EUROPEAN STROKE ORGANISATION

Blood pressure management in acute ischaemic stroke and intracerebral haemorrhage

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Guideline Webinar

Evidence-based Recommendation

PICO 1 In patients with suspected acute stroke, does pre-hospital blood pressure lowering with any vasodepressor drug compared to no drug improve outcome?

Evidence-based Recommendation

In patients with suspected stroke we suggest against routine blood pressure lowering in the pre-hospital setting.

Quality of evidence: **Moderate**⊕⊕⊕

Strength of recommendation: Weak ↓?

Expert Consensus Statement

PICO 1 In patients with suspected acute stroke, does pre-hospital blood pressure lowering with any vasodepressor drug compared to no drug improve outcome?

Due to the potential harm in patients with intracerebral haemorrhage prehospital treatment with glyceryl trinitrate should be avoided. Vote 9 of 10.

Evidence-based Recommendation

PICO 2 In hospitalised patients with acute ischaemic stroke not treated with reperfusion therapies (intravenous thrombolysis or mechanical thrombectomy), does blood pressure lowering with any vasodepressor drug compared to no drug improve outcome?

In hospitalised patients with acute ischaemic stroke and blood pressure > 220/110 mmHg not treated with intravenous thrombolysis or mechanical thrombectomy, we suggest against the routine use of blood pressure lowering agents at least in first 24 hours following symptom onset, unless this is necessary for a specific comorbid condition.

Quality of evidence: Moderate⊕⊕⊕
Strength of recommendation: Weak ↓?

Expert Consensus Statement

PICO 2 In hospitalised patients with acute ischaemic stroke not treated with reperfusion therapies (intravenous thrombolysis or mechanical thrombectomy), does blood pressure lowering with any vasodepressor drug compared to no drug improve outcome?

In patients with acute ischaemic stroke not treated with intravenous thrombolysis or mechanical thrombectomy and blood pressure > 220/120 mmHg, careful blood pressure reduction (<15% systolic blood reduction in 24 hours) is reasonable and likely to be safe. No specific blood pressure lowering agent can be recommended. Vote 10 of 10.

Evidence-based Recommendation

PICO 3 In hospitalised patients with acute ischaemic stroke and undergoing treatment with intravenous thrombolysis (with or without mechanical thrombectomy), does blood lowering therapies compared to control improve outcome?

In patients with acute ischaemic stroke undergoing treatment with intravenous thrombolysis (with or without mechanical thrombectomy) we suggest maintaining blood pressure below 185/110mmHg before bolus and below 180/105mmHg after bolus, and for 24 hours after alteplase infusion. No specific blood pressure-lowering agent can be recommended.
Quality of evidence: **Very low**⊕
Strength of recommendation: Weak ↑?

In patients with acute ischaemic stroke undergoing treatment with intravenous thrombolysis (with or without mechanical thrombectomy) we suggest against lowering systolic blood pressure to a target of 130-140mmHg compared to <180mmHg during the first 72 hours following of symptom onset.
Quality of evidence: **Moderate**⊕⊕⊕
Strength of recommendation: Weak ↓?

Evidence-based Recommendation

PICO 4 In patients with acute ischaemic stroke caused by large vessel occlusion and undergoing mechanical thrombectomy (with or without intravenous thrombolysis), does blood pressure lowering with any vasodepressor drug compared to no drug improve outcome?

In patients with acute ischaemic stroke due to large vessel occlusion undergoing mechanical thrombectomy (with or without intravenous thrombolysis) we suggest keeping blood pressure below 180/105mmHg during, and 24 hours after, mechanical thrombectomy. No specific blood pressure-lowering agent can be recommended.
Quality of evidence: Very low⊕
Strength of recommendation: Weak ↑?

In patients with acute ischaemic stroke due to large vessel occlusion we suggest against actively reducing systolic blood pressure <130mmHg during the first 24 hours following successful mechanical thrombectomy
Quality of evidence: Moderate⊕⊕⊕
Strength of recommendation: Weak ↓?

In patients with acute ischaemic stroke due to large vessel occlusion undergoing treatment with mechanical thrombectomy (with or without intravenous thrombolysis) systolic blood pressure drops should be avoided.
Quality of evidence: Very low⊕
Strength of recommendation: Strong ↓↓

Expert Consensus Statement

PICO 4 In patients with acute ischaemic stroke caused by large vessel occlusion and undergoing mechanical thrombectomy (with or without intravenous thrombolysis), does blood pressure lowering with any vasodepressor drug compared to no drug improve outcome?

In patients with acute ischaemic stroke due to large vessel occlusion who achieve successful reperfusion defined as modified Thrombolysis in Cerebral Infarction grade of 3 following mechanical thrombectomy we suggest against induced hypertension. Vote 10 of 10

Evidence-based Recommendation

PICO 5 In patients with acute ischaemic stroke not treated with reperfusion therapies (intravenous thrombolysis or mechanical thrombectomy) and with clinical deterioration, does induced hypertension by any vasopressor drug compared to no drug improve outcome?

In patients with acute ischaemic stroke not treated with reperfusion therapies (intravenous thrombolysis or mechanical thrombectomy) who experience clinical deterioration, we suggest against the routine use of vasopressor drugs to increase blood pressure.

Quality of evidence: Very low ⊕
Strength of recommendation: Weak ↓↓

Expert Consensus Statement

PICO 5 In patients with acute ischaemic stroke not treated with reperfusion therapies (intravenous thrombolysis or mechanical thrombectomy) and with clinical deterioration, does induced hypertension by any vasopressor drug compared to no drug improve outcome?

In patients with acute ischaemic stroke not treated with reperfusion therapies (intravenous thrombolysis or mechanical thrombectomy) and with clinical deterioration where a haemodynamic mechanism is suspected or shown to be directly responsible for the deterioration, we suggest:

- stopping existing blood pressure lowering therapy,
- administering intravenous fluids and
- introducing non-pharmacological procedures to raise blood pressure

before considering

- careful use of vasopressor agents to increase blood pressure with close monitoring of blood pressure values. Vote 10 of 10.

Expert Consensus Statement

PICO 6 In patients with acute ischaemic stroke, does continuing versus temporarily stopping previous oral blood pressure lowering therapy improve outcome?

In patients with acute ischaemic stroke we suggest stopping previous oral blood pressure lowering therapy in patients with dysphagia until swallowing is restored or a nasogastric tube is in place. Vote 10 of 10

Evidence-based Recommendation

PICO 7 In patients with acute intracerebral haemorrhage, does intensive blood pressure lowering with any vasodepressor drug compared to control improve outcome?

In patients with acute (<24 hours) intracerebral haemorrhage there is continued uncertainty over the benefits and risks (advantages/disadvantages) of intensive blood pressure lowering on functional outcome.
Quality of evidence: **Moderate**⨁⨁⨁
Strength of recommendation: -

In patients with hyperacute (<6 hours) intracerebral haemorrhage, we suggest lowering blood pressure to below 140 mmHg (and to keep it above 110 mmHg) to reduce haematoma expansion.

Quality of evidence: **Moderate**⨁⨁
Strength of recommendation: Weak ↑

Expert Consensus Statement

PICO 7 In patients with acute intracerebral haemorrhage, does intensive blood pressure lowering with any vasodepressor drug compared to control improve outcome?

In patients with acute intracerebral haemorrhage, we suggest initiating antihypertensive treatment as early as possible and ideally within 2 hours of symptom onset. The decrease of systolic blood pressure should not exceed 90mmHg from baseline values. Vote 10 of 10.

In patients with acute intracerebral haemorrhage, we suggest lowering blood pressure according to recommended levels beyond 6 hours after onset of treatment for at least 24 hours and up to 72 hours to reduce haematoma expansion. Vote 10 of 10.

Expert Consensus Statement

PICO 8 In patients with acute intracerebral haemorrhage, does continuing versus temporarily stopping previous oral antihypertensive therapy improve outcome?

In patients acute intracerebral haemorrhage who need blood pressure lowering therapy to maintain blood pressure within the recommended range and who do not have swallowing problems, we suggest continuation of prior oral antihypertensive agents. Vote 10 of 10.

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