

# TCD Protocols: Low Velocities / Asymmetry / ACA

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Data NHR EMSTN:

2 TCD Operators / April 2021-March 2023 / Colour TCD

## Low Velocities

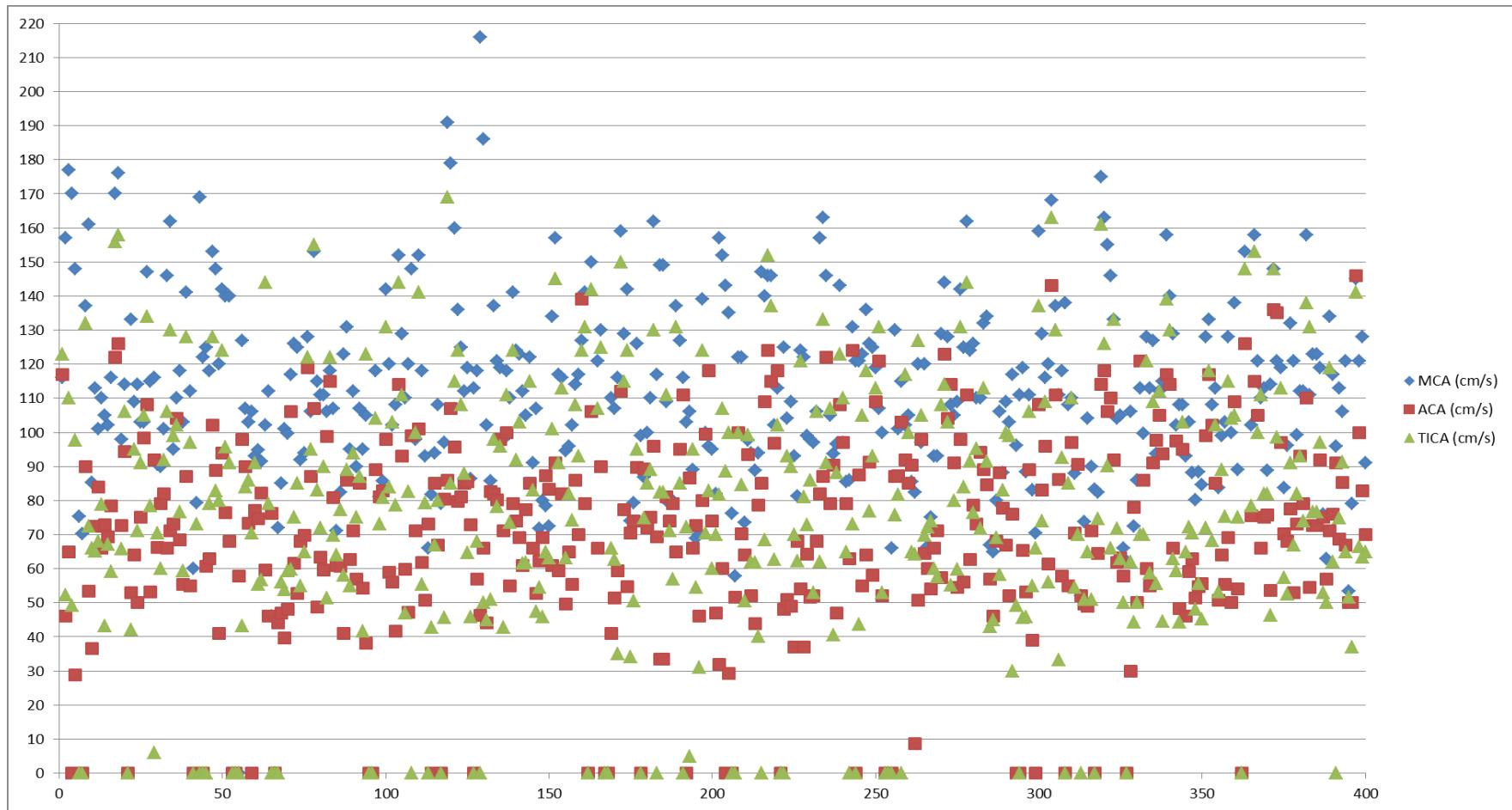
A low velocity is  $<70$  TAMV

1. Which vessels are more likely to show  $<70$  TAMV?
2. How frequently does this occur?

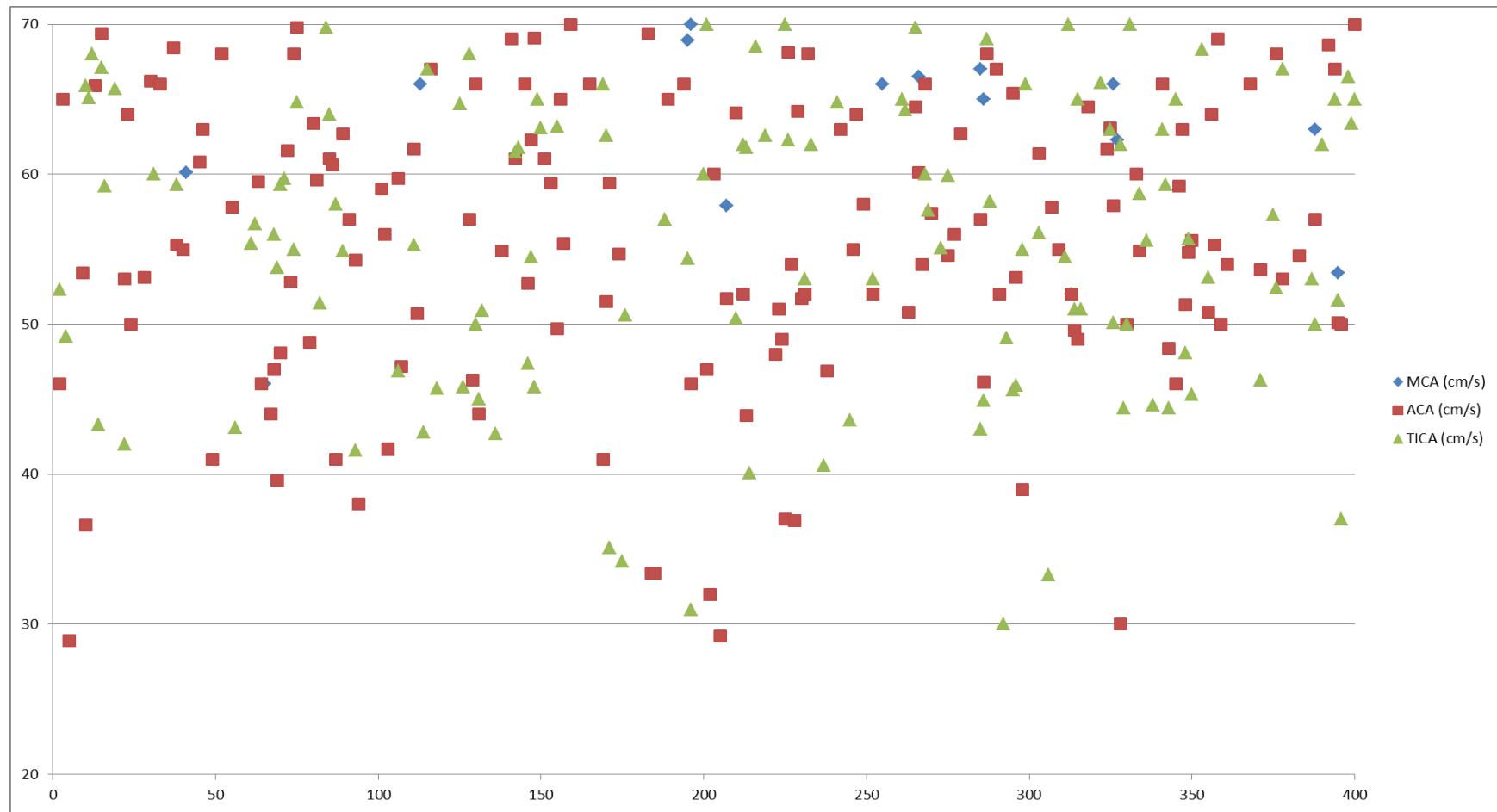
### Questions to consider:

- Why does this occur?
- Do clinicians act on the additional findings?
- Why is this cut-off chosen?

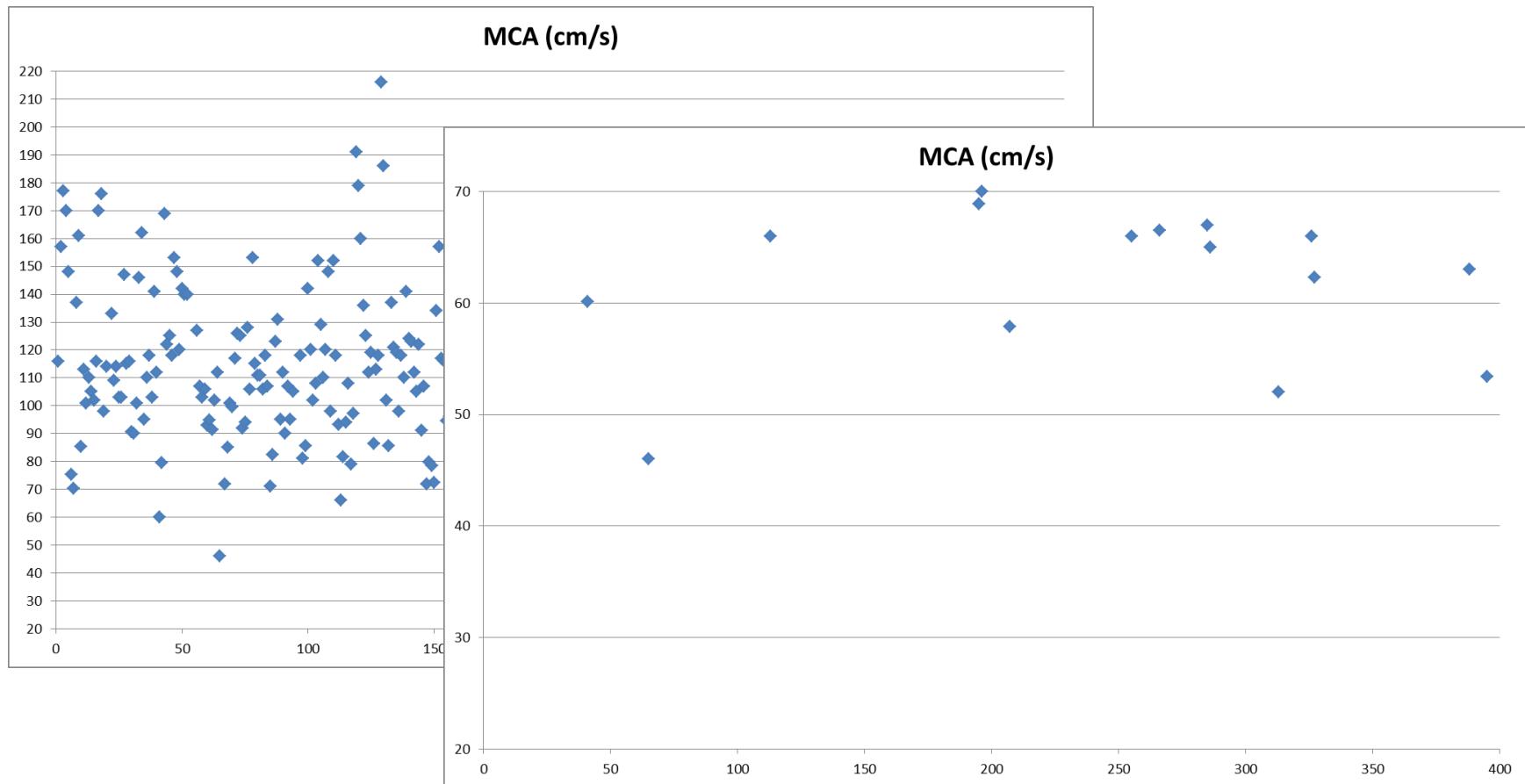
# All Velocity Data: (400) MCA ACA TICA



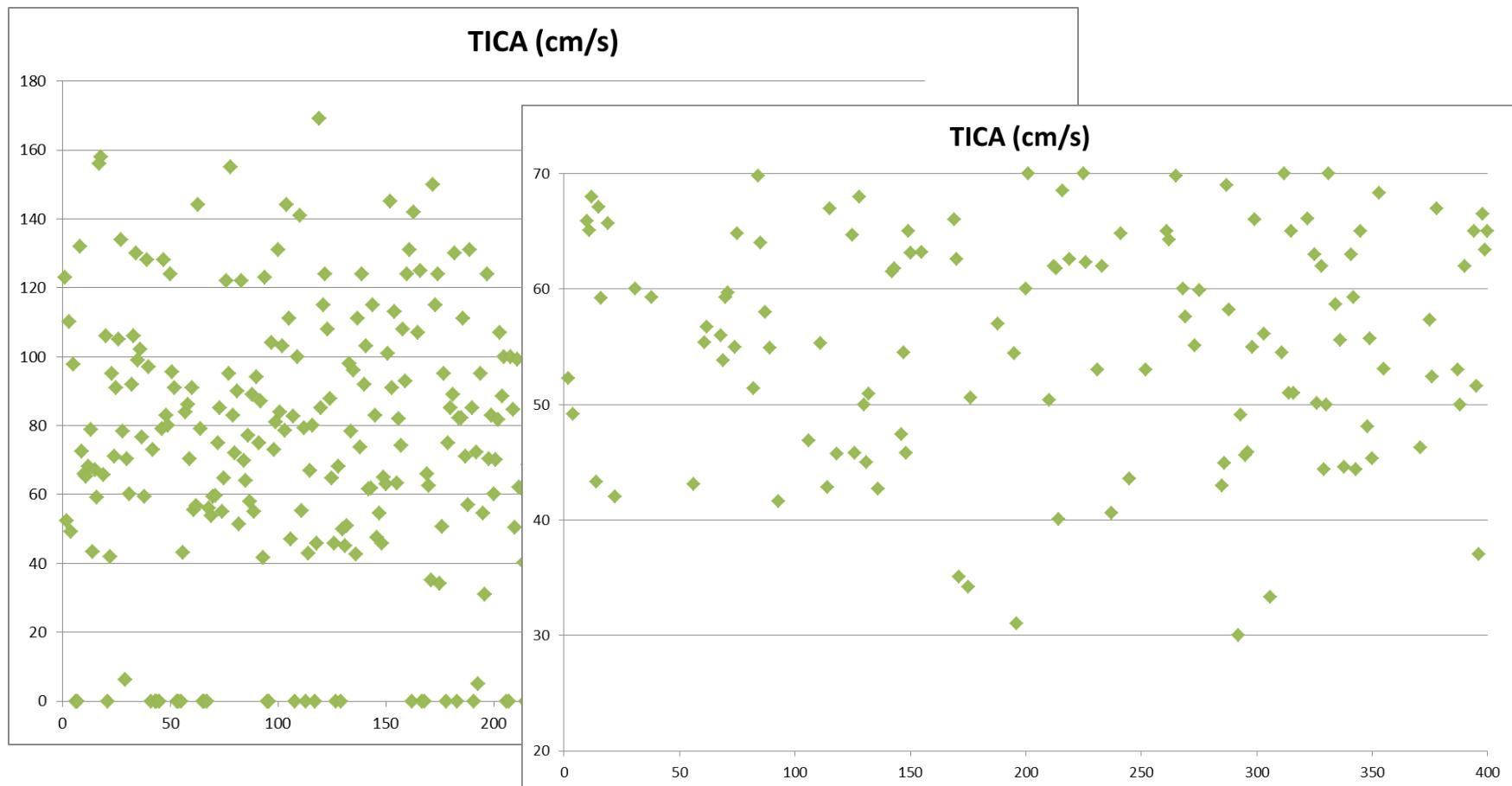
# All Low Velocities <70 TAMV: MCA ACA TICA



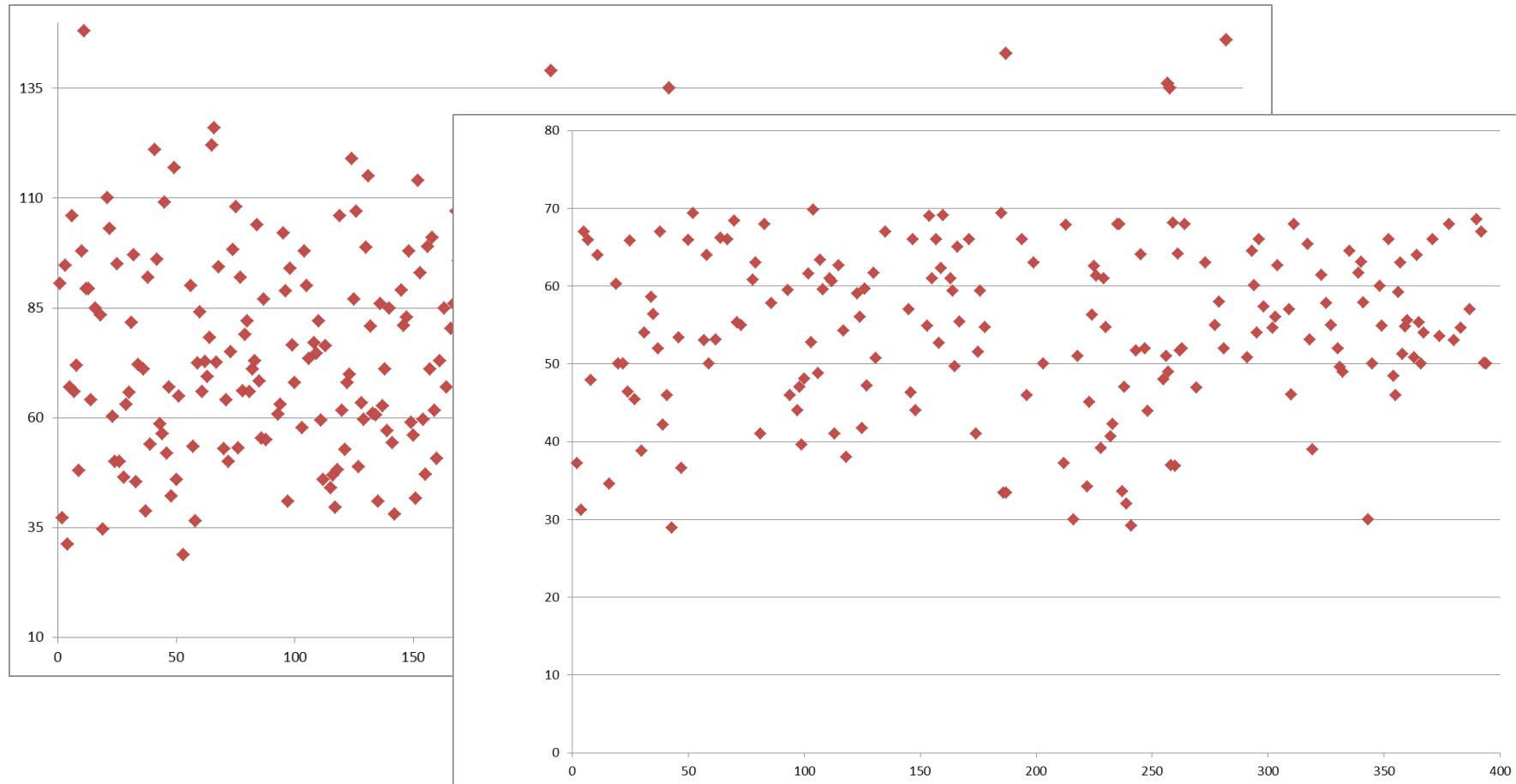
# MCA Velocities (4% Low)



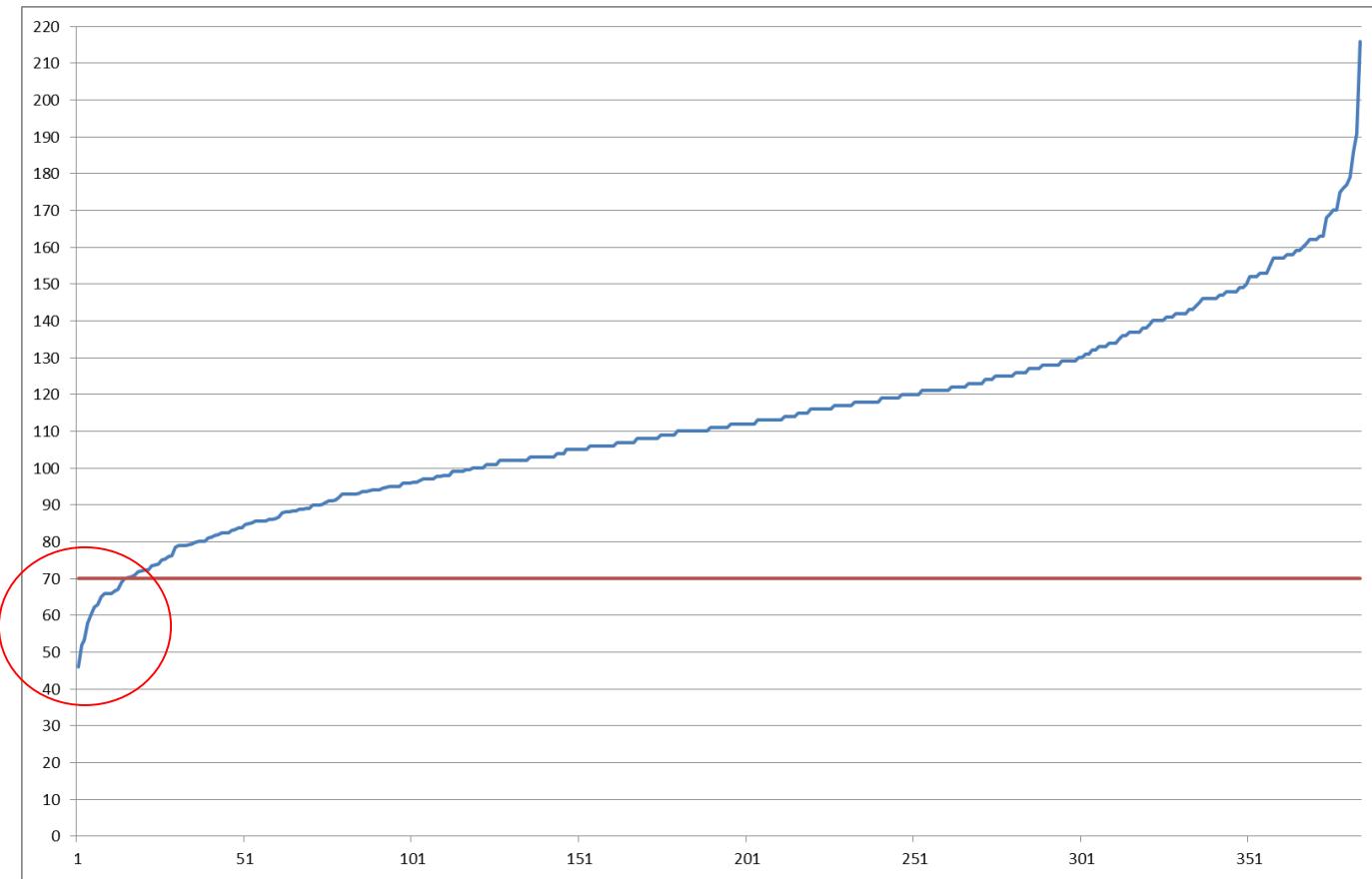
# TICA Velocities (35% Low)



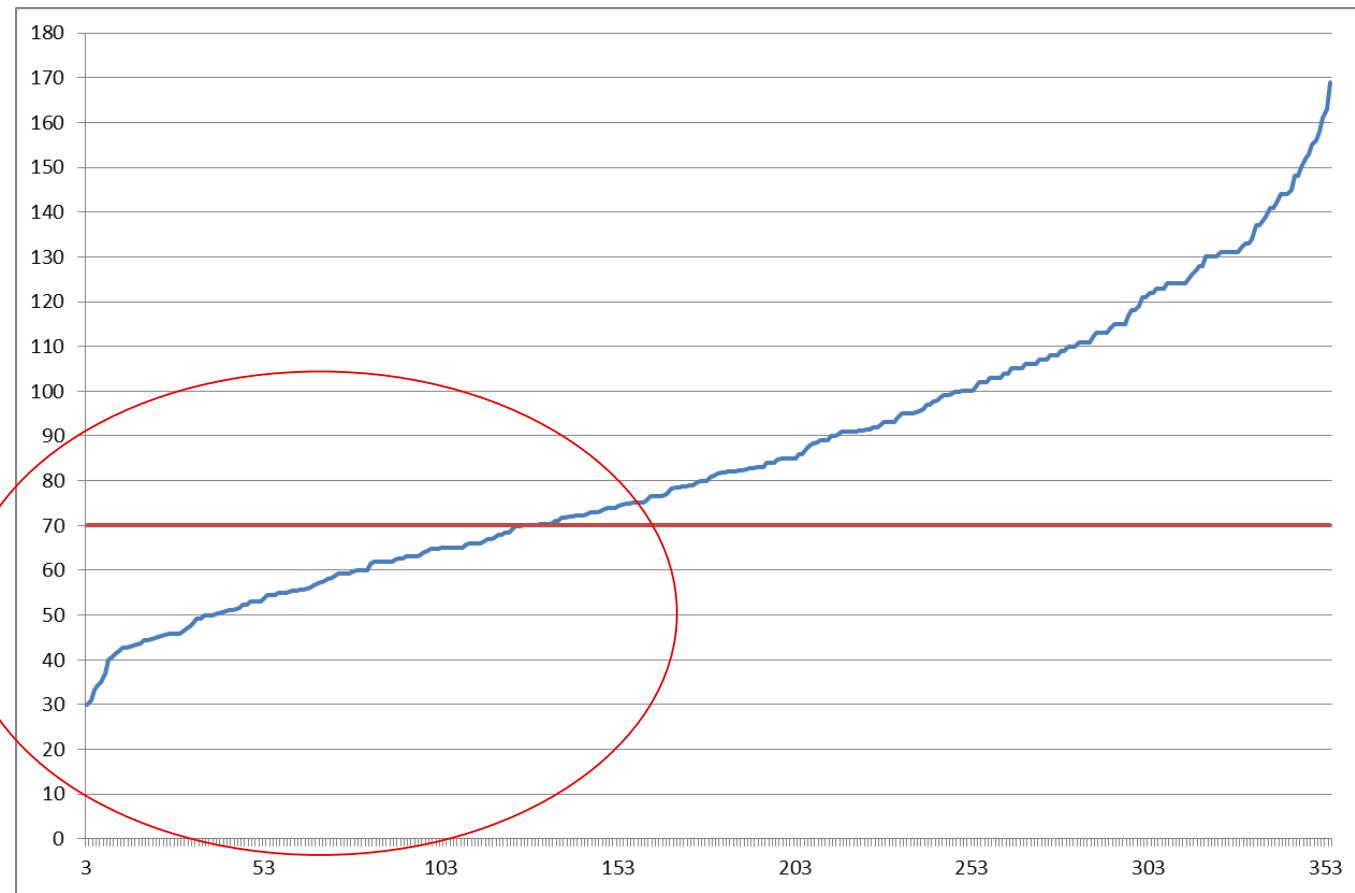
# ACA Velocities (53% Low)



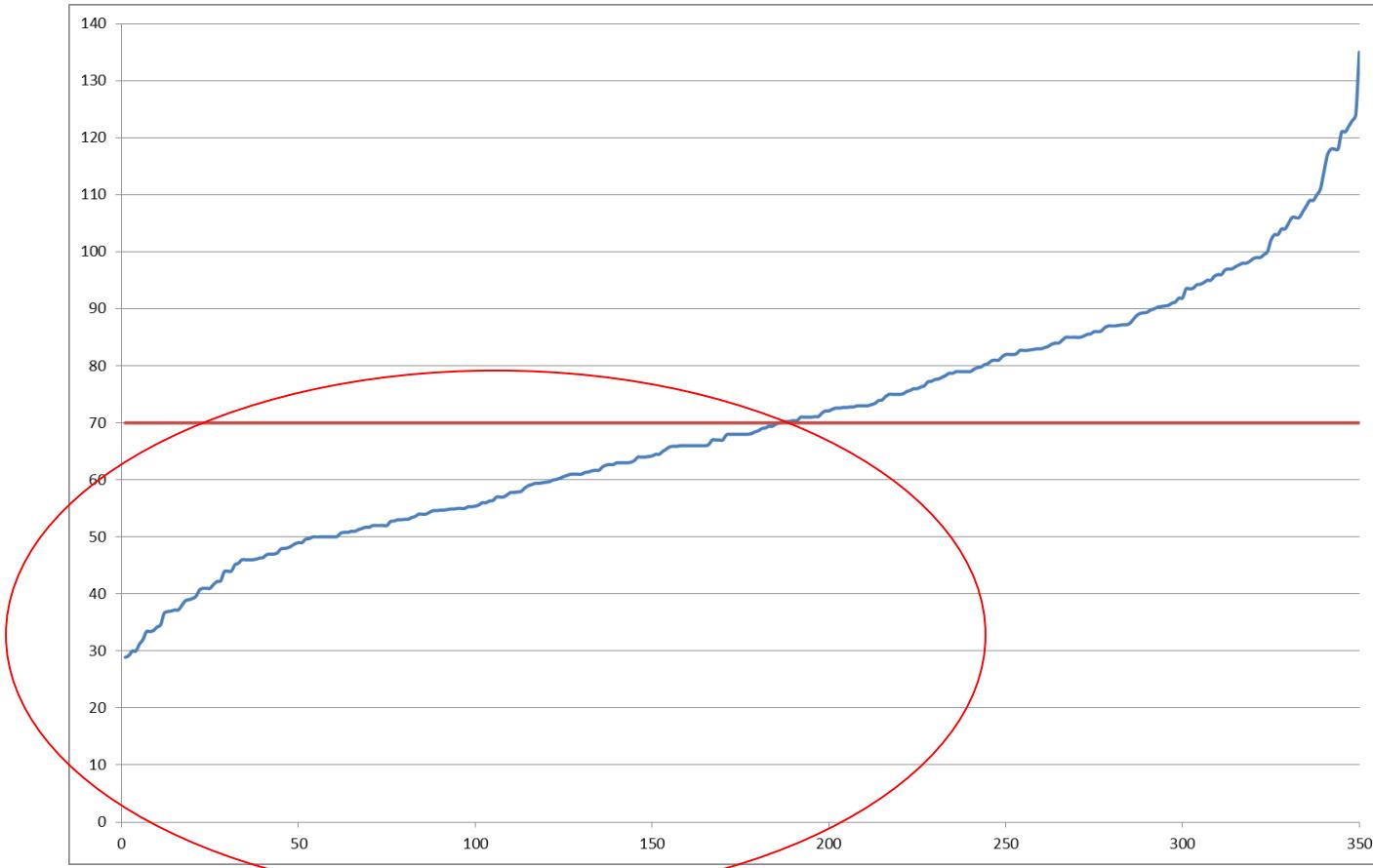
# MCA Velocities (384, 4% Low)



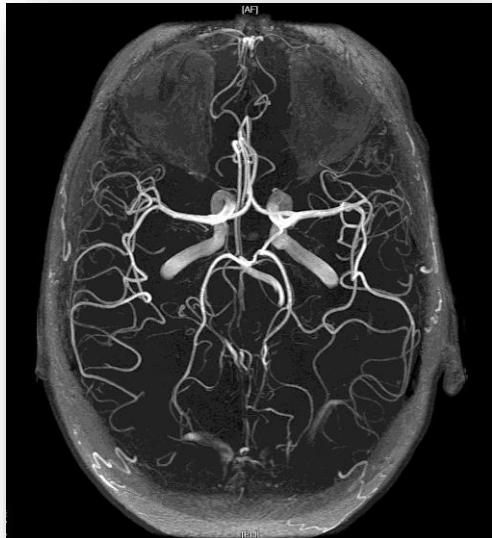
## TICA Velocities (354, 35% Low)



# ACA Velocities (351, 53% Low)



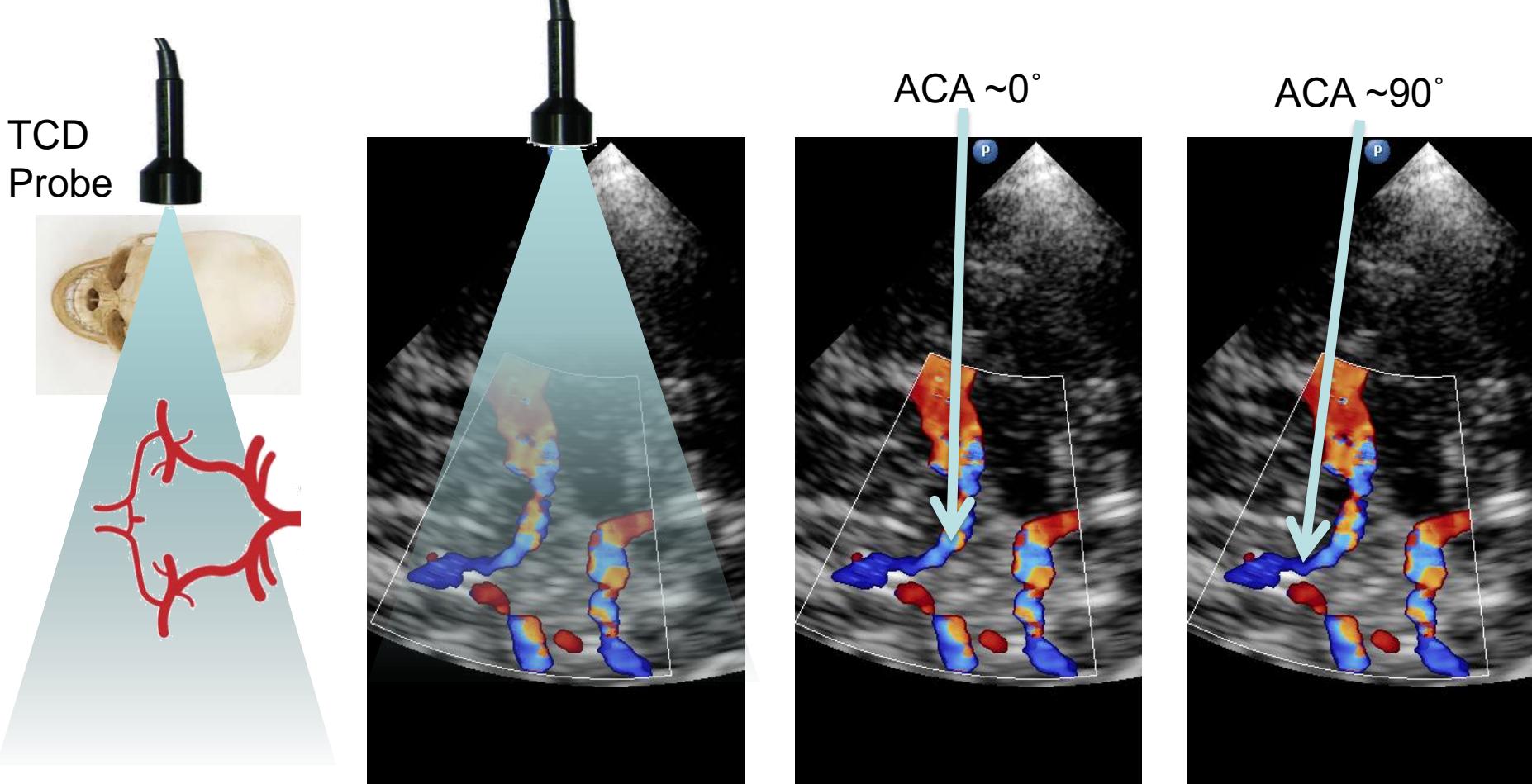
# Why Low ACA Velocities?



- Zero angle correction versus vessel anatomy?
- TCD ACA poor imaging technique?
- Equipment generally lower readings overall?
- Less dominant vessel and perfusion region?
- Diseased vessels in our cohort?
- Normal findings? ...

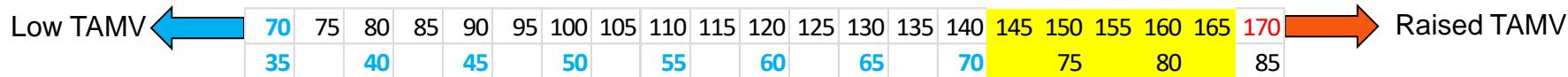


# Angle Versus Anatomy



# Asymmetry

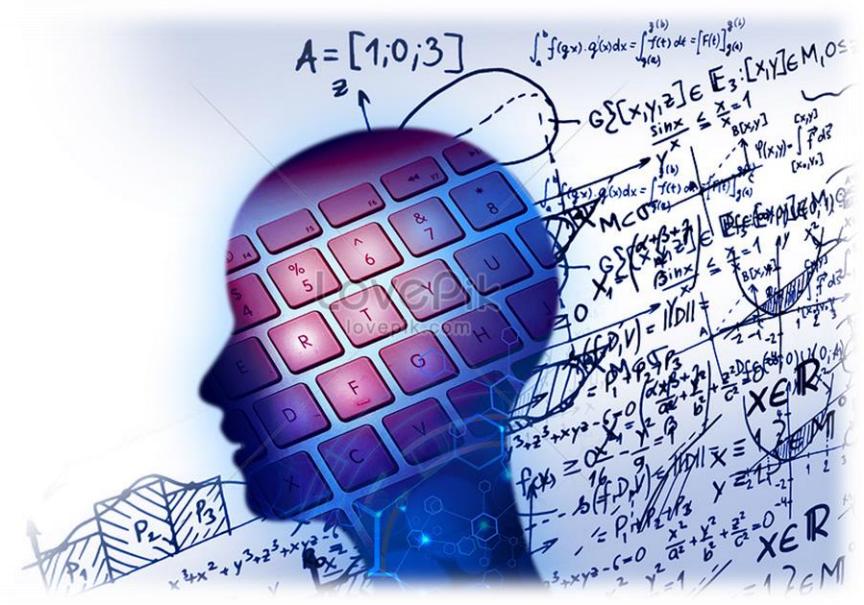
>50% lower than the contralateral side



Consideration:

Would the velocities have triggered anyway?

Eg. abnormally raised TAMV >170  
or low TAMV <70 on one side?



# Asymmetry – All Vessels/Sides (200 Patients)

## 10 Asymmetry

MCA (cm/s)			ACA (cm/s)			TICA (cm/s)		
Left	Right	Asymmetry	Left	Right	Asymmetry	Left	Right	Asymmetry
216	72.4	66%	46.3	78		0	44.4	
186	86	54%	66	50		50	50	
46	120	62%	76.3	64.5		0	69.8	
116	82		117	47	60%	123	70	
149	123		33.4	72.6	54%	82.3	76.6	
112	97		46	98	53%	79	105	
147	124		108	54	50%	134	121	
103	93		75	37	51%	91	70	
116	82		117	47	60%	123	70	
107	117		85	76		87	30	66%

 Low Velocity  
 High/Conditional  
 Asymmetry >50% Lower

## Asymmetry – All Vessels/Sides

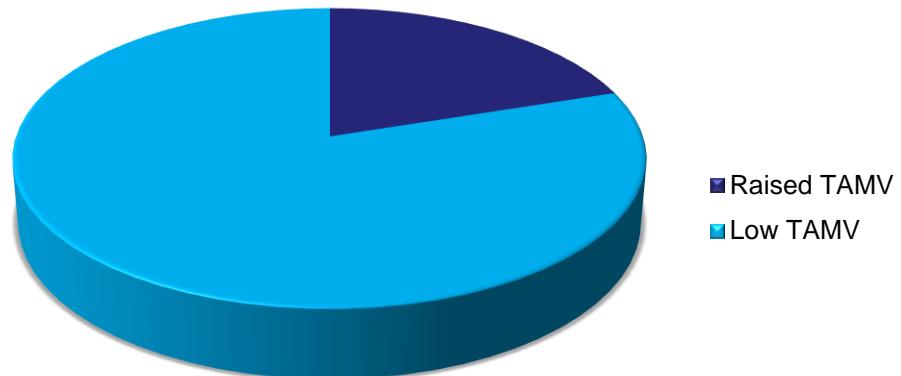
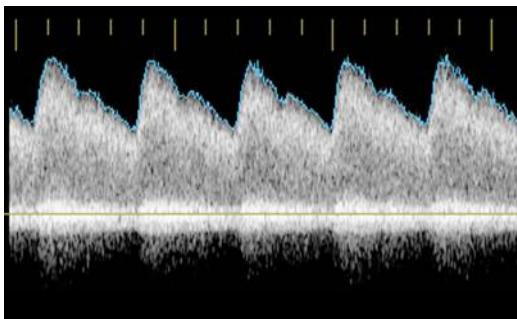
### 10 Asymmetry

- 1 patient with raised velocities (MCAs) & asymmetry (2 scan events)
- 8 patients with low velocities & asymmetry
- All would have triggered an additional category with either low or raised velocities

# Asymmetry Vessels

## 10 Asymmetry

- 3 MCA
- 6 ACA
- 1 TICA



■ Raised TAMV  
■ Low TAMV

## Future Work?

- Analysis of UK ACA velocity data in NHR
- Analysis of significance of asymmetry versus other parameters (low & high velocities)

## Poll:

1. Do you routinely order an MRI for normal STOP but with additional low velocities or asymmetry?
2. Do you do anything else if a report highlights normal STOP but with additional low velocities or asymmetry?



# Future Updates?



*Transcranial Doppler Scanning for  
Children with Sickle Cell Disease  
Standards and Guidance  
Second Edition September 2016*



# Questions

