

Local Guideline



Perioperative care of patients with a history of stroke

Sites where Local Guideline applies	John Hunter Hospital
This Local Guideline applies to:	
1. Adults	Yes
2. Children up to 16 years	No
3. Neonates – less than 29 days	No
Target audience	Surgeons, anaesthetists, neurologists, perioperative nurses, doctors.
Description	This guideline is intended to guide the perioperative care of patients who have a history of stroke and who are scheduled for elective non-cardiac, non-neurologic surgery at the John Hunter Hospital.

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Keywords	Stroke, surgery, theatre, anaesthetic, perioperative
Document registration number	
Replaces existing document?	No
Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics:	
<ul style="list-style-type: none"> See references section of page 4 	
Prerequisites (if required)	Patients must be booked to have elective non-cardiac surgery at the John Hunter Hospital and have a history of stroke.
Local Guideline note	<p>This document reflects what is currently regarded as safe and appropriate practice. This guideline does not replace the need for the application of clinical judgment in respect to each individual patient. If staff believe that the guideline should not apply in a particular clinical situation they must seek advice from a senior perioperative clinician or the neurology team and document the variance in the patient's health record.</p> <p>If this document needs to be utilised outside of the John Hunter Hospital, please liaise with the local neurology or stroke service to ensure the appropriateness of the information contained within the Guideline and Procedure.</p>
Position responsible for the Local Guideline and authorised by	Perioperative Executive Committee
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Date authorised	
This document contains advice on therapeutics	Yes Approval gained from Local Quality Use of Medicines Committee on (insert date)
Issue date	
Review date	Up to 3 years

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PURPOSE AND RISKS

Overt strokes are acute brain infarctions with symptoms lasting more than 24 hours. Covert strokes are brain infarcts that are not recognised acutely due to subtle symptoms, but which are detectable on neuroimaging. Evidence has shown that overt stroke occurs in up to 3% of patients and covert stroke in up to 7% of patients undergoing non-cardiac surgeries.¹

Overt stroke can be a devastating outcome for patients having surgery and is associated with high morbidity and mortality.¹ Covert stroke is associated with increased risk of post-operative delirium, cognitive decline and future stroke in the 12 months following surgery.¹

Risk factors for perioperative stroke include:^{2,3}

- Prior stroke
- Age
- Cardiovascular disease including atrial fibrillation, hypertension, valvular disease and heart failure
- Renal disease
- Diabetes
- Smoker or COPD
- Patent foramen ovale
- Surgical procedures including: vascular, thoracic, endocrine, transplant, otolaryngology and hemicolectomy.
- Presence of intracranial stents

As the history of a prior stroke is a risk factor for perioperative stroke, the preoperative management of patients with history of stroke presenting for non-cardiac surgery should specifically consider the following:

1. Timing of surgery
2. Management of antiplatelet and anticoagulant medications

While this document refers to all patients with a history of stroke, for management of patients with a history of *haemorrhagic stroke* please see the relevant sub-section.

Risk Category: Clinical Care & Patient Safety

GLOSSARY

Acronym or Term	Definition
COPD	Chronic obstructive pulmonary disease
PFO	Patent foramen ovale
RFA	Request for admission

GUIDELINE

This Guideline does not replace the need for the application of clinical judgment in respect to each individual patient.

Perioperative Management of Patients with a History of Stroke

Investigation and management of prior stroke

The patient with a prior stroke should have been reviewed by Neurology and appropriate investigation and management of cause for their stroke should have occurred. This includes management of symptomatic carotid stenosis, consideration of PFO closure and management of atrial fibrillation, as appropriate. Other risk factors listed above should be optimised prior to surgery.

If these steps have not occurred, discuss with the patient's GP or the neurology team. Any delays to surgery **must** be discussed with surgical team.

Timing of surgery

A history of stroke is associated with altered cerebrovascular reactivity, leading to physiologic vulnerability to perioperative stroke. The risk is highest within 3 months of the initial stroke and reaches a nadir at 9 months, although remains permanently elevated compared to a patient who has not had a stroke.(2,3,5)

Elective Surgery	Urgent Surgery
Delay for 9 months following stroke	Should not be delayed
Must be discussed with surgical team	If delay – discuss timing with surgical team

Medication management

Anticoagulants

- Review surgical recommendations on RFA and see local Perioperative Service guidelines for cessation
- **Warfarin** – if cessation required, stop medication 5 full days preoperatively and consider bridging anticoagulation only for those at high thromboembolic risk.^{6,7}
- **Non vitamin-K-antagonist Oral anticoagulant (NOAC) medications** – stop medications 24-72 hours preoperatively dependent upon creatinine clearance, and surgical and anaesthetic plans for day of surgery. Bridging with low molecular weight heparin or unfractionated heparin is not routinely recommended.⁷

Aspirin

- Contentious as limited evidence exists.⁸
- Review surgical recommendations on RFA
- Consider continuing for patient at high risk for perioperative stroke due to previous stroke, unless high risk of bleeding (eg neurosurgery, prostate surgery).
- If ceasing, stop for a minimum of 5 days, although longer period of cessation for some surgeries.⁷

Other antiplatelet medications

- Review surgical recommendations on RFA
- Consider conversion to aspirin for patients at high risk for perioperative stroke due to previous stroke, unless high risk of bleeding (eg neurosurgery, prostate surgery).
- Stop clopidogrel for ≥ 7 days preoperatively.
- For duration of cessation of other antiplatelets, consult perioperative medication guidelines (eg Prasugel, Ticagrelor, Ticlodopine).⁷

Other medication management

- Continue anti-arrhythmic medications perioperatively
- Continue beta-blocker medications perioperatively

Multidisciplinary involvement

- If you have concerns about the patient's perioperative stroke risk and antiplatelet/anticoagulant management, discuss with a Perioperative Anaesthetist before discussing with the Neurologist and the Surgeon.

Patients with a history of haemorrhagic stroke

With a lower incidence than ischaemic stroke and a high mortality, it is less common to encounter patients with a history of haemorrhagic stroke undergoing preoperative planning for elective surgery. Aspects for consideration:

- The aetiology, subsequent management and risk of recurrence of the haemorrhagic stroke should be identified where possible.
- **Anticoagulation:**
 - A portion of patients will be therapeutically anticoagulated and may carry a high thrombosis risk. These patients should be discussed with their neurologist or the neurology team.
 - Based on limited evidence, past haemorrhagic stroke is generally not considered a strong contraindication to chemical VTE prophylaxis.⁹
- **Antiplatelet management:**
 - Aspirin should usually be continued for patients with intracranial stents.
 - Dual antiplatelet therapy, or an antiplatelet agent and an anticoagulant, is often used for 3-6 months after intracranial stenting. Temporary cessation after 6 months when required for surgery is usually appropriate. For earlier cessation times discuss with the Neurology or Interventional Neuroradiology team.
- **Timing of elective surgery:**
 - With a lack of evidence regarding timing in this cohort, is it reasonable to use the recommendations from the literature for ischaemic stroke, i.e. 9 months delay from time of stroke until elective surgery.
 - For time-sensitive procedures it may be reasonable to proceed sooner, ideally after 3 months.
 - Cranioplasty after decompressive craniectomy may be a therapeutic procedure with an expected postoperative improvement in neurologic function and protection of underlying structures.¹⁰ It is reasonable to proceed with these surgeries within an earlier time frame.

IMPLEMENTATION, MONITORING COMPLIANCE AND AUDIT

This guideline will be communicated to the perioperative nurses and doctors via Continuing Medical Educational meetings.

REFERENCES

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FEEDBACK

Any feedback on this document should be sent to the Contact Officer listed on the front page.

DRAFT