Despite its high prevalence, the optimal management of arterial hypertension during the acute stage of ischemic stroke (IS) has not been established and remains an issue of long-lasting debate and little consensus. Both low and high admission systolic blood pressure (SBP) and diastolic blood pressure (DBP) values have been related to increased infarct volume and were confirmed to be independent prognostic factors for poor clinical outcome. In patients with high admission BP the higher rates of early recurrence and cerebral oedema were noted, while low BP values (SBP <120 mm Hg) in the acute stroke setting have been associated with a severe clinical stroke (total anterior circulation syndrome) and an excess of deaths due to coronary heart disease. There are many arguments supporting the therapeutic lowering of BP in the acute IS stage: (1) High BP levels in acute IS have been associated with subsequent death or dependency in a recent meta-analysis of observational studies investigating the association of BP with outcome. (2) Sustained high BP values, assessed by means of ambulatory blood pressure monitoring have been associated with subsequent oedema formation, whereas casually documented elevated BP values have also been related to death resulting from presumed cerebral oedema in acute IS patients according to the results of the International Stroke Trial (IST). (3) Data from observational studies have suggested that increased admission BP values are related to early and late stroke recurrence. The best outcome was observed in patients with normal or mildly elevated admission SBP (U point or nadir of the curve: 121–170 mm Hg) and DBP values (U point or nadir of the curve: 81–110 mm Hg), suggesting that both extremely high and low admission BP values are likely to affect outcome adversely.

In conclusion, moderate decreases in levels of BP are protective against hemorrhagic transformation and cerebral edema; excessive acute decreases may threaten the ischemic penumbra.