Studies have shown that the time from symptom onset to thrombolytic initiation is a critical factor affecting stroke outcomes. Nevertheless, <30% of stroke patients who receive thrombolytic therapy have a door-to-needle (DTN) time within the recommended 60 minutes. Target: Stroke was a national quality improvement initiative designed to increase the proportion of stroke survivors receiving tissue plasminogen activator <60 minutes of hospital arrival to >50%.1 All Get-With-The-Guidelines (GWTG) participating hospitals were encouraged to participate.

To evaluate the impact of Target: Stroke on acute stroke care and outcomes, Fonarow et al compared DTN times of tissue plasminogen activator administration in patients with acute ischemic stroke before (2003–2009; n=27,319) and after (2010–2013; n=43,850) the implementation of the initiative in 1030 GWTG participating hospitals (52.8% of total). The authors found improvements in process measures such as timeliness of tissue plasminogen activator administration (DTN times improved from 77 minutes preintervention to 67 minutes postintervention) and the proportion of individuals with DTN times of ≤60 minutes increased from 26.5% to 41.3% (all \( P < 0.001 \)). Clinical outcomes also improved: in-hospital mortality decreased from 9.9% to 8.2%, symptomatic intracranial hemorrhage <36 hours decreased from 5.7% to 4.7%, and percentage of patients discharged home increased from 37.6% to 42.7% (all \( P < 0.001 \)).

The impressive improvement in quality indicators highlights the importance of shortening DTN times and is a testament to the thoughtful design and successful implementation of the initiative. The study has several limitations. First, there is a selection bias because (1) GWTG participating hospitals likely have greater interest in stroke quality improvement compared with nonparticipating hospitals, and (2) only 52.8% of the 1952 GWTG stroke hospitals were included. In addition, there is lead-time bias because the preintervention period was nearly twice as long as the postintervention period, and there were no concurrent control groups for pre- and postintervention periods. Nevertheless, this study was the first to mobilize a nationwide quality improvement effort using 10 best practice strategies, including Emergency Medical Service prenotification of hospitals, single-call activation of the stroke team, rapid acquisition and interpretation of brain imaging, use of specific protocols and tools, premixing tissue plasminogen activator, a stroke team–based approach, and rapid performance data feedback. Further studies are needed to determine which components of the intervention drove the improvement in outcomes. Additionally, efforts aimed at more broadly disseminating the initiative and ensuring sustainability are likely warranted.

Huang et al conducted a meta-analysis to evaluate the association between prehypertension and stroke. Nineteen prospective cohort studies with 762,393 participants aged ≥18 years were included. The primary outcome was the relative risk of stroke in individuals with prehypertension (blood pressure [BP] of 120–139/80–89 mm Hg). Low-range prehypertension was defined as 120 to 129/80 to 84 mm Hg; high-range prehypertension was defined as 130 to 139/85 to 89 mm Hg. The prevalence of prehypertension ranged from 25.2% to 54.2%. Overall, prehypertension increased the risk of stroke (risk ratio, 1.66; 95% confidence interval, 1.51–1.81) compared with optimal BP (<120/80 mm Hg). Individuals with low-range prehypertension were 44% more likely to develop stroke (risk ratio, 1.44; 95% confidence interval, 1.27–1.63), and the risk was even greater in individuals with high-range prehypertension (risk ratio, 1.95; 95% confidence interval, 1.73–2.21). This study corroborated a previous meta-analysis that showed an association between prehypertension and incident stroke.2 Unlike previous studies that had shown a nonsignificant association between low-range prehypertension and stroke, this study also showed increased stroke risk in people with low-range prehypertension.

The study’s strengths include large sample size, selection of trials that reported multivariate-adjusted risk ratios to minimize confounders such as high body mass index, metabolic syndrome, dyslipidemia, and impaired glucose metabolism, which are known stroke risk factors. This study; however, is constrained by limited generalizability (>80% of subjects were Asian) and single BP measurements (which did not take into account BP variability). In addition, the meta-analysis combined individuals with and without history of previous stroke; recent evidence suggests that

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among stroke survivors, strict BP control to <120/80 mm Hg may be associated with a higher risk of recurrent stroke compared with maintaining BP in the prehypertensive range. Prospective studies are needed to examine the association between prehypertension and both primary and secondary stroke and to evaluate the treatment intensity needed for prehypertension in stroke prevention.

References
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