

average ( $H=637.1$ ;  $p<0.001$ ). When considering an 'ideal' setting, clinicians in South America 18% and South Asia 19.5% were most likely to add EVT versus the 6.9% global average.

**Conclusion** In the selection of patients to undergo endovascular treatment, there exists a significant difference in rate of EVT procedures performed across countries and regions in the world reflecting local resources and practice settings. The decision to proceed with EVT reflects factors such as center volumes and clinician age & experience as contributing factors with younger clinicians in centers with lower volumes being more likely to consider EVT in an 'ideal' setting.

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E-094

#### EFFECT OF DEFINITION AND METHODS ON ESTIMATES OF PREVALENCE OF LARGE VESSEL OCCLUSION IN ACUTE ISCHEMIC STROKE: SYSTEMATIC REVIEW

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**Background** An accurate estimate of large vessel occlusion (LVO) incidence is critical for planning stroke systems of care and approximating workforce requirements. The purpose of this systematic review was to estimate LVO prevalence among acute ischemic stroke (AIS) patients with emphasis on definitions and methods used by different studies.

**Methods** Using Medical Subject Headings terms, EMBASE, PubMed, Web of Science, Google Scholar, and the Cochrane Library were searched for prevalence of LVO and AIS from 2000–2018. All articles in the English literature describing the frequency of LVO among AIS patients were included in this review. Studies without consecutive recruitment or without confirmation of LVO with computed tomography angiography or magnetic resonance angiography were excluded. Studies were grouped based on similarities in LVO definition and methods.

**Results** Eighteen records met the eligibility criteria. Five studies presented population-based estimates and 13 provided single-hospital experiences (5 prospective, 8 retrospective). The AIS denominator (number of all AIS) from which LVO rates were generated was variable. Nine different definitions were used, based on occlusion site. The prevalence of LVO among suspected AIS patients ranged from 13–46%. The overall prevalence was 29.1% (95% CI, 21.5–36.77). Pooled prevalence of LVO among suspected AIS patients in population-based studies was 27.10% (95% CI 19.46–34.74); for studies defining AIS based on magnetic resonance imaging, it was 21.49% (95% CI 13.8–29.1).

**Conclusion** LVO definition and AIS denominator greatly influence estimates of LVO prevalence among AIS patients. Population-based studies with standardized methods must be conducted to provide data for planning and developing stroke systems of care.

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E-095

#### BGC PROTECTED ADAPT REDUCED RISK OF DISTAL EMBOLIZATION: AN IN VITRO STUDY

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**Introduction** Recent studies have demonstrated that a direct aspiration first pass technique (ADAPT) for the treatment of acute ischemic stroke may be effective and safe. In this study, we sought to optimize the ADAPT technique by incorporating an adjunctive device such as a balloon guide catheter (BGC). The impact of diameter of the aspiration catheter as well as use of BGC on risk of distal embolization and rate of first pass success was evaluated.

**Methods** Mechanical thrombectomy was simulated in an in-vitro Circle of Willis model. To create a challenging occlusive burden in the MCA, a 20 mm long clot analog was prepared. Direct aspiration was applied via an 0.068 distal access catheter (DAC, Cat 7, Stryker Neurovascular, group: ADAPT068), a large 0.074' DAC (AXS Vecta 074, Stryker Neurovascular, group: ADAPT074) or 0.068' DAC with a BGC (FlowGate 2 Balloon Guide Catheter) placed at the cervical ICA (group: ADAPT068-BGC). In both the ADAPT068 and 074 groups, a long 0.091' sheath was used in conjunction with the DAC. The pump was turned on before the aspiration catheter was advanced proximal to the clot. Each run was assigned a TICI score to assess degree of recanalization. Ten replicates were performed per group, and the maximum thrombectomy attempt was limited to three per run. Distal emboli greater than 200µm were collected and measured using the Coulter Principle.

**Results** The lowest number of distal emboli was observed when BGC was used in the ADAPT068 group. Collection of visible emboli greater than 1000µm yielded one particle from both the ADAPT068 and ADAPT068-BGC treatment groups, while ADAPT074 followed with four particles (average size 2.25 mm). A total of 34 emboli sized between 200–1000µm were collected from the ADAPT068 group, and the number of emboli was reduced by more than 50% when a BGC was employed in the ADAPT068-BGC group ( $P>0.05$ ). The highest rate of first pass recanalization was observed in the