None. **C. Cawley:** None. **A. Reisner:** None. **J. Chern:** None. **G. Pradilla:** None. **T. Garzon-Muvdi:** None. **B. Howard:** None. **A. Alawieh:** None.

E-088 A NOVEL NEUROPROTECTION DEVICE, ENCOMPASS F2 FOR IMPROVED STROKE PREVENTION IN TRANSCATHETER AORTIC VALVE REPLACEMENT: AN IN VITRO STUDY

M Ghowati*, T Imahori, N Fukui, A Gajjar, M Nakayama, L Guo, S Tateshima, G Duckwiler, N Kaneko. *Department of Radiological Sciences, David Geffen School of Medicine at UCLA, Los Angeles, CA, USA*

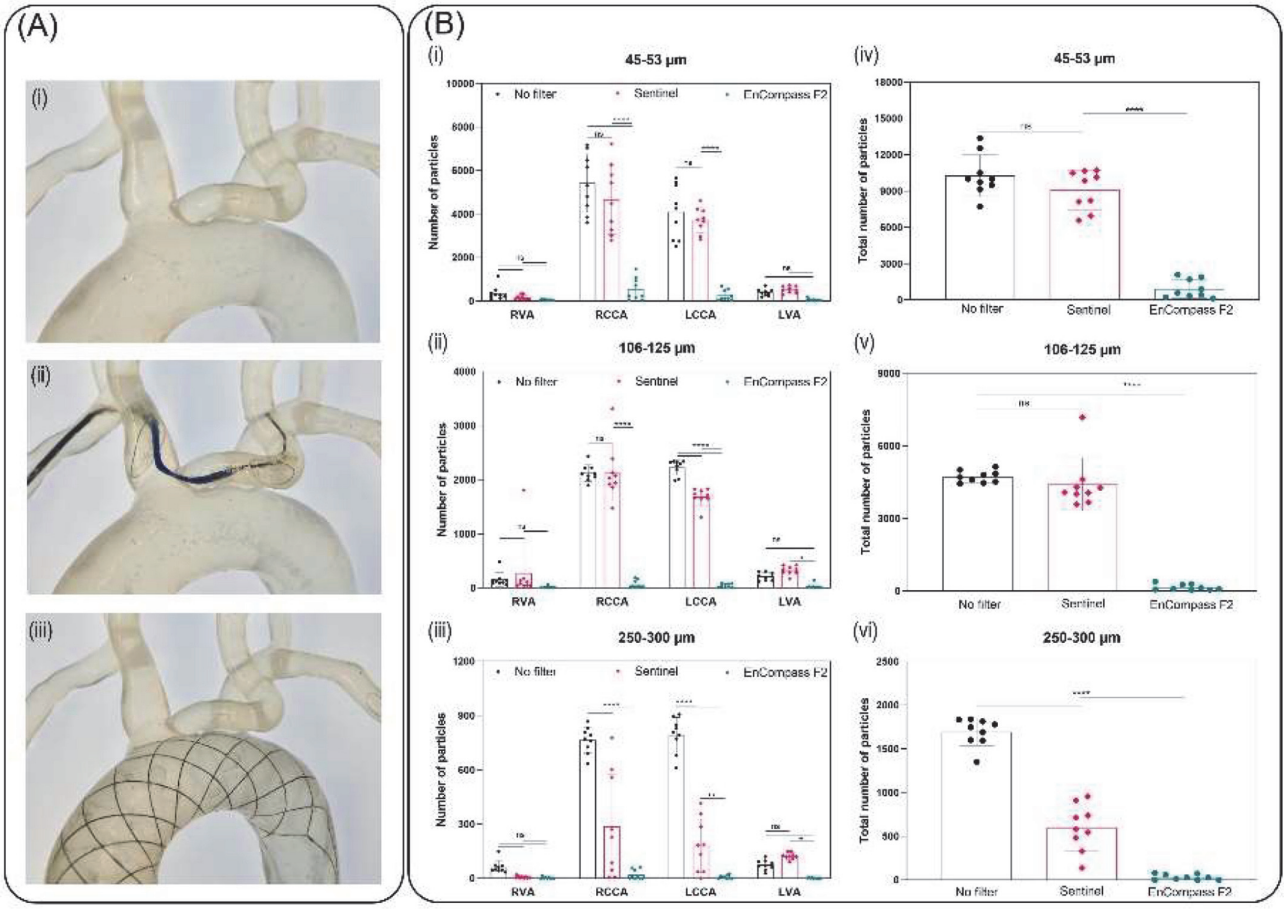
10.1136/jnis-2023-SNIS.188

Objective Stroke may occur during transcatheter aortic valve replacement (TAVR) due to debris dislodgement into intracranial arteries. Sentinel Cerebral Protection System is a filter device designed to capture the debris in the brachiocephalic and left common carotid arteries. However, clinical studies have not shown reductions in cerebral infarction with the Sentinel, possibly due to incomplete coverage and large pore size (140 µm). The EnCompass F2, a self-expanding nitinol stent with filter membrane made of electrospun polyurethane and smaller pore size (average 28 µm), provides coverage to all three great vessels of the aortic arch by using a simple unsheath deployment technique. This in vitro study aimed to compare the efficacy of the EnCompass F2 device against the Sentinel device and unprotected controls.

Methods A silicone model of the human aorta with cervical arteries was connected to a peristaltic pump to simulate physiological flow patterns (5L/min). A mixture of polyethylene microspheres with variable sizes (small 45-53 µm, medium 106-125 µm, and large 250-300 µm) was injected into the origin of the ascending aorta without a device, or with cerebral protection using either the Sentinel or Encompass F2 devices. Particles were collected from the right vertebral artery (RVA), right common carotid artery (RCCA), left common carotid artery (LCCA), and left vertebral artery (LVA), and counted using a Multisizer Coulter Counter. The experiment was repeated nine times per group.

Results The EnCompass F2 device demonstrated significantly lower counts of small, medium, and large particles in all four vessels compared to unprotected controls. The Sentinel reduced large particles in three vessels but not in the LVA and did not reduce small or medium-sized particles in any vessels. The protection efficacy (η) of EnCompass F2 and Sentinel was 91.1% and 11.7% for small, 96.8% and 6.5% for medium, and 99.3% and 64.7% for large particles, respectively. The protection effect of EnCompass F2 was significantly better than that of the Sentinel for all particle sizes.

Conclusions In our in vitro model, the EnCompass F2 filter stent demonstrated superior efficacy in providing full cerebral protection with smaller pores compared to the partial



Abstract E-088 Figure 1

protection offered by the Sentinel device, potentially contributing to improved cerebral protection.

Disclosures M. Ghovvati: None. **T. Imahori:** None. **N. Fukui:** None. **A. Gajjar:** None. **M. Nakayama:** None. **L. Guo:** None. **S. Tateshima:** None. **G. Duckwiler:** 2; C; EnCompass. **N. Kaneko:** 2; C; EnCompass.

E-089 RURAL VERSUS METROPOLITAN STROKE ACTIVATION INCIDENCE: USING VIZ.AI TO DETERMINE DISEASE PENETRANCE

[1]J Fraser*, [1]J Frank, [1]A Chen, [2]M Campbell, [1]L Wise, [3]B Krein, [4]R Silvernail, [1]D Dornbos, [5]S Pahwa, [2]J Lee. *[1]Neurological Surgery, University of Kentucky, Lexington, KY, USA; [2]Neurology, University of Kentucky, Lexington, KY, USA; [3]Information Technology, University of Kentucky, Lexington, KY, USA; [4]University of Kentucky, Lexington, KY, USA; [5]Radiology, University of Kentucky, Lexington, KY, USA*

10.1136/jnis-2023-SNIS.189

Introduction Viz.ai is a mobile triage tool for rapid identification and transfer of cerebrovascular emergencies. Viz.ai facilitates interhospital communication and data tracking. Our Comprehensive Stroke Center (CSC), located in a metropolitan area, interacts with many Viz.ai spoke hospitals in both metropolitan and rural areas of our state. There are known health disparities in rural communities throughout the United States. Using data from Viz.ai, we aimed to evaluate incidence of stroke activations and thrombectomy activations, comparing referring Primary Stroke Centers from rural and metropolitan communities.

Methods Beginning in 2020, we utilized Viz.ai to triage stroke patients from the Primary Stroke Centers (PSCs) that refer complex stroke patients only to our CSC. Using data collected from January, 2022 to February, 2023, we evaluated the number of stroke activations (CT-angiograms performed to evaluate for stroke), and the number of thrombectomy alerts (artificial intelligence alert on Viz.ai). Using 2020 Census data, we calculated the 'at-risk' population for each referring hospitals as the total population of the hospital's county and the counties immediate adjacent to them. We calculated and compared annualized per capita incidences of stroke activations and thrombectomy activations, comparing metropolitan to rural communities.

Results During the study period, the metropolitan PSC had 298 stroke activations and 29 thrombectomy activations with an at-risk population of 192,644. One rural PSCs had 552 stroke activations, 38 thrombectomy alerts, with an at-risk population of 259,365, while the other had 501 stroke activations, 34 thrombectomy alerts, and an at-risk population of 199,744. Accounting for annualization and population density, this yielded a per capita incidence of stroke activation at the metropolitan PSC of 143 per 100,000, compared to an incidence at the rural PSCs of 232 per 100,000 and 234 per 100,000; compared to the metropolitan PSC, incidence of activations at the rural PSCs were both significantly higher ($p<0.0001$). The annualized per capita incidence of thrombectomy alerts was 3.4 per 100,000 at the metropolitan center, compared to 8.0 per 100,000 at one rural PSC and 4.6 per 100,000 at the other rural PSC. These trended toward but did not reach statistically significant differences (p 0.06 and 0.68 respective).

Conclusion Compared to a metropolitan PSC in our network, two rural PSCs had significantly higher per capita incidence of stroke activations. There was a trend toward higher per capita thrombectomy alerts as well. Given the known health disparities in rural regions of the US, these findings provide clear confirmation of the importance of stroke care protocols in rural areas, and the value of rapid identification and triage for rural communities. Our future studies will examine more detailed patient-specific factors based on geographic region.

Disclosures J. Fraser: None. **J. Frank:** None. **A. Chen:** None. **M. Campbell:** None. **L. Wise:** None. **B. Krein:** None. **R. Silvernail:** None. **D. Dornbos:** None. **S. Pahwa:** None. **J. Lee:** None.

E-090 FLOW DIVERSION WITH OR WITHOUT ADJUNCTIVE COILING FOR CEREBRAL ANEURYSMS: A SYSTEMATIC REVIEW AND META-ANALYSIS

[1]R Ismail*, [1]D Schartz, [2]N Ellens, [2]M Bender. *[1]Radiology, URMC, Rochester, NY, USA; [2]Neurosurgery, URMC, Rochester, NY, USA*

10.1136/jnis-2023-SNIS.190

Background Flow diversion (FD) is a commonly used endovascular modality for cerebral aneurysm treatment. While adjunctive coiling combined with flow diversion (FDC) is often used, rates of occlusions and risk of complications remain controversial compared to FD alone.

Methods A PRISMA-guided systematic literature review of the MEDLINE and Cochrane Library databases. Comparative studies evaluating FDC compared to FD alone were included. Meta-analysis was completed to investigate the following outcome variables: rate of occlusion on initial imaging study, rate of occlusion on long term follow-up, need for retreatment, and major complications. Odds ratios (OR) with corresponding confidence intervals (CI) were completed using a random effects model.

Results In total, 16 studies met full inclusion criteria with 3433 total patients. FD alone was used in 2899 patients while adjunctive coiling with FD was used in 534 patients. 2672 aneurysms had descriptions of location, of which 2226 aneurysms treated were anterior circulation and 326 aneurysms treated were posterior circulation. 2174 aneurysms had morphological descriptions, of which, 1,675 were saccular, 430 were either fusiform or dissecting/pseudoaneurysm, 18 were blister and 51 were not categorized in any of the aforementioned groups. There was no difference in complete occlusion at initial post-procedure imaging between FD and FDC (OR: 6.44; 95% CI, 0.78 to 52.87, P = 0.08). However, on long term follow up, FDC was associated with a higher odd of achieving full occlusion compared to FD alone (OR: 1.92; 95% CI, 1.05 to 3.51, P = 0.03). Additionally, there was no significant difference regarding need for retreatment (OR: 0.84; 95% CI: 0.020 to 3.58, P = 0.81) or in occurrence of major complications (OR: 0.81; 95% CI, 0.45 to 1.46, P = 0.49) between the two modalities.

Conclusion Flow diversion with adjunctive coiling facilitates a higher odd of full occlusion at long term follow-up without differences in major complications. Further research regarding risk and benefit stratification based on additional aneurysm characteristics, such as size and location is warranted.

Disclosures R. Ismail: None. **D. Schartz:** None. **N. Ellens:** None. **M. Bender:** None.