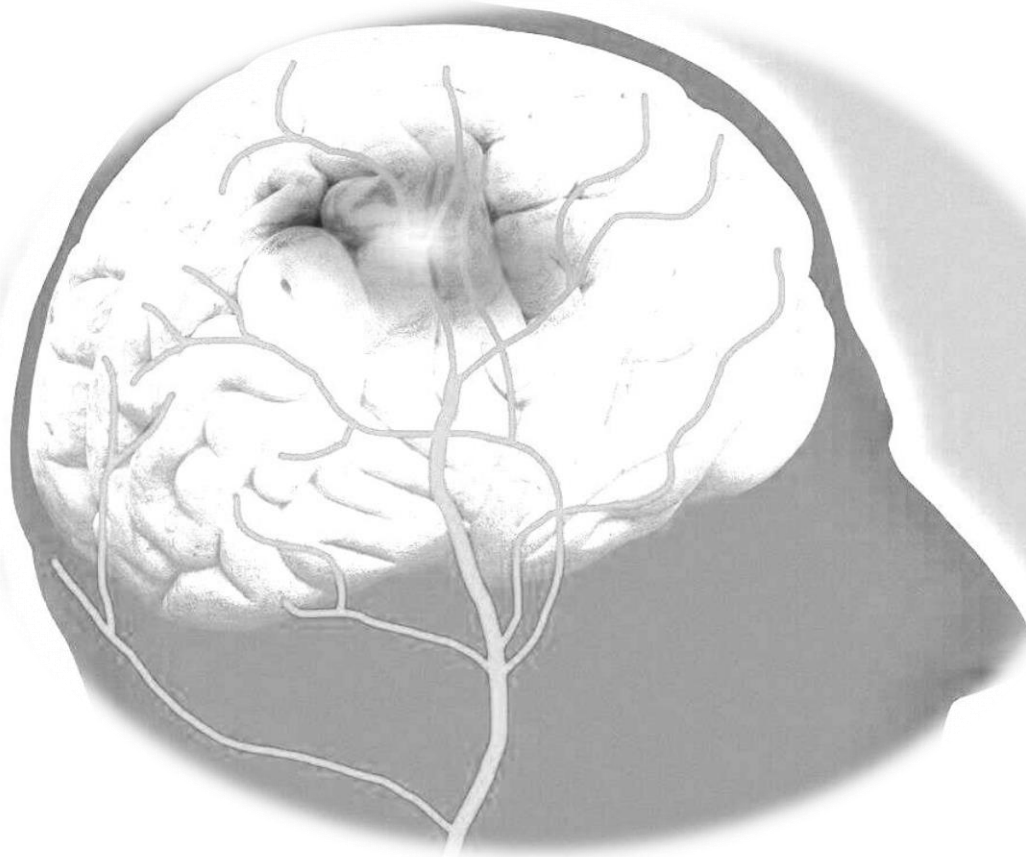


# Hypertension and Stroke

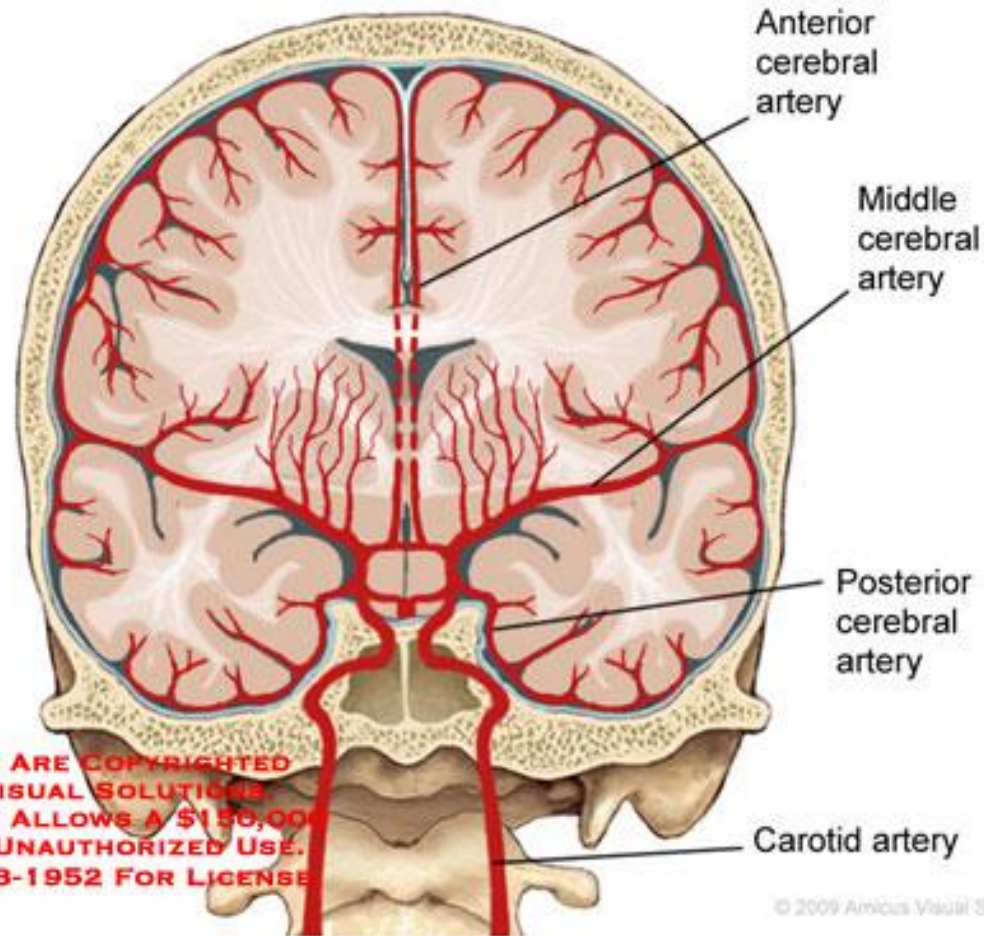


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*TUMS*

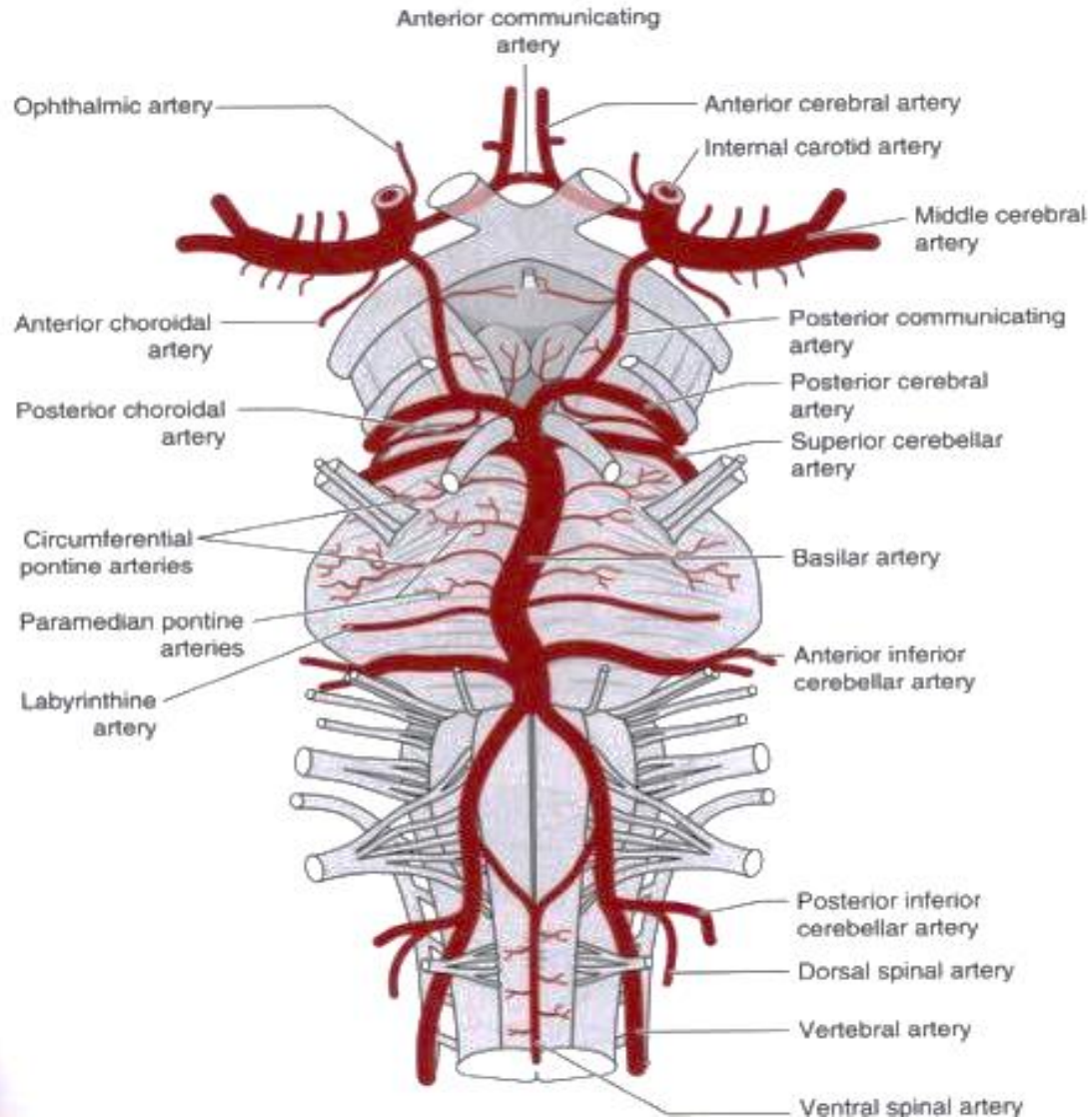
# Cerebral Blood Flow

- ✓ Cerebral blood flow (CBF) is the blood supply to the brain in a given period of time.
- ✓ In an adult, CBF is typically **750 milliliters per minute** or 15% of the cardiac output.
- ✓ This equates to an average perfusion of **50 to 54 milliliters of blood per 100 grams** of brain tissue per minute

# Anterior circulation



# Posterior circulation



# Stroke

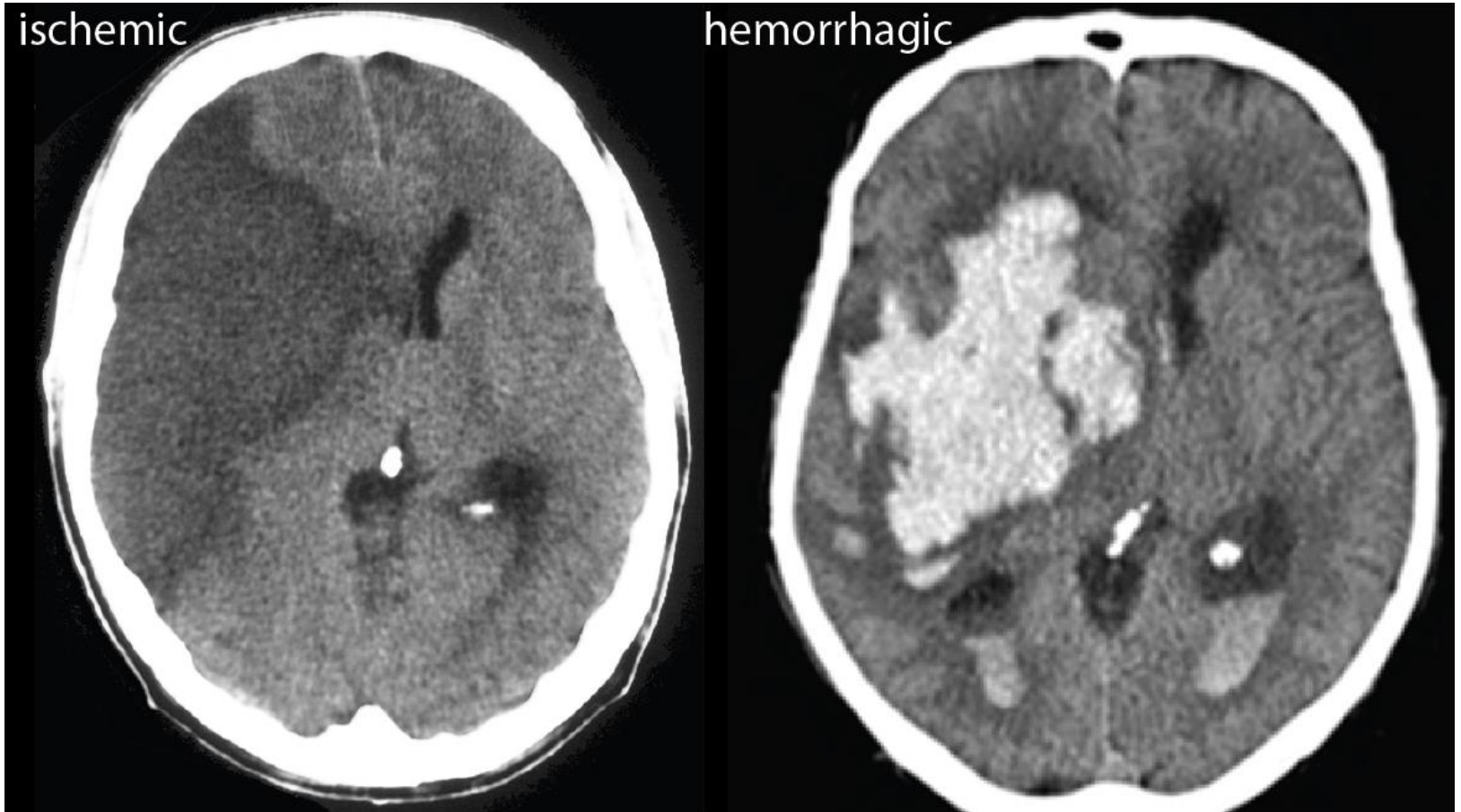
- Stroke is the second most common cause of mortality worldwide and the third most common cause of disability.
- There are two main types of stroke: ischemic due to lack of blood flow, and hemorrhagic, due to bleeding
- Hypertension is the most prevalent risk factor for stroke
- The cause of stroke and haemodynamic consequences are heterogeneous across stroke subtypes and timing of disease presentation. Thus, the management of blood pressure (BP) in stroke patients is complex and requires an accurate diagnosis and precise definition of therapeutic goals.

# Signs and Symptoms

Sudden onset of:

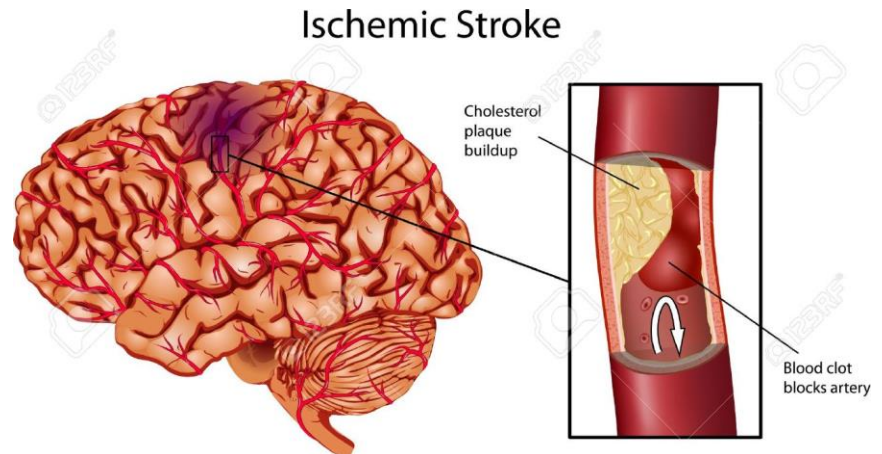
- Weakness or [paralysis](#) of any part of the body
- Numbness or a "pins and needles" sensation anywhere in the body
- Gait disturbances (trouble [walking](#)) or loss of balance and coordination
- Vision changes, [blurred vision](#), or trouble with eyesight in one or both eyes
- Severe [headache](#) that usually is unlike [headaches](#) in the past
- [Confusion](#)
- Inability to speak, slurred speech, or inability to understand speech
- Loss of sensation in any part of the body
- [Memory loss](#)
- Behavioral changes
- [Difficulty swallowing](#)

# Brain CT Scan



# Ischaemic Stroke

- Acute ischaemic strokes occur due to an occlusion of an intracranial or cervical artery with consequent deprivation of blood and oxygen to a brain territory.
- A few minutes after an arterial occlusion in the brain, a core ischemic lesion is established, however a larger area at risk of hypoperfusion can be salvageable if recanalisation therapies are administered. The salvageable area or ischemic penumbra is largely dependent on collateral blood flow and acute reductions of BP can threaten perfusion in critical areas.





# Ischemic stroke risk factors

## Non-modifiable risk factors

- Age
- Previous stroke or TIA
- Gender
- Ethnicity (e.g., South Asian, Caucasian)
- Family History

## Modifiable risk factors

- Hypertension
  - Hyperlipidemia
  - Smoking
  - Cardiovascular disease
  - Diabetes
-

# Acute Stroke Management

- Hypotension and hypovolemia should be avoided to facilitate systemic perfusion
- Before intravenous fibrinolytic therapy is administered, BP should be  $<185/110$  mm Hg and  $<180/105$  mm Hg in the first 24 hours after such treatment
- If mechanical thrombectomy is planned BP should be  $\leq 185/110$  mm Hg before the procedure and  $\leq 180/105$  mm Hg in the first 24 hours after the procedure

- For patients who are not treated with intravenous fibrinolytic therapy or mechanical thrombectomy:
- If BP is  $\geq 220/120$  mm Hg and there are no comorbid conditions requiring acute BP-lowering treatment, it is reasonable to initially lower BP by 15% although the benefit of lowering or reinstating BP therapy in the first 48 to 72 hours is uncertain
- – Lowering BP when it is  $< 220/120$  mm Hg in the first 48 to 72 hours seems to be a safe strategy but does not lower mortality or improve functional outcome
- For stable patients who remain hypertensive ( $\geq 140/90$  mmHg) more than three days after an acute ischaemic stroke, initiation or reintroduction of BP-lowering medication should be considered. Restarting BP control is reasonable after the first 24 hours for hypertensive patients who are stable.

# Recurrent Stroke Prevention

- For those with SBP  $\geq 140$  mm Hg or DBP  $\geq 90$  mm Hg, BP-lowering therapy is reasonable, and a target for BP-lowering of  $< 140/90$  mm Hg is reasonable
- For those with a stroke or TIA, a BP-lowering goal of  $< 130/80$  mm Hg may be reasonable
- Any of a number of medication classes may be used to lower BP; however, a thiazide diuretic, ACE inhibitor, or angiotensin receptor blocker or a combination of the first 2 medication choices may be administered
- Individualize the choice of BP-lowering medication based on patient comorbidities

# First Stroke Prevention

- Regular screening of BP and treatment of elevated BP by lifestyle and pharmacological measures
- Based on patient comorbidities choose appropriate BP-lowering medications
- Self-measurement of BP is recommended
- The ACC/AHA BP Guideline sets a new target for BP lowering for first stroke prevention: <130/80 mm Hg

# Intracerebral Hemorrhage

- Spontaneous, non-traumatic intracerebral haemorrhage is the second most common cause of stroke after ischaemic stroke. The most common causes are hypertension, bleeding diatheses, amyloid angiopathy, drug misuse and vascular malformations.



- When SBP is between 150 and 220 mm Hg, acute BP lowering may be effective in relation to improvement of functional outcome and is safe
- When SBP is >220 mm Hg, it may be reasonable to lower BP by administration of a continuous intravenous infusion medication with initiation of frequent BP monitoring
- it is reasonable to aim for a target SBP of 140 to 160 mm Hg early after the onset of ICH.achieving an early and stable mean SBP of  $\approx$ 147 mm Hg in ICH of mild-to-moderate severity is safe and associated with improvement in functional status.



**Thank  
You**