



## ACETYL SALICYLIC ACID (ASA)

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### OBJECTIVE:

To provide information on the use of acetyl salicylic acid in the prevention of vascular thromboembolic events.

### BACKGROUND:

Acetyl salicylic acid (ASA) is well-established in the management of acute myocardial infarction and in the secondary prevention of cardiovascular disease among both men and women, based on large randomized trials. More recently, its role in the prevention of recurrent venous thromboembolism has been demonstrated. The net benefit of ASA use depends on weighing the anticipated reduction in cardiovascular events against the increased risk of gastrointestinal bleeding.

### MECHANISM OF ACTION OF ASA:

ASA irreversibly inhibits platelet aggregation by inhibiting thromboxane A<sub>2</sub> (TxA<sub>2</sub>) synthesis.

### INDICATIONS FOR ASA:

Antiplatelet therapy is recommended for all patients with the following, unless contraindicated:

- 1) Cardiac:** For all patients with symptomatic coronary artery disease (CAD), including:
  - i. Acute coronary syndrome (ACS) patients with and without ST segment elevation [see Clinical Guides: Non-ST Elevation Acute Coronary Syndrome: Outpatient Antithrombotic Management and ST Elevation Myocardial Infarction: Outpatient Antithrombotic Management]
  - ii. Chronic stable angina
  - iii. Following percutaneous coronary intervention (PCI) or coronary artery bypass graft (CABG)
  - iv. Prosthetic heart valves:
    - i. ASA 81 mg daily is recommended in addition to VKA in selected high-risk patients with a mechanical valve prosthesis
    - ii. ASA 81 mg daily is reasonable in all patients with a bioprosthetic aortic or mitral valve who are not also taking an oral anticoagulant
- 2) Cerebrovascular:**
  - i. For patients with non-cardioembolic ischemic stroke or transient ischemic attack (TIA)
  - ii. Following carotid endarterectomy
- 3) Peripheral arterial disease (PAD):**
  - i. Symptomatic patients

- ii. Asymptomatic with an ankle brachial index (ABI) <0.9 at high risk because of associated atherosclerotic risk factors in the absence of risk factors for bleeding

**4) Primary prevention of cardiovascular morbidity and mortality:**

- i. Only in special circumstances in patients without manifest vascular disease in whom vascular risk is considered high and bleeding risk is considered low. Examples include: asymptomatic carotid or coronary atherosclerosis demonstrated on vascular imaging studies and patients at very high risk of vascular events due to multiple cardiovascular risk factors

**5) Secondary prevention of recurrent VTE**

- i. In patients at high risk of VTE recurrence following completion of initial anticoagulant therapy (a minimum of 3-6), ASA may be considered as an option to decrease recurrent VTE only if extended anticoagulant therapy is not acceptable to the patient.

**DOSING OF ASA:**

- The usual antiplatelet dose of ASA is 81 mg daily. Higher doses increase risk of adverse events with no evidence of increased efficacy.
- A single initial dose of 325 mg is recommended in patients suffering an ACS event, and then indefinite therapy with 81 mg daily.
- An initial dose of 81 mg once daily should be utilized in patients suffering a TIA or ischemic stroke of noncardiac origin.
- For patients with a history of, or at risk of, gastrointestinal bleeding, co-administration of a gastroprotective agent should be considered (i.e. proton pump inhibitor (PPI), H2 antagonist) or consideration given to an alternate antiplatelet agent such as clopidogrel.

**ADVERSE EFFECTS OF ASA:**

- Bruising is very common with use of ASA
- Dyspepsia
- The most common serious adverse effect of ASA is bleeding into the gastrointestinal tract (which is dose-related)
- Allergic reactions, asthma (may be severe)

**PERI-PROCEDURAL MANAGEMENT FOR PATIENTS TAKING ASA:**

Patients receiving ASA and:

- a) undergoing an invasive diagnostic test,
  - i. associated with a low risk of bleeding, should continue ASA without interruption.
  - ii. associated with a high risk of bleeding, should discontinue ASA 7 days prior to the procedure.
  - iii. Patients with coronary stents deserve special consideration, and consultation with a specialist is advised.
- b) undergoing arthrocentesis, continue ASA through the time of the procedure.
- c) undergoing a minor surgery, dental, eye, or skin procedure, generally continue ASA around the time of the procedure.

- d) undergoing elective major non-cardiac surgery should discontinue ASA 7 days prior to surgery if the risk for cardiovascular events is low, but continue if cardiovascular risk is high.

### **SPECIAL CONSIDERATIONS:**

- 1) **Concomitant use of therapeutic doses of anticoagulants and ASA** is discouraged and should only be considered in patients with an indication for anticoagulation who are at relatively low bleeding risk AND have one of the following indications:
  - i. Recent ACS
  - ii. Recent PCI +/- coronary artery stent
  - iii. High risk prosthetic heart valve (e.g. older generation valve or mitral valve replacement with atrial fibrillation, LV dysfunction or previous systemic embolus on therapeutic anticoagulation)
  - iv. Proven TIA/ischemic stroke while on therapeutic doses of anticoagulation aloneIn **most** other patients taking ASA, if anticoagulation is started, the ASA should be stopped.
- 2) Patients taking ASA for vascular protection should avoid the concomitant use of **NSAIDs**. If a patient taking low-dose ASA for vascular protection requires an anti-inflammatory agent, specific cyclooxygenase-2 inhibitors should be chosen over traditional NSAIDs.
- 3) ASA should be avoided or used with caution in patients with **asthma or nasal polyps**; in those at **high risk of bleeding** or with recent major bleeding; or in patients with **severe thrombocytopenia** or with familial or **acquired bleeding disorders**.

### **PEDIATRICS:**

ASA may be used in infants and children with congenital or acquired heart disease or with arterial ischemic stroke. When ASA is used for antiplatelet therapy in children, it is given in doses of 1-5 mg/kg per day. ASA should be held 1 week pre- and 6 weeks post-varicella immunization. ASA is contraindicated with FluMist (Agriflu should be used instead). In general, depending on the underlying etiology of the illness, a specialist should be consulted prior to the use of ASA in children.

### **OTHER RELEVANT THROMBOSIS CANADA CLINICAL GUIDES:**

- Non-ST Elevation Acute Coronary Syndrome: Outpatient Antithrombotic Management
- ST Elevation Myocardial Infarction: Outpatient Antithrombotic Management
- Pediatric Stroke

### **REFERENCES:**

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