

# Timing of surgery after COVID-19 in adults

This document provides clinicians and patients information to aid in the decision making about when patients should have planned surgery after COVID-19.

## Scope

This advice will inevitably be modified by the clinical impact of new variants of concern, vaccination, new treatments and how they may affect recovery after COVID-19. **It is important to stress that there is minimal information about the timing of surgery after infection with the Omicron variant and these recommendations are based on data related to the Alpha and Delta variants.**

## Overview

“Decisions regarding surgical timing will require careful consideration of possible sequelae of COVID-19 infection, the urgency of the required surgery and the expected physiological effects of surgery and anaesthesia on the patient. After seven weeks, the perioperative risk is thought to return to baseline in those who had asymptomatic COVID-19 infection and/or those whose symptoms have resolved.”<sup>1(p1)</sup>

## Limitations of advice and evidence

This advice is based on currently available evidence and may change.

A recent updated [Evidence Check](#) (11 February 2022) by the NSW Agency for Clinical Innovation (ACI) COVID-19 Critical Intelligence Unit (CIU) found no available evidence relating to surgery in patients after infection with the Omicron variant.<sup>2</sup> The CIU continually updates available evidence which can be found at their [Living Evidence - website](#).

There is no available advice regarding minor procedures being done under sedation or local anaesthetic (e.g. gastrointestinal endoscopy) for patients following COVID-19.

## Recommendations

1. Planned non-urgent surgery for Category 2 and 3 patients should be deferred for seven weeks after the first positive test diagnosing COVID-19 infection, in either asymptomatic or symptomatic patients, in view of the probable increased risk of mortality and pulmonary morbidity.

Should surgery be recommended within this seven-week period, patients should have a documented discussion with the treating surgical team about the increased risks associated with surgery for the post COVID-19 patient, weighed up against the risk of delaying surgery. Informed consent should be given and documented. Please refer to the [Elective Surgery Access Policy](#) for details on urgency categories.

2. For Category 1 and urgent Category 2 cases:
  - a. Consensus advice proposes that **asymptomatic** patients, or those who had mild COVID-19 symptoms, could have surgery four weeks after recovery from COVID-19. This four-week delay after recovery would seem reasonable for low risk, otherwise well patients, having minor minimal-risk procedures (low risk category 3 patients). An indicative list may include: cardioversion, coronary angiogram, permanent pacemaker or automated implantable cardioverter defibrillator box change, transoesophageal echocardiogram, dental

surgery, gastroscopy, colonoscopy, endoscopic retrograde cholangiopancreatography, drainage of superficial abscess, minor amputation (e.g. toe), excision of skin lesions, axillary lymph nodes, Bartholin's cyst, hysteroscopy, hand surgery, carpal tunnel, cataract, trabeculectomy, vitreoretinal surgery, hallux valgus, removal of hardware, local skin flaps, cystoscopy, hydrocele, epididymal cyst, transrectal biopsy prostate, vasectomy, bronchoscopy and electroconvulsive therapy.

- b. Patients who experienced moderate or severe COVID-19 symptoms should be risk assessed by the admitting consultant and multidisciplinary team (if appropriate) to determine if surgery can be deferred until the recommended seven-week period has passed. Should surgery be recommended within this seven-week period, patients should have a documented discussion with the treating surgical team of the increased risks associated with surgery in the post COVID-19 patient weighed up against the risk of delaying surgery. Informed consent should be given and documented.
  - c. Preoperative assessment is primarily a surgical and anaesthetic decision but may include advice from a multidisciplinary team. Issues to assess include pre-morbid functional status, risk of disease progression from delaying surgery, and extent and complexity of surgery. While awaiting surgery, patients may benefit from prehabilitation.
  - d. Patients who have ongoing symptoms or who needed hospitalisation (especially ICU care) will require additional precautions for perioperative care. This may include waiting longer than seven weeks for further recovery to reduce surgical risk. This decision will have to be balanced against the risk of delaying surgery and is a surgical and anaesthetic decision with input as required by other specialties.
3. Vaccination before elective surgery, when practicable, may reduce risk to patients and staff.
  4. This advice is current at present but will inevitably be modified as more data becomes available, new variants of COVID-19 emerge and new treatments become available. This document will be updated as required.

## Background to the recommendations

The number of patients who have been infected with COVID-19 means that many patients will present for planned non-urgent surgery with a history of COVID-19 infection. As of January 21 2022, more than 1.5 million people in Australia have been infected with COVID-19.<sup>3</sup> Current Australian and NSW guidelines recommend that planned surgery in patients should be delayed until eight or more weeks after infection with COVID-19.<sup>4,5</sup>

The above advice is general and based on data from COVID-19 infection prior to Omicron; it does not consider the severity of COVID-19 infection, residual functional impairment related to the infection, prior health status, or the nature or extent of surgery.

## The nature of COVID-19 infection on patients' clinical and functional status

While COVID-19 is principally a respiratory disease, it also has significant multi-organ effects. Persistence of symptoms, clinical abnormality and abnormal investigations after recovery from COVID-19 may be longer than six months in 50% of patients (Systematic review, n= 250,351, 57 studies).<sup>6</sup> The most common persistent clinical abnormalities were: pulmonary impairment and imaging (62%), difficulty concentrating (23.8%), generalised anxiety disorder (29.6%), functional impairment (44%) and fatigue or muscle weakness (37.5%).<sup>6</sup>

## Surgery on patients with concurrent COVID-19

There is a higher risk of mortality (23.8% at 30-days) and pulmonary morbidity (51.2%) for patients who acquire COVID-19 in the period of seven days prior to surgery or 30 days after surgery.<sup>7</sup> Mortality is higher for patients who are men, aged over 70-years-old, who have major surgery and who have higher American Society of Anesthesiology (ASA) status. Different variants of COVID-19 will inevitably have different morbidity and mortality profiles.

## Clinical evidence

The [COVIDSurg study](#) (an international, multicentre, prospective cohort study, n=140,231, 116 countries, data collected during October 2020) compared postoperative 30-day mortality in patients with recent COVID-19 with those without previous COVID-19.<sup>8</sup> The 30-day adjusted postoperative mortality was 3.6% to 4.1% in patients undergoing surgery within seven weeks of a COVID-19 diagnosis.

The 30-day mortality for those without COVID-19 was 1.5%. In patients who previously had COVID-19, a delay in surgery of seven weeks after diagnosis of COVID-19 resulted in overall a return to the baseline 30-day mortality of 1.5%. Although most COVID-19 patients were asymptomatic; the increased mortality still occurred in these patients compared with patients with no prior infection (OR range 3.9-3.2). In the subgroup of COVID-19 patients who continued to be symptomatic beyond seven weeks, mortality was 6%. Postoperative pulmonary complications (PPC) occurred in 13.1% of patients at  $\geq$  seven weeks after a diagnosis of COVID-19 who remained symptomatic. In comparison, those with resolved symptoms had a 3.9% incidence of PPC. However, this study was done before the emergence of the Omicron variant which may have a different risk profile.

A US retrospective cohort study (n=5479) in patients having major planned non urgent surgery, four to eight weeks after a COVID-19 diagnosis, found increased risk of postoperative pneumonia (OR 6.46); respiratory failure (OR 3.36), pulmonary embolism; (OR 2.73); and sepsis (OR 3.67).<sup>9</sup> This elevated risk resolved following more than 8 weeks after COVID-19. Again, this study was pre-Omicron.

Another study of COVID-19 patients (n=238) found those who had acute infection, had continuing pulmonary impairment at four months after discharge. Six months after COVID-19, in those patients who required support with high-flow oxygen, CPAP or management in ICU, 29% had a six-minute walk test distance less than the lower limit of normal and 56% had impaired gas transfer (DLCO) of less than 80% predicted.<sup>10</sup>

Pulmonary complications have been shown to persist for up to six months following discharge with acute COVID-19 infection. The degree of impairment is predicted by the severity of acute COVID-19 infection and prior health status.<sup>11</sup>

## Consensus statements

The advice from the [Royal Australasian College of Surgeons](#) (RACS),<sup>12</sup> and the joint consensus statement from the [Royal College of Surgeons England and the Royal College of Anaesthetists](#)<sup>13</sup> state that non urgent planned surgery should be deferred for seven weeks after COVID-19 unless outweighed by the risk of deferring surgery such as disease progression or clinical priority. The advice from the [Australian and New Zealand College of Anaesthetists](#) (ANZCA) states that non-urgent elective major surgery should be delayed for a minimum of eight weeks.<sup>1</sup>

[The American Society of Anesthesiologists](#) (ASA) has released an expert consensus statement about advice for the timing of surgery after COVID-19. This advice risk stratifies according to symptoms and severity of illness.<sup>14</sup> This ASA statement and the advice from the RACS and ANZCA, recommends that asymptomatic patients, or those with mild or non-respiratory symptoms, could have surgery involving a general anaesthetic four weeks after recovery from COVID-19.

## Assessment of Infectivity

For the protection of healthcare staff, patients and hospital visitors, elective surgery should not occur if the patient is still infectious. Patients should meet the criteria for deisolation prior to performing elective surgery (refer to current *Guidelines for deisolation for COVID-19 for NSW Health Facilities*).<sup>15</sup>

If a subsequent COVID-19 test is performed (according to local admission policies) and found to be positive, discuss with the local clinical microbiologist as this is likely to represent residual shedding of non-infectious viral particles which may persist for weeks or months following infection.

The presence of viable virus can be determined by using cell culture.<sup>16</sup> A positive rapid antigen test may offer a practical and sensitive assessment of infectivity.<sup>17</sup>

## Vaccination before surgery

Vaccination against COVID-19, at least two weeks before elective surgery, reduces the risk of preventable COVID-19 infection and the severity of the infection in surgical patients, as well as protecting staff and other patients within the hospital. This will help maintain the health system capacity and avoid preventable furloughing of staff.

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