

A 3D medical illustration of a blood vessel. The vessel is shown in cross-section, with a red lumen containing red blood cells. A yellowish, irregular mass representing a thrombus is partially occluding the vessel. A blue, mesh-like stent retriever is positioned to capture the thrombus. The vessel wall is shown in a reddish-brown color.

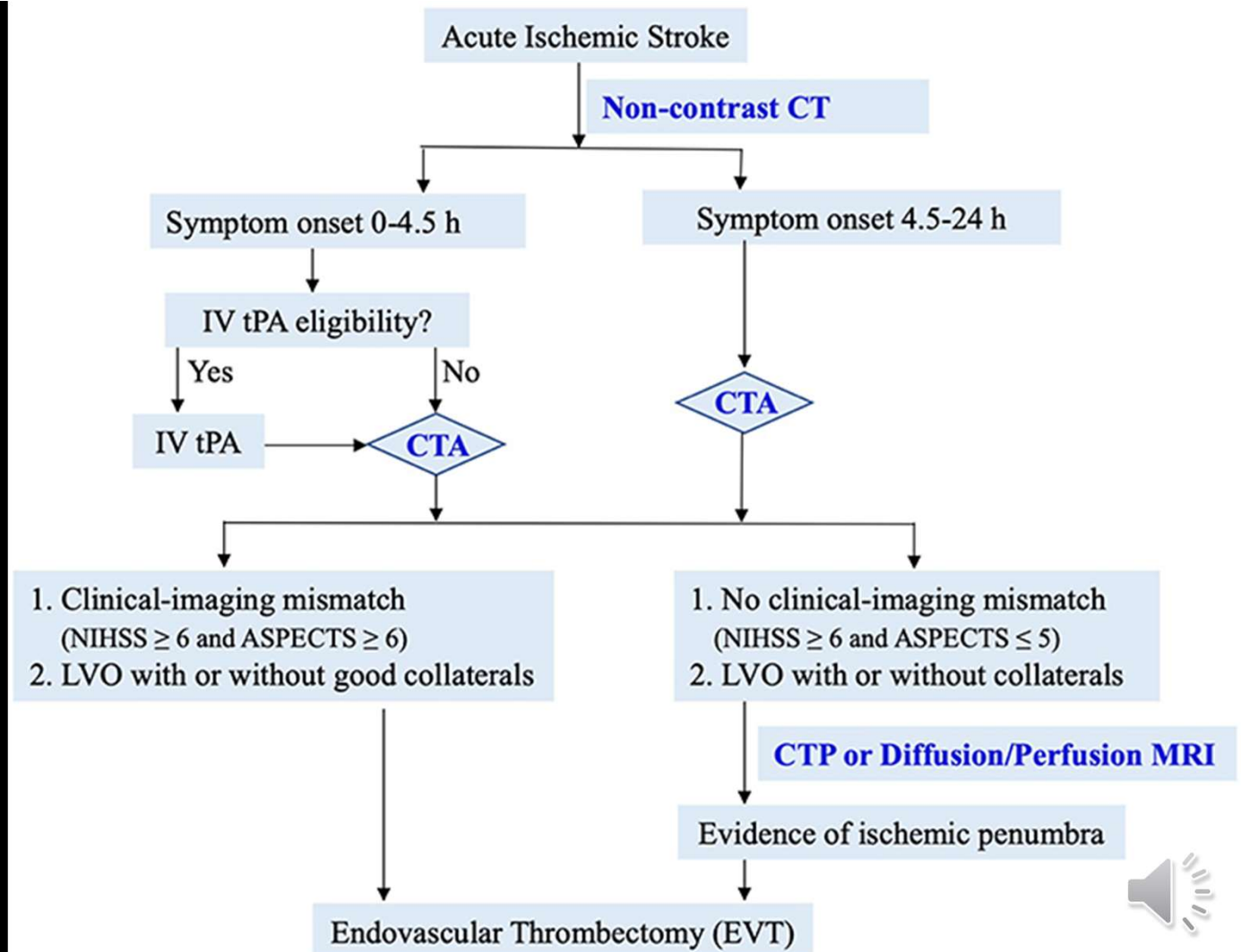
Optimal Blood Pressure Management During Mechanical Thrombectomy

Thi Nguyen
University of Virginia School of Medicine
Fall 2024



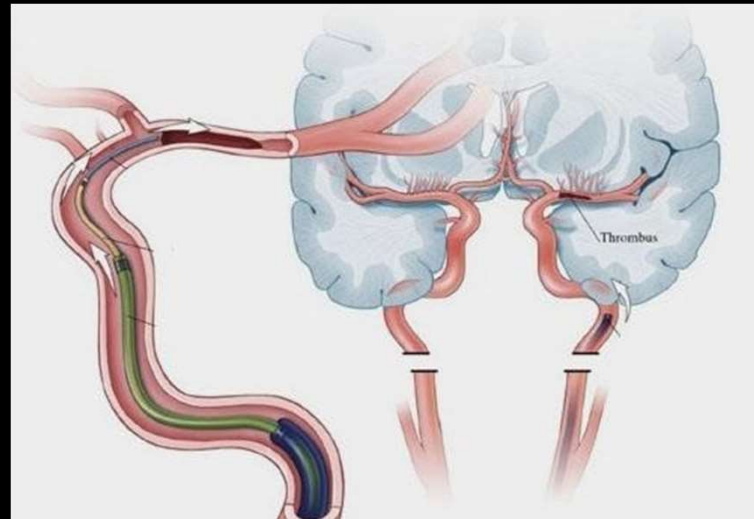
Disclosures

- None



Background on Mechanical Thrombectomy (MT)

- Acute strokes can be managed with emergent mechanical thrombectomy
- BP management for optimal perfusion during these interventions is critical



Suboptimal BP Management in Stroke - Complications

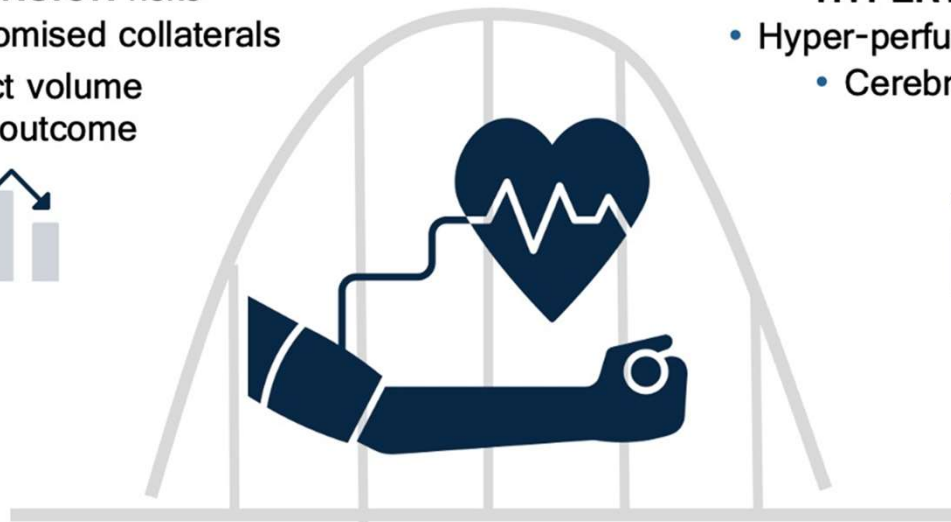
HYPOTENSION risks

- Compromised collaterals
- ↑ Infarct volume
- Worse outcome



HYPERTENSION risks

- Hyper-perfusion syndrome
- Cerebral hemorrhage

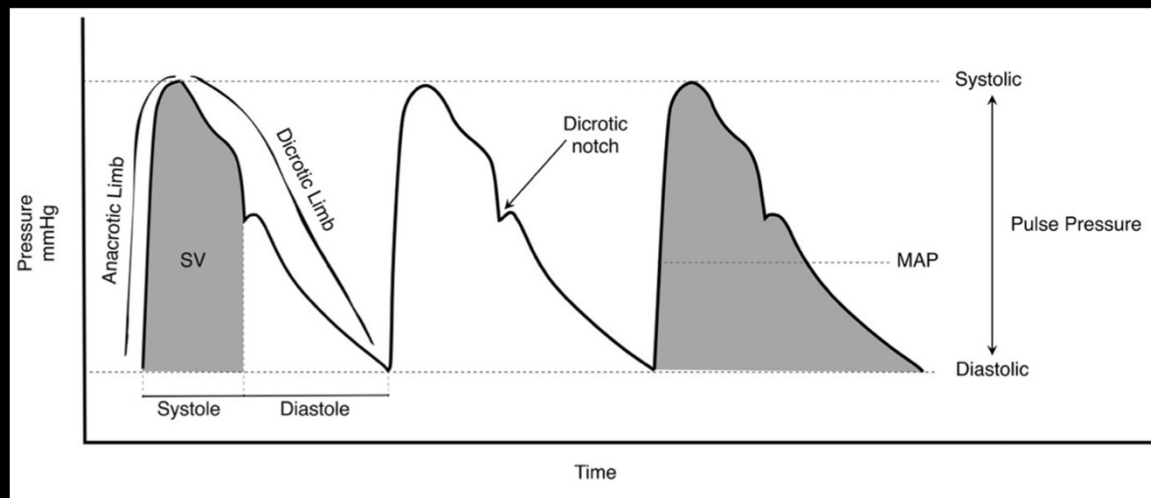


Both **LOW** and **HIGH** blood pressure (BP) predict poor outcomes during acute ischemic stroke.



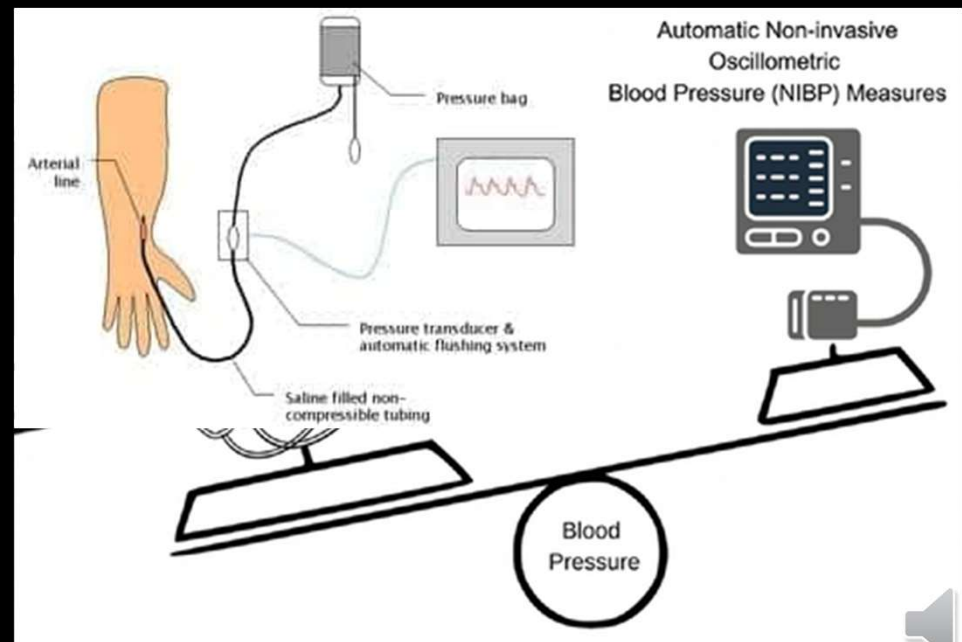
Introduction

- Guidelines target SBP > 140 and < 180 , MAP > 70 , $70 > DBP > 105$ mm Hg
- However, there is no clear optimal BP monitoring modality regarding invasive (arterial line or a-line) vs noninvasive (BP cuff cycled every few minutes)



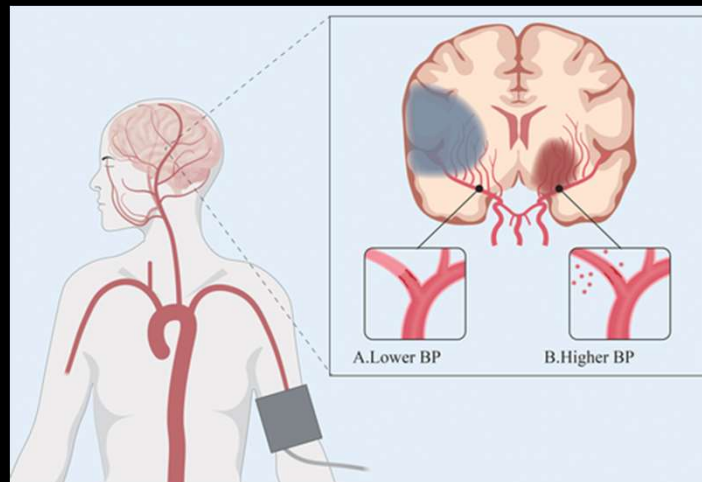
Research Objectives

- Determine whether invasive or non-invasive blood pressure (NIBP) monitoring is most appropriate



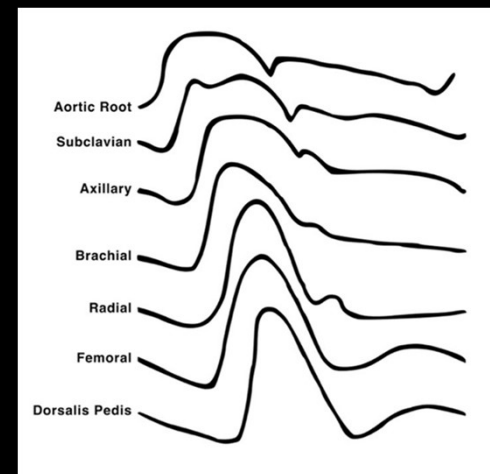
Methods

- Retrospective IRB exempt chart review of MT cases at UVA Health
- Measure % of a-line vs NIBP cases
- Compare duration of time within target BP for a-line vs NIBP



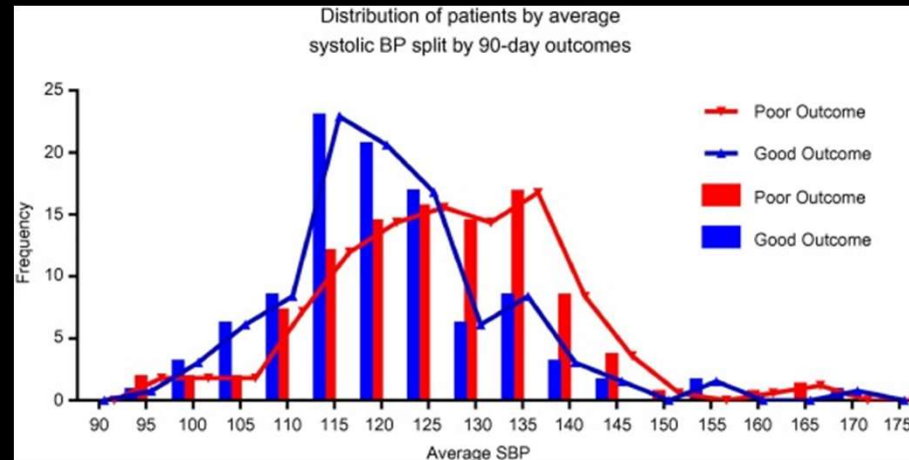
Additional Data

- Reasons for not placing a-lines, NIBP cuff cycling frequency, a-line locations, a-line leading to delays, and vasopressor of choice in hypotension
- % of MTs staffed by neuro-anesthesia vs a non neuro-anesthesia attending and % of cases staffed by residents vs certified registered nurse anesthetists



Overarching Goals

- Examining whether a-line or NIBP would be more appropriate in MT
- Potentially contribute to guidance on the optimal approach for monitoring BP in these time-critical situations and lead to better patient outcomes



Acknowledgements

- University of Virginia School of Medicine
- Virginia Academy of Family Physicians Scholarly Symposium



References

1. 6 Parameters Patient Monitor Cardiac Monitor ECG NIBP RESP PR with the CO2. eBay. Accessed October 6, 2024. <https://www.ebay.com/itm/404916733883>
2. Yu W, Jiang WJ. A Simple Imaging Guide for Endovascular Thrombectomy in Acute Ischemic Stroke: From Time Window to Perfusion Mismatch and Beyond. *Front Neurol*. 2019;10. doi:10.3389/fneur.2019.00502
3. Sharma D, Rasmussen M, Han R, et al. Anesthetic Management of Endovascular Treatment of Acute Ischemic Stroke During COVID-19 Pandemic: Consensus Statement From Society for Neuroscience in Anesthesiology & Critical Care (SNACC). *J Neurosurg Anesthesiol*. 2020;32:10.1097/ANA.0000000000000688. doi:10.1097/ANA.0000000000000688
4. Nickson C. Arterial line and Pressure Transducer. *Life in the Fast Lane · LITFL*. January 1, 2019. Accessed October 6, 2024. <https://litfl.com/arterial-line-and-pressure-transducer/>
5. Anadani M, Orabi Y, Alawieh A, et al. Blood pressure and outcome post mechanical thrombectomy. *Journal of Clinical Neuroscience*. 2019;62:94-99. doi:10.1016/j.jocn.2018.12.011
6. Dong X, Liu Y, Chu X, et al. Blood pressure management after endovascular thrombectomy: Insights of recent randomized controlled trials. *CNS Neuroscience & Therapeutics*. 2024;30(8):e14907. doi:10.1111/cns.14907
7. de Havenon A, Petersen N, Sultan-Qurraie A, et al. Blood Pressure Management Before, During, and After Endovascular Thrombectomy for Acute Ischemic Stroke. *Semin Neurol*. 2021;41(1):46-53. doi:10.1055/s-0040-1722721
8. Bath PM, Song L, Silva GS, et al. Blood Pressure Management for Ischemic Stroke in the First 24 Hours. *Stroke*. 2022;53(4):1074-1084. doi:10.1161/STROKEAHA.121.036143
9. De Georgia M, Bowen T, Duncan KR, Chebl AB. Blood pressure management in ischemic stroke patients undergoing mechanical thrombectomy. *Neurological Research and Practice*. 2023;5(1):12. doi:10.1186/s42466-023-00238-8
10. Intensive Blood Pressure Control After Mechanical Thrombectomy for Acute Ischemic Stroke | *Stroke*. Accessed June 30, 2024. <https://www.ahajournals.org/doi/10.1161/STROKEAHA.122.041949>
11. Grove MA, Paliwal M, Shearin A, et al. Manual and Oscillometric Blood Pressure in tPA-Treated Acute Ischemic Stroke: What Constitutes Agreement? *Stroke: Vascular and Interventional Neurology*. 2023;3(4):e000711. doi:10.1161/SVIN.122.000711
12. Mechanical Thrombectomy - Stroke Medicine. North Tees and Hartlepool NHS Foundation Trust. May 30, 2023. Accessed October 6, 2024. <https://www.nth.nhs.uk/resources/mechanical-thrombectomy-stroke-medicine/>
13. Mechanical Thrombectomy for ELVO Strokes: Best to Stop at 3 Attempted Passes? Cleveland Clinic. Accessed October 6, 2024. <https://consultqd.clevelandclinic.org/mechanical-thrombectomy-for-elvo-strokes-best-to-stop-at-3-attempted-passes>
14. uvaradweb. Mechanical Thrombectomy: A New, Minimally Invasive Treatment for Blood Clots. *UVA Radiology and Medical Imaging Blog for Patients*. June 12, 2018. Accessed October 6, 2024. <https://blog.radiology.virginia.edu/thrombectomy/>
15. Sharma D. Periprocedure Management of Blood Pressure After Acute Ischemic Stroke. *Journal of Neurosurgical Anesthesiology*. 2023;35(1):4. doi:10.1097/ANA.0000000000000891
16. Republished: Society for Neuroscience in Anesthesiology and Critical Care Expert Consensus Statement: Anesthetic Management of Endovascular Treatment for Acute Ischemic Stroke* | *Stroke*. Accessed June 30, 2024. <https://www.ahajournals.org/doi/10.1161/STROKEAHA.113.003412>

