

## COVID-19 in Malaysia

### Who should be prioritised to receive the COVID-19 vaccine?

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#### Highlights

The COVID-19 pandemic has disrupted both lives and livelihoods across the globe. COVID-19 vaccines may accelerate countries and societies' return to a degree of normalcy. However, rapid deployment of a population-wide vaccination strategy appears infeasible due to resource limitations and vaccine logistics challenges.

Although clinical trials have demonstrated their effectiveness, COVID-19 vaccines remain new, limited in availability, and resource-intensive from production and distribution perspectives. The government must therefore optimise the distribution of initial doses through a stratified approach.

Against this backdrop, this policy brief presents high-risk populations in Malaysia who should be prioritised for COVID-19 vaccination in 2021.

We hereby recommend that Malaysia's COVID-19 immunisation programme target subpopulations who are at highest risk of: **a) COVID-19 infection, and b) progression to severe disease and death from COVID-19 infection**, as follows:

- Persons aged 60 and over and those living with certain pre-existing medical conditions (e.g. cancer, chronic kidney disease, heart disease)
- Persons living in settings with increased risk of COVID-19 transmission, namely prisons, immigration detention facilities, and factory dormitories
- Persons working in the essential services sectors, including health and social care, law enforcement, cleaning and sanitation, and water, food, and electricity

#### Background

SARS-CoV-2 is a novel coronavirus that spreads faster and is more fatal than flu viruses.<sup>1</sup> It was first discovered in humans in late 2019 as the coronavirus disease (COVID-19); by January 2020, the World Health Organization had declared it a Public Health Emergency of International Concern. Globally, over 79 million people have been infected and 1.74 million people have died.<sup>2</sup>

Meanwhile, governments continue to battle with the dual challenge of safely reopening economies and preventing spikes in new infections.

As of 24<sup>th</sup> December 2020, Malaysia has recorded 100,318 confirmed cases of COVID-19 and 446 deaths.<sup>3</sup> Since the pandemic began, Malaysian authorities have employed well-established key strategies to fight COVID-19.

These include safe distancing measures, lockdowns, travel restrictions, contact tracing, isolation of suspected cases, and designation of dedicated COVID-19 healthcare facilities. However, despite initial successes at suppressing transmission, new surges have arisen at the confluence of several events, including post-lockdown lifting movement of peoples, September's Sabah state election, and new clusters at immigration depots, detention centres, construction sites and factories.

Nevertheless, the development of COVID-19 vaccines signals a turning point for countries to move beyond the spectre of the pandemic and its consequences.

Thus far, the Malaysian government has entered into three agreements to secure enough COVID-19 vaccines to inoculate 40% of the population.

At time of writing, the two-dose Pfizer-BioNTech vaccine is being evaluated by the National Pharmaceutical Regulatory Agency. Pfizer is expected to deliver a total of 12.8 million doses for 20% of the population, starting with 1 million doses by March 2021.<sup>4</sup>

Malaysia will also purchase vaccine doses for a further 10% of the population under the Covid-19 Vaccine Global Access (COVAX) facility.<sup>5</sup> COVAX has pledged access to the first round of doses for health and social care workers by June 2021.<sup>6</sup>

A separate, bilateral agreement with AstraZeneca is intended to cover another 10% of the population.<sup>7</sup> Alongside, the government is in talks to purchase 6.4 million doses of the Russia-developed Sputnik V vaccine and a yet-unspecified number of Chinese-manufactured vaccines.<sup>8</sup>

The number of people who can be vaccinated will be limited by the number of doses received in batches throughout 2021.

Against this backdrop, to maximise the impact of limited and valuable resources, Malaysia’s initial COVID-19 vaccination strategy must be fundamentally grounded in the prioritisation of target subpopulations who are at highest risk of: a) COVID-19 infection, and b) progression to severe disease and death from COVID-19 infection.

The recommended subpopulations are detailed in the following section.

## Recommendations

### Recommendation #1: Prioritise the elderly and those living with multiple comorbid conditions

#### Issue

International evidence shows that COVID-19 causes severe illness in 10-15% of cases, putting this subgroup of patients at heightened risk of multiple complications and death. In this segment of the population, many are of older age and/or live with multiple underlying conditions.

The Ministry of Health Malaysia reported that 87% of people who died of COVID-19 had at least one underlying medical condition, and 60% had at least two or more.

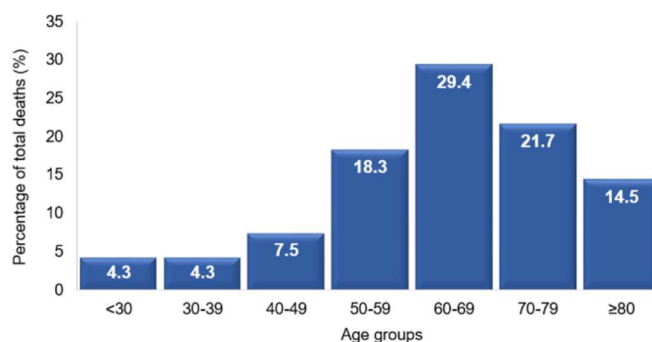
The overwhelming majority - over 80% - of deaths in the country occurred in people aged 50 years old and above (Figure 1). 81% of patients who died despite treatment in Malaysian hospitals were admitted at a severe stage of illness (Stage 4 and 5).<sup>9</sup>

Severe disease disproportionately affects people living with cancer, chronic kidney disease, heart conditions, type 2 diabetes, obesity, and chronic obstructive pulmonary disease (COPD).<sup>10</sup>

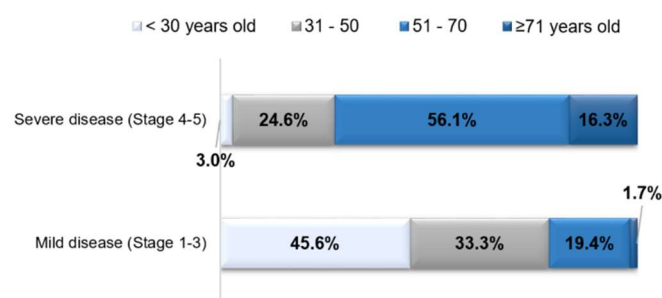
Data from Malaysian hospitals confirm this disparity for our population<sup>11</sup>(Figure 3), with evidence that the virus interacts

with other organs beyond the lungs, in severe cases unleashing a storm of inflammation and blood clots.<sup>12</sup>

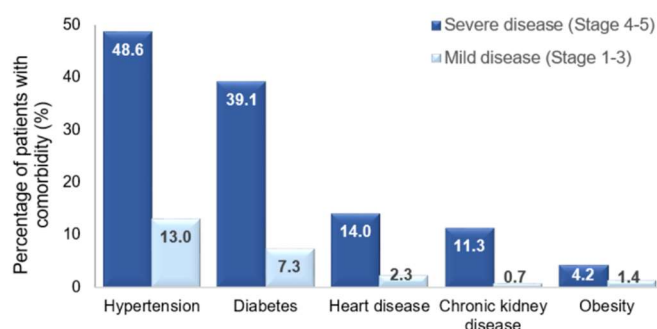
**Figure 1.** Percentage of death by age group as of 13 December 2020; total deaths n=415 (Source: Institute for Clinical Research, Desk of Director-General of Malaysia)



**Figure 2.** Severity of COVID-19 disease among Malaysian patients by age group (Source: Sim et al 2020)



**Figure 3.** Relationship between severity of COVID-19 and comorbid conditions among Malaysian patients (Source: Sim et al 2020)



Patients with severe COVID-19 require intensive, costly, and prolonged hospital-based management as well as rehabilitation.<sup>11,13,14</sup> If they survive, they face medium- to long-term effects such as major organ damage (e.g. heart, kidneys), chronic respiratory issues, and mental and neurological after-effects.<sup>15</sup>

These treatment and long-term care challenges impose significant burdens on health systems and their limited financial and human resources.

Acknowledging the aforementioned challenges and the need to mitigate them, countries including the United Kingdom, United States, Canada, Australia, and Singapore have all chosen to prioritise vaccination for this group in their rollout.

**Recommendation #2: Prioritise migrant workers and persons in detention residing in settings with high risk of transmission**

*Issue*

People living in specific settings with high risk of transmission face a combination of environmental factors that are both conducive to COVID-19 transmission and not within their control.

Many clusters in Malaysia have emerged from densely populated, congregated settings like factory dormitories, prisons, and immigration detention facilities.

This is well-aligned with research showing that COVID-19 is spread through infected droplets produced by coughing, sneezing, and breathing in close proximity to another person.

The percent positive detected in these clusters are high, indicating that the risk of transmission within these settings is significantly higher than that of the general population. For example, the Teratai cluster of worker dormitories in Klang, Selangor yielded a 76.9% screen positivity rate in early December.<sup>16</sup>

Safe distancing guidelines, like maintaining a physical distance of 1 metre and limiting the number of people in a space, cannot be realistically enforced in these settings. The main risk factor in this group, i.e., physical proximity, is fundamental and difficult to address. Together, these factors augment the risk of transmission of respiratory illnesses more broadly, as shown in research demonstrating how prisons are institutional ‘amplifiers’ of latent tuberculosis infection in Malaysia.<sup>17</sup>

The Malaysian authorities have imposed geographically bound, localised lockdowns in many of these clusters to minimise further transmission. However, it is infeasible and unsustainable to impose repetitive lockdown measures every time a cluster emerges, given the economic, social, and mental health impacts of lockdowns and the inevitable movement of people within clusters and between the cluster and surrounding communities.

**Recommendation #3: Prioritise workers in essential services sectors, including health and social care, law enforcement, cleaning and sanitation, and water, food, and electricity**

*Issue*

Healthcare workers are at disproportionately high risk of COVID-19 compared to the general population. This is by nature of their work, where they face patients who may be infected, and risk transmitting the virus to people who are vulnerable to severe disease.

In mid-December, reports emerged that over the past couple of months, in several major hospitals in the Klang Valley, dozens of healthcare workers including doctors and nurses had been infected. Some had died. Around 1,880 have been found positive since the beginning of the outbreak.<sup>18</sup>

However, while doctors and nurses are widely acknowledged to need protection, other essential service workers do not receive the same level of consideration.

**Figure 3.** Essential services under Prevention and Control of Infection Diseases Order 2020<sup>19</sup>

<ul style="list-style-type: none"> <li>• Food supply</li> <li>• Healthcare and Medical</li> <li>• Water</li> <li>• Electricity and energy</li> <li>• Security and defence</li> <li>• Waste management</li> <li>• Sewerage</li> <li>• Postal</li> </ul>	<ul style="list-style-type: none"> <li>• Immigration</li> <li>• Customs</li> <li>• Prison</li> <li>• Fire</li> <li>• Radio communication (TV and broadcasting)</li> <li>• Telecommunication</li> <li>• Banking and finance</li> <li>• E-commerce</li> <li>• Wildlife</li> </ul>	<ul style="list-style-type: none"> <li>• Transport by land, water or air</li> <li>• Port, dock and airport services</li> <li>• Fuel and lubricants production, supply, distribution, storage</li> <li>• Hotels and accommodations</li> <li>• Any services determined by the Minister as essential</li> </ul>
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In June 2020, members of the National Union of Workers in Hospital Support and Allied Services protested against working conditions, among which included the lack of provision of personal protective equipment (PPE).<sup>20</sup>

Over 10,000 police personnel were quarantined in October as they were involved in immigration and roadblock duties.<sup>21</sup> In the same month, it was reported that 161 police officers and their families were being treated for infection.<sup>22</sup>

Social care services take care of some of the most vulnerable people in the community throughout challenging lockdowns. Many residential care homes are privately run, often unregistered and have limited or minimal PPE resources to

protect elderly residents and care workers. At least six deaths were linked to clusters in care homes in the Klang Valley.<sup>23</sup>

Failing to protect our essential workers adequately jeopardises the core social, economic, and service delivery systems that are crucial to ensuring the public's basic needs and economic recovery and reopening.

## Potential Challenges

Recognising the obstacles to large-scale rollout of a novel vaccine during a pandemic, we anticipate and outline five key challenges:

### 1. Maintaining COVID-19 vaccine cold chain and logistics

The Pfizer-BioNTech vaccine will require an ultra-cold delivery chain, which is unprecedented. In sites where ultra-cold freezers are unavailable, the vaccine can be stored in special containers refilled with dry ice every five days for up to 30 days.<sup>24</sup> Dry ice availability and continuous temperature monitoring in these special containers are issues of concern.<sup>25</sup>

Leading vaccines under the COVAX portfolio also depend on effective cold chain management, including trained personnel and clear compliance to vaccine management and handling procedures and protocols. Moderna's vaccine is transported and stored at regular freezer temperature<sup>26</sup> while Oxford-AstraZeneca's vaccine must be maintained between 2-8 degrees Celsius.<sup>27</sup>

Reaching rural populations at scale is a logistical challenge even for high-income countries with well-established rural health networks.

In the Malaysian context, rural hospitals and clinics are spaced further apart, are less heavily staffed, and typically have weaker infrastructure than their urban counterparts. This necessitates tight coordination to ensure population access and avoid wasted doses.

As such, a less logistically demanding vaccine with a safety and efficacy record backed by clinical trial data will be needed for hard-to-reach geographic areas.

### 2. Public communications on vaccine strategy as critical for uptake

Novel vaccines are anticipated to raise public concerns about potential side effects and safety, even among healthcare workers.<sup>28</sup>

A 2019 Wellcome Monitor survey found that 91% of Malaysian respondents generally perceive vaccines as safe.<sup>29</sup> However, the rapid development, approval, and rollout of COVID-19 vaccines has received intense public scrutiny globally.

In Malaysia, evidence suggests rising levels of vaccine hesitancy and refusal and cultural concerns related to halal medicines.<sup>30</sup> Also, research shows that overall health literacy levels in the Malaysian population are low.<sup>31</sup>

This must be taken alongside the high availability, accessibility, and unregulated shareability of misinformation and fake news around COVID-19 and its vaccines. Without clear and consistent public messaging, all these concerns could lead to vaccine hesitancy in the population.

Against this backdrop, public communication should focus on vaccine safety and benefits, evidence-based and data-driven justification for the national vaccination strategy, transparency and integrity of the evaluation the National Pharmaceutical Regulatory Agency's evaluation processes, and implementation of safety measures (including clear, transparent reporting of and management pathways for any adverse reactions) during rollout.

This approach is especially crucial as most COVID-19 vaccine candidates are administered in a two-dose regimen several weeks apart, necessitating the successful completion of two visits to the vaccination site to achieve effective immunity.

### 3. Timeline for achievement of herd immunity (assumed at 70% coverage)

Prime Minister Tan Sri Muhyiddin Yassin announced plans to procure and deploy enough vaccines for 70% of the population.<sup>32</sup> When this will be achieved and how progress will be gauged has yet to be publicly known. It will likely take at least a year to achieve half that coverage. There are also numerous barriers to reach rural communities, irregular migrant populations, and individuals who are stateless or without formal registration.

Like most countries around the world, Malaysia faces the reality that COVID-19 will likely become endemic and remain a visible public health concern for years to come.

### 4. Oversight and accountability for vaccine rollout

The government must be prepared to invest sufficient resources and provide oversight to the program over at least the next two years to ensure vaccine safety and efficacy, public

confidence in large-scale rollout, and payoffs in increased allocations for health.

As seen in other countries which have begun deploying vaccines, multiple challenges have emerged, many of which are related to managing the scale of the immunisation exercise and encouraging the public to voluntarily come forward to be vaccinated. The societal impact of immunisation will depend on how well Malaysia distributes and administers the vaccine.

As such, an independent governance body comprising multisectoral stakeholders should be established to provide objective oversight and strengthen accountability. The vaccination roll-out should also involve private healthcare facilities to complement the public sector.

### 5. Availability for individuals who may benefit from early vaccination but are not in priority groups

There will be individuals who are not in the identified priority groups but may still benefit from early vaccination i.e., those living with a chronic respiratory illness like asthma. For these subgroups, there must be clearly defined pathways to and beyond vaccination, including pre-vaccination clinical risk assessment and post-vaccination medical follow-up.

### Authors

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### References

1. Piroth L, Cottenet J, Mariet A-S, Bonniaud P, Blot M, Tubert-Bitter P, et al. Comparison of the characteristics, morbidity, and mortality of COVID-19 and seasonal influenza: a nationwide, population-based retrospective cohort study. *Lancet Respir Med* [Internet]. 2020 Dec 24; Available from: [https://doi.org/10.1016/S2213-2600\(20\)30527-0](https://doi.org/10.1016/S2213-2600(20)30527-0)
2. Lau CH. COVID-19 Corona Tracker [Internet]. 2020 [cited 2020 Dec 24]. Available from: <https://www.coronatracker.com/>
3. Abdullah NH. Kenyataan Akhbar KPK 24 Disember 2020 – Situasi Semasa Jangkitan Penyakit Coronavirus 2019 (COVID-19) di Malaysia – From the Desk of the Director-General of Health Malaysia [Internet]. 2020 [cited 2020 Dec 24]. Available from: <https://kpkkesihatan.com/2020/12/24/kenyataan-akhbar-kpk-24-disember-2020-situasi-semasa-jangkitan-penyakit-coronavirus-2019-covid-19-di-malaysia/>
4. The Edge Markets. Govt signs deal with Pfizer for 12.8 mil Covid-19 vaccine doses — PM Muhyiddin [Internet]. 2020 [cited 2020 Dec 24]; Available from: <https://www.theedgemarkets.com/article/malaysia-has-signed-initial-agreement-pfizer-procure-128-million-doses-covid19-vaccine>
5. Code Blue. Gavi Welcomes Malaysia After Signing COVAX Vaccine Plan [Internet]. 2020 [cited 2020 Dec 24]; Available from: <https://codeblue.galencentre.org/2020/11/25/gavi-welcomes-malaysia-after-signing-covax-vaccine-plan/>
6. World Health Organization. COVAX Announces Additional Deals To Access Promising COVID-19 Vaccine Candidates; Plans Global Rollout Starting Q1 2021 [Internet] [Internet]. 2020 [cited 2020 Dec 24]. Available from: <https://www.who.int/news/item/18-12-2020-covax-announces-additional-deals-to-access-promising-covid-19-vaccine-candidates-plans-global-rollout-starting-q1-2021>
7. The Edge Markets. Govt to seal vaccine purchase with AstraZeneca on Monday [Internet] [Internet]. 2020 [cited 2020 Dec 24]. Available from: <https://www.theedgemarkets.com/article/govt-seal-vaccine-purchase-astrazeneca-monday>
8. Channel News Asia. Malaysia in talks to secure more COVID-19 vaccines from Russia, Pfizer: Minister [Internet]. 2020 [cited 2020 Dec 25]; Available from: <https://www.channelnewsasia.com/news/asia/covid-19-malaysia-in-talks-to-secure-more-vaccines-13829960>
9. Parliament of Malaysia. Jawapan-Jawapan Bagi Pertanyaan-Pertanyaan Jawab Lisan Yang Tidak Dijawab Di Dalam Dewan - 12 NOVEMBER 2020. 2020.
10. Centers for Disease Control and Prevention. Scientific Evidence for Conditions that Increase Risk of Severe Illness | COVID-19 [Internet] [Internet]. 2020 [cited 2020 Dec 25]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/evidence-table.html>
11. Sim BLH, Chidambaram SK, Wong XC, Pathmanathan MD, Peariasamy KM, Hor CP, et al. Clinical characteristics and risk factors for severe COVID-19 infections in Malaysia: A nationwide observational study. *Lancet Reg Heal – West Pacific* [Internet]. 2020 Nov 1;4. Available from: <https://doi.org/10.1016/j.lanwpc.2020.100055>
12. Guido I, Guido G, Claudio B, Claudio F, Massimo S, Massimo V, et al. Age and Multimorbidity Predict Death Among COVID-19 Patients. *Hypertension* [Internet]. 2020 Aug 1;76(2):366–72. Available from: <https://doi.org/10.1161/HYPERTENSIONAHA.120.15324>
13. Li X-Z, Jin F, Zhang J-G, Deng Y-F, Shu W, Qin J-M, et al. Treatment of coronavirus disease 2019 in Shandong, China: a cost and affordability analysis. *Infect Dis Poverty* [Internet]. 2020;9(1):78. Available from: <https://doi.org/10.1186/s40249-020-00689-0>
14. Hazard D, Kaier K, von Cube M, Grodd M, Bugiera L, Lambert J, et al. Joint analysis of duration of ventilation, length of intensive care, and mortality of COVID-19 patients: a multistate approach. *BMC Med Res Methodol* [Internet]. 2020;20(1):206. Available from: <https://doi.org/10.1186/s12874-020-01082-z>
15. BMJ Best Practice. Coronavirus disease 2019 (COVID-19) - Complications [Internet] [Internet]. 2020 [cited 2020 Dec 25]. Available from: <https://bestpractice.bmj.com/topics/en-us/3000168/complications>
16. Batumalai K. 82% Of Malaysia's Active Covid Clusters Above 5% Positivity Rate [Internet]. 2020 [cited 2020 Dec 25]; Available from: <https://codeblue.galencentre.org/2020/12/03/82-of-malysias-active-covid-clusters-above-5-positivity-rate/>

17. Al-Darraj HAA, Kamarulzaman A, Altice FL. Latent tuberculosis infection in a Malaysian prison: implications for a comprehensive integrated control program in prisons. *BMC Public Health*. 2014 Jan;14:22.
18. Abdullah NH. Kenyataan Akhbar KPK 22 Disember 2020 – Situasi Semasa Jangkitan Penyakit Coronavirus 2019 (COVID-19) di Malaysia – From the Desk of the Director-General of Health Malaysia [Internet]. 2020 [cited 2020 Dec 25]. Available from: <https://kpkasihatan.com/2020/12/22/kenyataan-akhbar-kpk-22-disember-2020-situasi-semasa-jangkitan-penyakit-coronavirus-2019-covid-19-di-malaysia/>
19. Jabatan Peguam Negara. Prevention and Control of Infectious Diseases (Declaration of Infected Local Areas) Order 2020 - Schedule of Essential Services. 2020.
20. Bunyan J. After Ipoh hospital cleaners' protests, employer says has implemented safety measures, to resolve matter internally [Internet]. 2020 [cited 2020 Dec 25]; Available from: <https://www.malaymail.com/news/malaysia/2020/06/03/after-ipoh-hospital-cleaners-protests-employer-says-implemented-safety-meas/1871853>
21. The Edge Markets. Covid-19: More than 10,000 police personnel in quarantine [Internet]. 2020 [cited 2020 Dec 25]; Available from: <https://www.theedgemarkets.com/article/covid19-more-10000-police-personnel-quarantine>
22. Tee K. Report: Bukit Aman confirms 161 cops, family members have tested positive for Covid-19 [Internet]. 2020 [cited 2020 Dec 25]; Available from: <https://www.malaymail.com/news/malaysia/2020/10/26/report-bukit-aman-confirms-161-cops-family-members-have-tested-positive-for/1916488>
23. Hasmuk K, Sallehuddin H, Tan MP, Cheah WK, Ibrahim R, Chai ST. Updated country report: The Long-Term Care COVID-19 situation in Malaysia – Resources to support community and institutional Long-Term Care responses to COVID-19 [Internet]. 2020 [cited 2020 Dec 25]. Available from: <https://lccovid.org/2020/10/09/updated-country-report-the-long-term-care-covid-19-situation-in-malaysia/>
24. Pfizer. COVID-19 Vaccine U.S. Distribution Fact Sheet [Internet] [Internet]. 2020 [cited 2020 Dec 25]. Available from: [https://www.pfizer.com/news/hot-topics/covid\\_19\\_vaccine\\_u\\_s\\_distribution\\_fact\\_sheet](https://www.pfizer.com/news/hot-topics/covid_19_vaccine_u_s_distribution_fact_sheet)
25. Olivia Goldhill. Pfizer decision on vaccine temperature sensors forced scramble [Internet]. 2020 [cited 2020 Dec 25]; Available from: <https://www.statnews.com/2020/12/17/pfizer-decision-to-turn-off-temperature-sensors-forced-scramble-to-ensure-covid19-vaccines-kept-cold/>
26. Dena Bunis. Comparing the Pfizer and Moderna COVID-19 Vaccines [Internet]. 2020 [cited 2020 Dec 25]; Available from: <https://www.aarp.org/health/conditions-treatments/info-2020/covid-vaccines-compared.html>
27. Gallagher J. Covid-19: Oxford University vaccine is highly effective [Internet]. 2020 [cited 2020 Dec 25]; Available from: <https://www.bbc.com/news/health-55040635>
28. Dror AA, Eisenbach N, Taiber S, Morozov NG, Mizrahi M, Zigran A, et al. Vaccine hesitancy: the next challenge in the fight against COVID-19. *Eur J Epidemiol* [Internet]. 2020;35(8):775–9. Available from: <https://doi.org/10.1007/s10654-020-00671-y>
29. Wellcome. 2018 Wellcome Global Monitor [Internet]. 2018. Available from: <https://wellcome.ac.uk/reports/wellcome-global-monitor/2018%0Awww.gallup.com/contact.%0Awww.gallup.com/contact.%0Ahttps://wellcome.ac.uk/reports/wellcome-global-monitor/2018>
30. Batumalai K. Vaccine Refusal In East Coast States, Sabah Rising Since 2013: Expert [Internet]. 2020 [cited 2020 Dec 25]; Available from: <https://codeblue.galencentre.org/2020/12/11/vaccine-refusal-in-east-coast-states-sabah-rising-since-2013-expert/>
31. Institute for Health Systems Research (IHSR). National Health and Morbidity Survey (NHMS) 2019: Vol. II: Healthcare Demand. [Internet]. Vol. 20. 2020. Available from: <http://www.ihsr.moh.gov.my/publication>
32. Prime Minister's Office. Govt to add COVID-19 vaccine order to cover 60-70 per cent of Malaysians - PM [Internet] [Internet]. [cited 2020 Dec 25]. Available from: <https://www.pmo.gov.my/2020/12/govt-to-add-covid-19-vaccine-order-to-cover-60-70-per-cent-of-malaysians-pm/>