



**MALAYSIAN SOCIETY OF ANAESTHESIOLOGISTS AND COLLEGE OF ANAESTHESIOLOGISTS,  
ACADEMY OF MEDICINE OF MALAYSIA  
GUIDELINES ON ELECTIVE SURGERY AND ANAESTHESIA  
FOR PATIENTS AFTER COVID-19 INFECTION**

**A. OVERVIEW**

This document is a guide for the anaesthetic team regarding appropriate timing of elective surgeries that require anaesthesia for patients who had Covid-19 infection. This guideline may change as new evidence emerges.

1. Non-urgent surgeries/procedures should be delayed until the patient is no longer deemed infectious and has recovered from Covid-19 infection.
2. The timing of elective surgery is a joint decision between the anaesthesiologist and surgeon/proceduralist when any surgery/procedure is scheduled based on the recommendations below.
3. When informed consent is obtained from the patient, the risks of perioperative complications, especially respiratory events, that may result in perioperative intensive care unit (ICU) care or longer hospitalisation must be clearly explained to the patient and documented.

**B. RECOVERY FROM COVID-19 INFECTION**

1. Covid-19 infection can affect all major organ systems.<sup>1</sup>
2. Residual symptoms such as fatigue, shortness of breath and chest pain are common and can affect patients up to sixty (60) days after diagnosis.<sup>2</sup>
3. The timing of surgery after Covid-19 infection must take into consideration the risks of perioperative complications due to residual organ dysfunction.
4. There are significant risks of post-operative pulmonary complications up to four (4) weeks after Covid-19 diagnosis.<sup>3</sup>

5. H1N1 infections has shown that pulmonary dysfunction is present for up to three (3) months after acute respiratory distress syndrome (ARDS).<sup>4</sup>
6. In the pre-operative period, patient's medical condition and functional status should be evaluated. Rehabilitation from severe illness and multidisciplinary optimisation of physiologic status is required.<sup>5</sup>
7. A thorough assessment of cardiac and respiratory function must be conducted.
8. Covid-19 patients are no longer infectious based on:
  - i. the time from symptom onset or
  - ii. severity of symptoms and
  - iii. presence of immunocompromised state as follows:

Patient's condition at presentation of infection	Days passed since symptoms first appeared	Fever*	Current Symptom #
Patients with mild illness (category 1-3) and not severely immunocompromised	At least 10 days	At least 24 hours have resolved	Improved
Patients with severe/critical illness (category 4-5) or severely immunocompromised	At least 10 days and up to 20 days		

\* No use of antipyretics

# Symptoms e.g. cough, shortness of breath

**Special considerations for patients who are severely immunocompromised.<sup>6</sup>**

- a. Includes patients with:
  - i. cancer on chemotherapy
  - ii. untreated human immunodeficiency virus (HIV) infection with CD4 lymphocyte count less than 200 cells/mm<sup>3</sup>
  - iii. combined primary immunodeficiency disorder
  - iv. steroid use with equivalent doses of prednisolone more than twenty (20) mg/day for more than fourteen (14) days.
- b. Decision to identify a patient as no longer infectious must be made in consultation with infectious disease experts.
- c. May require further testing as replication-competent virus have been identified beyond twenty (20) days after the 1<sup>st</sup> positive RT-PCR results.
- d. Effects on duration of infectivity by other factors with lower degree of immunocompromise, such as advanced age, diabetes mellitus or end-stage renal failure is unknown.

### C. TIMING OF ELECTIVE SURGERY AFTER RECOVERY FROM COVID-19 <sup>7</sup>

The decision regarding timing of elective surgery is based on severity of symptoms and infection. Duration to delay surgery is determined by the interval between the date of Covid-19 diagnosis to surgery and are as follows:

Symptoms & Covid-19 infection Severity	Suggested wait time (weeks)
Asymptomatic patient or recovery from ONLY mild, non-respiratory symptoms.	4
Symptomatic patients who did not require hospitalization with cough, dyspnea, etc.	6
Symptomatic patients who required hospitalisation with diabetes, Immunocompromised, etc.	8 – 10
Critically ill patients who required critical care management.	12

1. The timeline is not definitive and must be tailored to each patient as well as urgency of surgery.
2. Patients that require elective surgery such as those with malignancy may not tolerate this wait time. Surgery should be scheduled after discontinuation of Covid-19 transmission-based precautions.
3. The decision to proceed to surgery before recovery from Covid-19 infection should take into consideration the risks of transmission versus disease progression if further delays in surgery is being considered.
4. When time permits, vaccination is to be encouraged several weeks before surgery.

### TIMING OF ELECTIVE LOWER SEGMENT CAESAREAN SECTION (LSCS)

1. Parturient who have recovered from Covid-19 infection do not require any alteration in timing of the elective LSCS.<sup>8</sup>
2. Parturients who have recovered from Category 3 - 5 Covid-19 infection should be reviewed by an obstetrician two (2) weeks after discharge from the hospital following the infection. Long Covid syndrome are to be identified and managed to reduce perioperative risks such as medical conditions related to thromboembolism and Covid-19 respiratory complications.

#### **D. TESTING IN PATIENTS WHO HAVE RECOVERED FROM COVID-19 AND ARE PLANNED FOR SURGERY<sup>9</sup>**

1. We do not recommend re-testing for Covid-19 within ninety (90) days of symptom onset or 1<sup>st</sup> positive PCR test.
2. If a patient presents within ninety (90) days post infection, and
  - i. **has new** symptoms consistent with Covid-19 infection
    - a. immediate patient isolation and consultation with Infectious Disease Consultant/Physician is warranted.
    - b. surgery can be rescheduled only when reinfection is excluded, and the patient is discontinued from Covid-19 transmission-based precautions.
  - ii. **has no new** symptoms but has history of Covid-19 infection, no repeat testing or quarantine is required.
3. Once the 90-day period is over, standard pre-operative Covid-19 testing guideline should be followed and the patient should undergo RT-PCR test no less than seventy-two (72) hours prior to surgery/procedure.

#### **SUMMARY**

Timing of elective surgeries/procedures after Covid-19 infection is based on the urgency of surgery taking into consideration patients' condition following the infection, infectious state, and the disease process for which the surgery/procedure is indicated. Emergence of new knowledge on the effects of mass vaccination on infectivity, reinfection/infection by Covid-19 variants, and recovery from Covid-19 with new treatment will necessitate updates of these recommendations.

## Steps to be taken as part of preoperative assessment

### 1. History

- a. Obtain detailed history and that of co-morbidities
  - This includes discharge summary from previous treating facility indicating category of infection, medications, and imaging reports.
- b. Assess present functional status in performing daily living activities.
- c. Post COVID infection complications
  - Chronic steroid use with post Covid related lung disease
  - Anticoagulation for Thromboembolic events: Pulmonary embolism (PE)/ myocardial infarction (MI)/ cerebral vascular accident (CVA)
  - Home oxygen therapy

### 2. Physical examination

Standard clinical examination as per routine preoperative assessment

### 3. Preoperative blood tests and imaging per anesthesiologist's assessment

4. Informed consent includes increased risks of **perioperative CARDIORESPIRATORY** complications and possible ICU stay for all Covid-19 infection categories until more data is available on perioperative risks and long-term outcome for post Covid-19 patients.

## REFERENCES

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- <sup>2</sup> Carfi A, Bernabei R, Landi F, for the Gemelli Against COVID-19 Post-Acute Care Study Group. Persistent Symptoms in Patients After Acute COVID-19. *JAMA*. 2020;324(6):603–605. doi:10.1001/jama.2020.12603
- <sup>3</sup> COVID Surg Collaborative. Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study. *Lancet* 2020; 396(10243):27–38.
- <sup>4</sup> Hsieh MJ, Lee WC, Cho HY, et al. Recovery of pulmonary functions, exercise capacity, and quality of life after pulmonary rehabilitation in survivors of ARDS due to severe influenza A (H1N1) pneumonitis. *Influenza Other Respir Viruses*. 2018;12(5):643-648. doi: 10.1111/irv.12566. Epub 2018 Jun 12. PMID: 29676537; PMCID: PMC6086854.
- <sup>5</sup> El-Boghdady K, Cook TM, Goodacre T, Kua J, Blake L, Denmark S, McNally S, Mercer N, Moonesinghe SR, Summerton DJ. SARS-CoV-2 infection, COVID-19 and timing of elective surgery: A multidisciplinary consensus statement on behalf of the Association of Anaesthetists, the Centre for Peri-operative Care, the Federation of Surgical Specialty Associations, the Royal College of Anaesthetists and the Royal College of Surgeons of England. *Anaesthesia*. 2021 Jul;76(7):940-946.
- <sup>6</sup> [https://covid-19.moh.gov.my/garis-panduan/garis-panduan-kkm/ANNEX\\_2\\_Management\\_of\\_Suspected\\_Probable\\_and\\_Confirmed\\_COVID19\\_04062021.pdf](https://covid-19.moh.gov.my/garis-panduan/garis-panduan-kkm/ANNEX_2_Management_of_Suspected_Probable_and_Confirmed_COVID19_04062021.pdf) page 5
- <sup>7</sup> American Society of Anesthesiologists and Anesthesia Patient Safety Foundation Joint Statement on Elective Surgery and Anesthesia for Patients after Covid-19 infections (updated March 9, 2021)
- <sup>8</sup> MOH Malaysia Guidelines on the Management of Covid-19 in Obstetrics updated 30th August 2021 page 11
- <sup>9</sup> [https://covid-19.moh.gov.my/garis-panduan/garis-panduan-kkm/ANNEX\\_2\\_Management\\_of\\_Suspected\\_Probable\\_and\\_Confirmed\\_COVID19\\_04062021.pdf](https://covid-19.moh.gov.my/garis-panduan/garis-panduan-kkm/ANNEX_2_Management_of_Suspected_Probable_and_Confirmed_COVID19_04062021.pdf) page 6

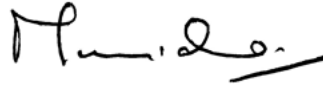
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