

# 21. Hypertensive Emergencies Algorithm

This clinical pathway is intended to supplement, rather than substitute for, professional judgment and may be changed depending upon a patient’s individual needs. Failure to comply with this pathway does not represent a breach of the standard of care.

BEGIN 20. HYPERTENSION ALGORITHM  
Features of progressive or impending end organ damage  
(especially if BP > 180/110 mmHg)?

- Monitor, support ABCs
- Check vital signs (BP, PR, RR, SPO<sub>2</sub>, T° C, **RBS**)
- Start Oxygen **IF** SPO<sub>2</sub> < 94%. Maintain SPO<sub>2</sub> ≥ 94%
- Establish IV Access and send samples for **FBC, UEC, Urinalysis for proteinuria**
- Obtain/review 12-lead ECG
- Perform brief, targeted history, physical exam
- **Consult a Physician/ (Obstetrician for Eclampsia)** and consider treatments as below **in consultation** with a Physician/Obstetrician

See Hypertensive Emergencies Drug Infusions for Dosages and Precautions

Neurological Emergencies

Preferred medications	Medications to avoid
<ul style="list-style-type: none"><li>• Labetalol</li><li>• Nicardipine</li><li>• Esmolol</li></ul>	<ul style="list-style-type: none"><li>• Nitroprusside</li><li>• Hydralazine</li></ul>

**Hypertensive Encephalopathy** - Reduce mean arterial pressure (MAP) **25%** over **8 hours**.

**Acute Ischemic Stroke** - Evidence exists that patients who have acute strokes have **better outcomes** with **higher BPs**. Antihypertensive therapy is **not routinely recommended** for patients with acute stroke and HTN.

- Patient otherwise eligible for acute reperfusion therapy except that BP is **>185/110 mm Hg**:
    - Labetalol 10–20 mg IV over 1–2 minutes, may repeat 1 time
    - Other agents (hydralazine, enalaprilat, etc.) may be considered when appropriate
  - If BP is not maintained at or below 185/110 mm Hg, do not administer rtPA
  - Management of BP **during and after rtPA or other acute reperfusion therapy** to maintain BP **at or below 180/105 mm Hg**:
    - Monitor BP every 15 minutes for 2 hours from the start of rtPA therapy, then every 30 minutes for 6 hours, and then every hour for 16 hours
    - If **systolic BP >180–230 mm Hg** or **diastolic BP >105–120 mm Hg**:
      - Labetalol 10 mg IV followed by continuous IV infusion 2–8 mg/min;
      - If BP not controlled or diastolic BP >140 mm Hg, consider IV sodium nitroprusside
- After treatment with fibrinolysis**, the **SBP** should be maintained **< 180mmHg** and **DBP < 105mmHg** for **24 hours**.
- In patients with markedly elevated blood pressure (**SBP > 220 mm Hg** or **DBP > 120 mm Hg**) who **do not receive fibrinolysis**, a reasonable goal is to lower blood pressure by **15% during the first 24 hours after onset of stroke**.

**Acute Intracerebral Haemorrhage** - **No evidence** exists to suggest that HTN provokes **further bleeding** in patients with ICH. A precipitous fall in SBP may compromise cerebral perfusion and increase mortality. The controlled lowering of BP with **IV labetalol** (in the absence of bradycardia) is currently **recommended only when** the SBP is **>200mmHg** or the DBP is **>110mmHg**. Treatment based on clinical/radiographic evidence of increased intracranial pressure (ICP).

- If signs of **increased ICP**, maintain **MAP just below 130mmHg** (or **SBP < 180mmHg**) for first 24 hours after onset.
- Patients **without increased ICP**, maintain **MAP < 110mmHg** (or **SBP < 160mmHg**) for first 24 hours after symptom onset.

**Subarachnoid Haemorrhage** - Maintain **SBP < 160mmHg** until the aneurysm is treated or cerebral vasospasm occurs. Oral **nimodipine** is used to **prevent delayed ischemic neurological deficits**, but it is **NOT indicated** for treating acute hypertension.

Cardiovascular Emergencies

**Aortic Dissection** – **Immediately** reduce the **SBP < 110mmHg** and maintain it at this level unless signs of end-organ hypo perfusion are present. Preferred treatment includes a combination of;

- a) narcotic analgesics (morphine sulphate),
- b)  $\beta$ -blockers (labetalol, esmolol) or calcium channel blockers (verapamil, diltiazem); **Avoid  $\beta$ -blockers** if there is;
  - aortic valvular regurgitation or
  - suspected cardiac tamponade.
- c) vasodilators (nicardipine, **nitroprusside**).

**Acute Coronary Syndrome** - Treat if **SBP >160 mmHg** and/or **DBP >100 mmHg**. Reduce BP by **20-30%** of baseline. Thrombolytics are **contraindicated** if BP is **>185/100 mmHg**. Preferred medications include  **$\beta$ -blockers & Nitroglycerin**

**Acute Heart Failure** - Treatment with vasodilators (in addition to diuretics) for **SBP ≥ 140 mmHg**. **IV or sublingual nitroglycerin** is the preferred agent.

Other Disorders

**Cocaine toxicity/Pheochromocytoma** - Hypertension and tachycardia from cocaine toxicity rarely require specific treatment.

- **Benzodiazepines** are the preferred agents for cocaine-associated acute coronary syndromes.
- Pheochromocytoma treatment guidelines are similar to that of cocaine toxicity.  **$\beta$ -blockers can be added** for BP control only **after  $\alpha$ -blockade**.

**Preferred medications** - Diazepam, Phentolamine, Nitroglycerin/nitroprusside  
**Medications to avoid** -  $\beta$ -adrenergic antagonists prior to phentolamine administration

**Preeclampsia/eclampsia** - In women with eclampsia or preeclampsia, **SBP** should be **< 160 mmHg** and **DBP <110 mm Hg** in the prepartum and intrapartum periods. If the **platelet count is < 100,000 cells/mm<sup>3</sup>** BP should be maintained below **150/100mmHg**. Patients with eclampsia or preeclampsia should also be loaded with **IV Magnesium sulphate 4gm** diluted in 100mL NS over 15 mins then with an **infusion of 2gm/hr** to avoid seizures.

**Preferred medications** - Hydralazine, Labetalol, Nifedipine  
**Medications to avoid** - Nitroprusside, Angiotensin-converting enzyme inhibitors, Esmolol