

## The Effectiveness of the Malaysian Guidelines for Pre-operative COVID-19 Screening in ORL Patients Undergoing Elective Surgery

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### Abstract

The Coronavirus disease 2019 (COVID-19) pandemic is a devastating global pandemic affecting many countries worldwide. It has a huge impact on the country's healthcare system as well as its socio-economic wellbeing. Majority of elective surgery was deferred in order to provide beds, resources and treat COVID-19 cases. Resumption of elective surgery requires a well-planned process and adherence to standard guidelines to protect both the healthcare providers and patients. Pre-operative COVID-19 screening will be one of the new norms for patients undergoing surgery. This study was aimed to evaluate the pre-operative COVID-19 screening for elective surgery among Otorhinolaryngology (ORL) patients in Hospital Ampang based on the current Malaysian guidelines for undertaking surgery during COVID-19 pandemic and highlight the screening protocols implemented by the Ministry of Health. This retrospective review was conducted in ORL

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Department, Hospital Ampang. We reviewed the surgical registry of 117 patients who underwent elective surgeries under general anaesthesia from June till September 2020. There were 62 patients (53%) below 18 years old and 55 patients (47%) above 18 years old. There were 76 cases (65%) involving aerosol-generating procedures. A total of 23 patients (19.7%) had COVID-19 screening done pre-operatively based on the Malaysian guidelines patient selection and all results were negative. None of the patients experienced any symptoms, complications or morbidities related to SARS-CoV-2 infection post-operatively. The Malaysian guideline on pre-operative screening for COVID-19 is applicable for institutions with low to moderate local transmission of SARS-CoV-2. Targeted group or risk-based protocols are beneficial for improving cost-effectiveness and reducing workload burden during the critical period. As the pandemic evolved, the guidelines have to be revised based on the prevailing situation to suit the best clinical practice for the benefit of patients and healthcare personnel without disrupting the surgical services.

**Keywords:** *COVID-19, screening, preoperative, elective, surgery*

## **1. Introduction**

Coronavirus disease 2019 (COVID-19) pandemic is a global pandemic affecting most of the countries including Malaysia. As of 14th November 2020, in Malaysia a total of 46,209 positive cases have been reported with 73.1% (33,772 cases) recovery rate and 0.7% (306 cases) fatalities (COVID-19 updates, 2020). The epidemic curve was flattened during June to early August 2020 with single digit number of COVID-19 cases daily. However, there was a resurgence of the third wave which started towards the end of August (Figure 1). This pandemic had a major impact on the country’s healthcare system as well as the socio-economic sectors.

During the first wave of the COVID-19 pandemic, majority of elective surgery was deferred in order to focus on treating COVID-19 cases. The American College of Surgeons had recommended to delay inpatient and outpatient elective surgery and procedures during this critical period (American College of Surgeons, 2020). Otorhinolaryngology involves a lot of instrumentations and aerosol-generating procedures (AGP) and being among the most susceptible to infection with SARS-CoV-2, the virus that causes COVID-19 (Lammers et al., 2020). AGP is defined as any medical or patient care procedure that results in the production of airborne particles/aerosols that creates potential for air borne transmission of infections and may otherwise only be transmissible by the droplets route (MOH Malaysia, 2020). These AGPs carry high risk of droplets transmission of SARS-CoV-2 especially to the healthcare providers and operating theatre staffs; with reported infection rates of 3.8% to 29% (Sommerstein et al., 2020). The nasal and oropharyngeal cavities are the sites of high viral shedding leading to significant numbers of infections and deaths among Otolaryngologists, Ophthalmologists and Anaesthesiologists (Patel et al., 2020).

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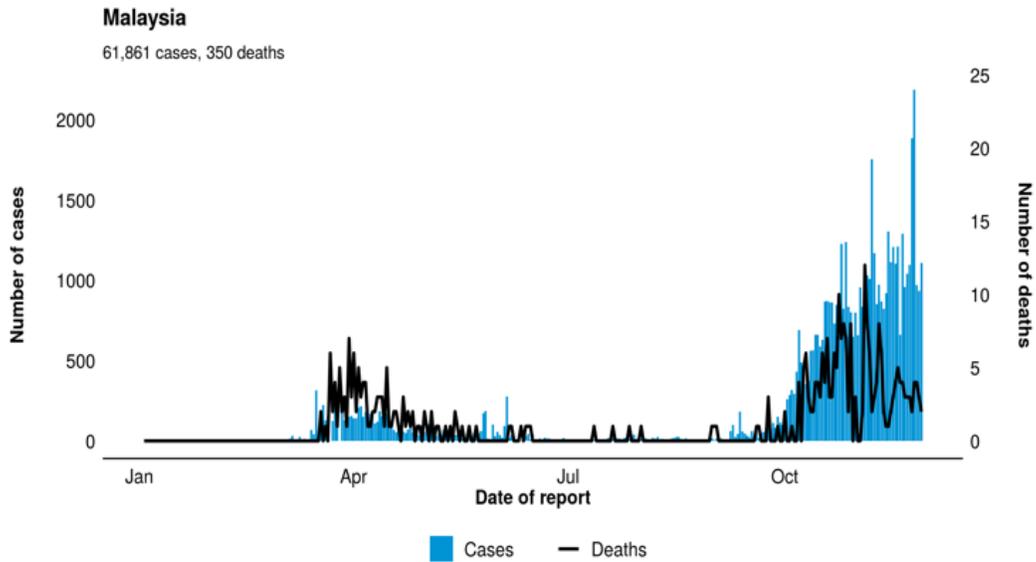


Figure 1: Numbers of daily cases and deaths of COVID-19 in Malaysia, January to December 2020

Therefore, resumption of elective and non-emergency surgeries need to be well-planned and strict adherence to the prescribed standard guidelines which provide protection for healthcare providers and patients. The standard operating procedures and guidelines provided by Malaysian Ministry of Health (MOH) and pre-operative screening constitute a mandatory prerequisite to be undertaken prior any surgery. The protocol of the Malaysian guidelines for pre-operative screening for COVID-19 and the evaluation of pre-operative screening procedures among Otorhinolaryngology elective surgical patients that were implemented at our centre are described here.

## 2. Methodology

This retrospective review was conducted in Otorhinolaryngology (ORL) Department Hospital Ampang from June till September 2020. Ethical approval to conduct this study was obtained from the National Medical Research Registry (NMRR), Ministry of Health, Malaysia (NMRR-20-2530-57395). We reviewed the surgical registry of patients due for elective surgery under general anaesthesia. Elective surgery is a planned surgery in which the patients are optimized prior to

surgery. Data was collected from ORL operation theatre's list, surgical registry book and electronic medical records. All patients of various ages and types of surgery were included.

Emergency cases and surgeries conducted under local anaesthesia were excluded.

The Malaysian guidelines for management of surgery during COVID-19 pandemic and pre-operative screening required for targeted and case-based approach is summarized in Figure 2 (MOH Malaysia, 2020). All patients going for elective surgery were required to undergo a thorough clinical assessment which included the following criteria:

- a) History taking: Detail history must include information pertaining to COVID-19 risk assessment such as close contact with COVID-19 cases, history of travel to or residence in affected countries or red zone areas and respiratory symptoms or fever past 14 days
- b) Physical examination including temperature and lung auscultation
- c) Laboratory investigation: FBC to identify leukopenia or lymphopenia and other relevant investigations.
- d) Radiological investigation: chest x-ray and other imaging if indicated.

Based on the thorough clinical assessment, patients were divided into two groups, "High probability" and "Low probability". The "High probability" group included patients who had any of the above criteria with a clinical suspicion of COVID-19, immunocompromised patients, elderly more than 65 years old, cancer patients and patients with underlying co-morbidity. Prior surgery, screening for COVID-19 using Reverse-Transcription Polymerase Chain Reaction (RT-PCR) as per local hospital protocol is warranted for all patients in the "High probability" group. If the result showed positive for COVID-19 disease, the case will be referred to the infectious disease (ID) specialist or physician for further management of COVID-19 and the surgery is deferred until repeated swabs are negative and patient is medically stable. "Low probability" is classified when none of the above criteria is met. Pre-operative COVID-19 screening is not indicated for patients in this category.

Surgery and AGP involving the high probability patients require a full personal protective equipment (PPE) including powered air-purifying respirator (PAPR) or at least N-95 facemask with sterile operation theatre attire, head and boot covers as well as eye protection gear.

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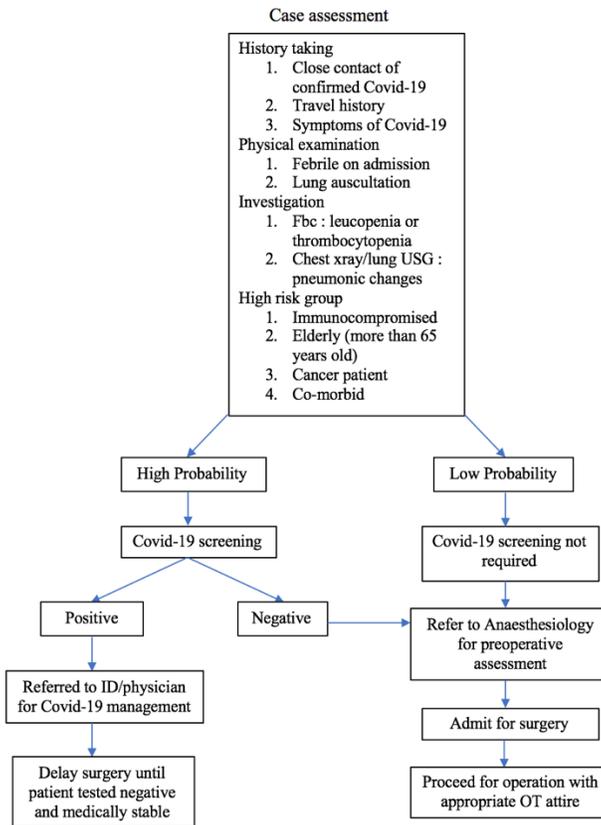


Figure 2: Malaysian MOH Guideline for management of surgery during COVID-19 pandemic, preoperative screening for elective surgery.

### 3. Results

Our department’s elective surgery was fully resumed from June 2020. During this time there was a “flattening” of the numbers of new COVID-19 cases daily in Malaysia. A total of 117 elective surgeries requiring general anaesthesia were performed from June to September 2020 in the Otorhinolaryngology (ORL) Department, Hospital Ampang. There were 62 patients (53%) below 18 years of age and 55 patients (47%) above 18 years old. Majority of the patients in our study population were Malay (72.7%) followed by Chinese (17.9%), Indian (6.8%) and Others (2.6%).

Various types of ORL surgeries were performed during this period and 76 cases (65%) were aerosol-generating procedures as shown in Figure 3. Out of the total cases, 23 patients (19.7%) had COVID-19 screening pre-operatively based on the Malaysian MOH guidelines (Figure 4). The targeted group comprised the high risk patients which met the criteria for age more than 65 years, those with underlying comorbidity and cancer patients. In the Other group, only one (1) patient was a foreigner and another one (1) patient was a healthcare worker. None of the patients had upper respiratory tract symptoms or COVID-19 symptoms at the time of screening. The screening was done using RT-PCR for the nasopharyngeal and oropharyngeal swabs, 3 to 6 days prior to the surgery. All screened patients were negative for COVID-19. Following the MOH guidelines, all patients who proceeded with surgery did not experience any symptoms, complications or morbidities related to COVID-19 during the post-operative period.

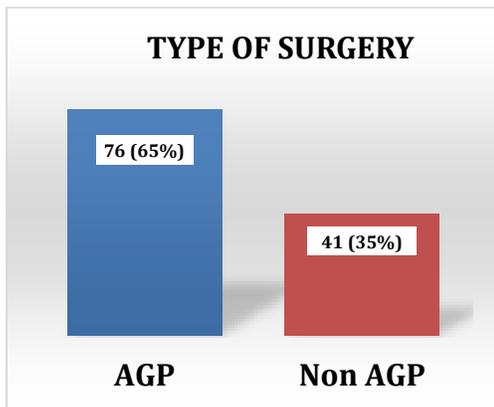


Figure 3: Type of surgery

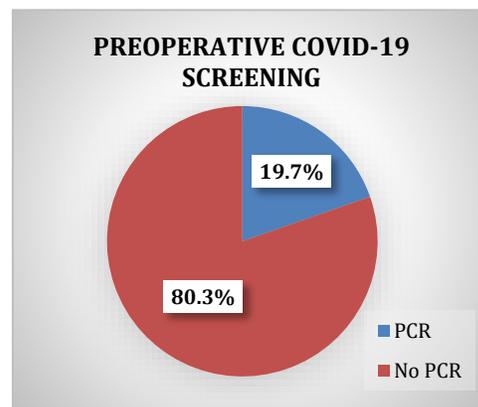


Figure 4: Pre-operative COVID-19 screening

#### 4. Discussion

The COVID-19 pandemic affected most of the healthcare services worldwide. To date, there are more than 50 million cases reported worldwide, with about 2.4% mortality rate (WHO, 2020). Until a successful vaccine is developed, it is still uncertain when the pandemic will cease. The operative surgical services have been greatly affected; thus the surgical fraternity are facing unprecedented health issues. Therefore, a major adaptation has to be applied for continuation of the surgical services. Several surgical guidelines and protocols have been proposed and reported in the literature for peri-operative management during this current pandemic (Hojaij et al., 2020)

Whether universal or targeted pre-operative COVID-19 screening should be implemented has been deliberated among surgeons and anaesthetists. Up to 10th July 2020, a total of 60,952 pre-operative COVID-19 screenings were conducted on asymptomatic patients going for emergent and semi-emergent surgery in Malaysia. Of these pre-operative screenings, only 21 cases (0.03%) were positive for COVID-19 (Press statement MOH, 2020). The Malaysian MOH guidelines recommend that all patients going for elective surgery need a thorough clinical assessment and the “High probability” group should be the targeted group for pre-operative screening. The targeted screening in our centre showed that between June and September 2020, none of the ORL elective surgery patients were positive for COVID-19 upon screening using RT-PCR. This is similar to the findings of a study in Netherland (Huybens et al., 2020). The result from our centre may be due to low local transmission of SARS-CoV-2 infection at the time when the data was extracted. Two studies reported less than 1% positive rate of COVID-19 cases (Komori et al., 2020; Schlosser et al., 2020). Meanwhile, three studies reported positive rate of 8% to 12.1% (Urban et al., 2020; Nekkanti, 2020; Gruskay et al., 2020).

All of the patients undergoing elective surgery are healthy, optimized and asymptomatic from COVID-19 disease, in contrast to emergency cases or cases requiring essential surgery, where regardless of COVID-19 status, the procedures are mandatory as a live-saving procedure or to prevent further complications. Nevertheless, there were also reported cases of asymptomatic positive COVID-19 disease. A narrative review of a study of communities involving multiple countries such as China, United Kingdom, Italy and New York City reported the prevalence of asymptomatic SARS-CoV-2 infection was approximately 40% to 45% (Oran & Topol, 2020). Another systematic review reported the incidence rate ranging from 1.6% to 56.5%. Asymptomatic patients were noted to have similar viral load and potential of spread compared to those who tested positive (Gao et al., 2020). Therefore, asymptomatic and healthy patients also need to be screened during the pandemic era. Thus, many authors recommend targeted or universal pre-operative screening among asymptomatic elective surgery cases to prevent transmission, post-operative complications and mortality as well as to reduce usage of unnecessary PPE which will always be limited during the pandemic critical period (Nekkanti, 2020; Nahshon & Lavie, 2020; Lothar, 2020). In our centre, we practiced targeted high risk screening as recommended by Malaysian MOH guidelines.

Several guidelines and surgical protocols have been published by various surgical disciplines. A systematic review of surgical practice during current COVID-19 pandemic identified 29 articles which recommended some form of pre-operative screening. Of these, 82.8% recommended the Polymerase Chain Reaction (PCR) for nasal swab for all surgical patients (Hojaij et al., 2020). Other screening methods reported were clinical evaluation and examination including body temperature, blood investigation and chest imaging; radiography or computed tomography (Hojaij et al., 2020; Gruskay et al., 2020). The Malaysian MOH guidelines on screening protocols include thorough clinical assessment, blood and radiological investigation, nasal and oropharyngeal swab for RT-

PCR of targeted groups. The nasal swab screening is targeted for those with ‘high probability’ of COVID-19. In a study comparing two algorithms between universal and risk-based testing showed that universal testing had no additional value in a non-surge area with low to moderate risk of community transmission (Schlosser et al., 2020). Targeted group nasal swab screening can improve cost effectiveness in managing COVID-19 and reduce the burden to medical personnel and laboratory workload of unnecessary testing. However, it carries the risk of missing asymptomatic COVID-19 patients. Therefore, targeted group screening as recommended in the Malaysian guidelines may not be applicable for institutions in areas with high prevalence and high risk of community transmission.

Sampling of pre-operative COVID-19 screening is recommended to be taken within 48 to 72 hours prior surgery (Hojaij et al., 2020). The timing of our pre-operative screenings ranged from 3 to 6 days prior surgery. This prolonged duration between screening and surgery is due to the available schedule for pre-operative screening provided by our centre. After swabbing was done, the patient was advised to comply with strict self-quarantine at home until admission for the surgery. If the patient developed any symptoms within this quarantine period, the surgery was deferred and further assessment was required.

Many authors recommended that for surgical practice there should be reduction of health-care worker circulation, and the surgery should be performed by experienced surgeons to optimize the surgical time, usage of N95 masks and level 3 protective measures to enhance safety and specific designated area or operating theatre for COVID-19 patients (Hojaij et al., 2020).

Although this study showed that a successful outcome was accomplished by using thorough clinical assessment and pre-operative screening with no SARS-CoV-2 infection nor transmission during the postoperative period based on Malaysian Ministry of Health guidelines, there were a few limitations identified in this study. The numbers of patients were smaller in comparison with other published studies, short period of data collection and it involved only a single institution. The limitations were mainly attributed to Movement Control Order that has been implemented in this country, Thus, the research activities had to be restricted. Therefore, the limited data did not represent the experience of other institutions in Malaysia. Preferably, the low risk patients should be screened to give a better perspective of the effectiveness of targeted screening. However, it was not done due to cost limitation and the need to comply with the present guidelines as prescribed by Malaysian Ministry of Health. As the number of COVID-19 cases are increasing in our country and across the globe, our findings may not reflect the current situation on ongoing management of pre-operative surgical cases. Therefore, the authors recommend a further study involving a larger cohort of patients in multiple tertiary medical centres be conducted to provide a clearer picture and more comprehensive collection of data of the impact of COVID-19 in the management of surgical patients, focusing on elective cases and pre-operative COVID-19 screening. Although the present guidelines suggested that targeted screening had been proven to be reliable and applicable at the time of writing, it should

be noted that this pandemic is an evolving dynamic process where the number of cases can fluctuate and hence the guidelines may need to be revised as the pandemic progresses.

## 5. Conclusion

The Malaysian MOH guideline on pre-operative screening for COVID-19 is reliable and applicable for institutions or areas with low to moderate local transmission of SARS-CoV-2 infection. Targeted group or risk-based protocol is beneficial for improving cost-effectiveness and reducing workload during the critical period. As the pandemic evolves, the guidelines need to be revised based on the prevailing situation to suit the best clinical practice for the benefit of patients and healthcare personnel without disrupting surgical services.

## 6. Conflict of interest

The authors declared that they have no conflict of interest.

## 7. Acknowledgement

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