

# How Reliable are CT and MRI?

Dr Mark Abelson  
Interventional Cardiologist  
Somerset West, Cape Town  
Honorary Lecturer  
Groote Schuur Hospital, University of Cape Town

# Or Rather...

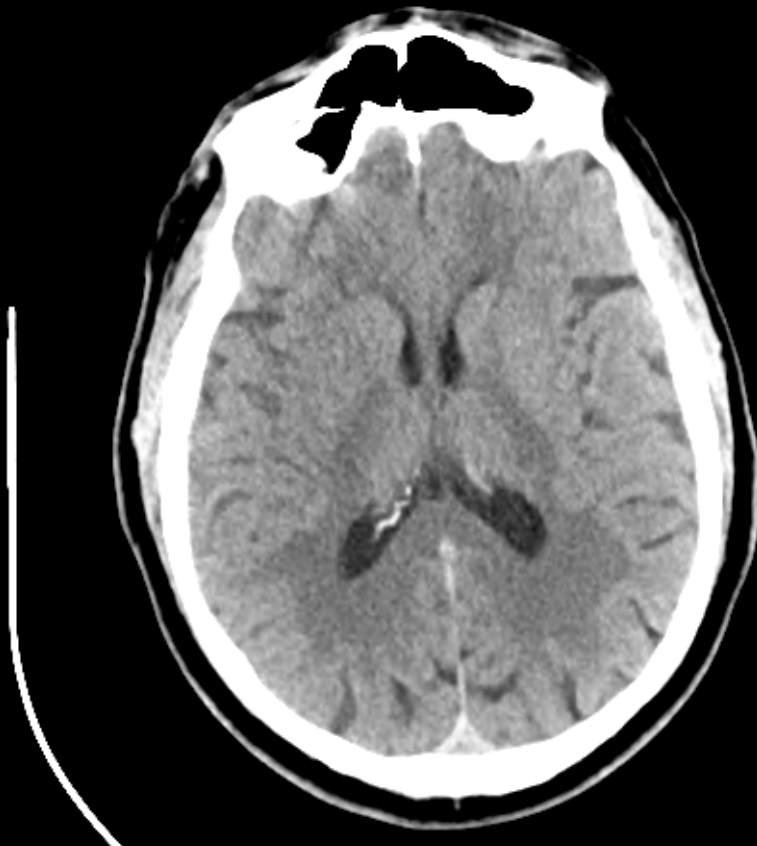
- How reliable are
  - the clinical signs?
  - the scans themselves?
  - the radiological interpretation?

# Case 1

- 66 year old lady one week post large anterior myocardial infarction
- Presents with dense left hemiplegia of 3 hours duration.

# Case 1 – CT scan

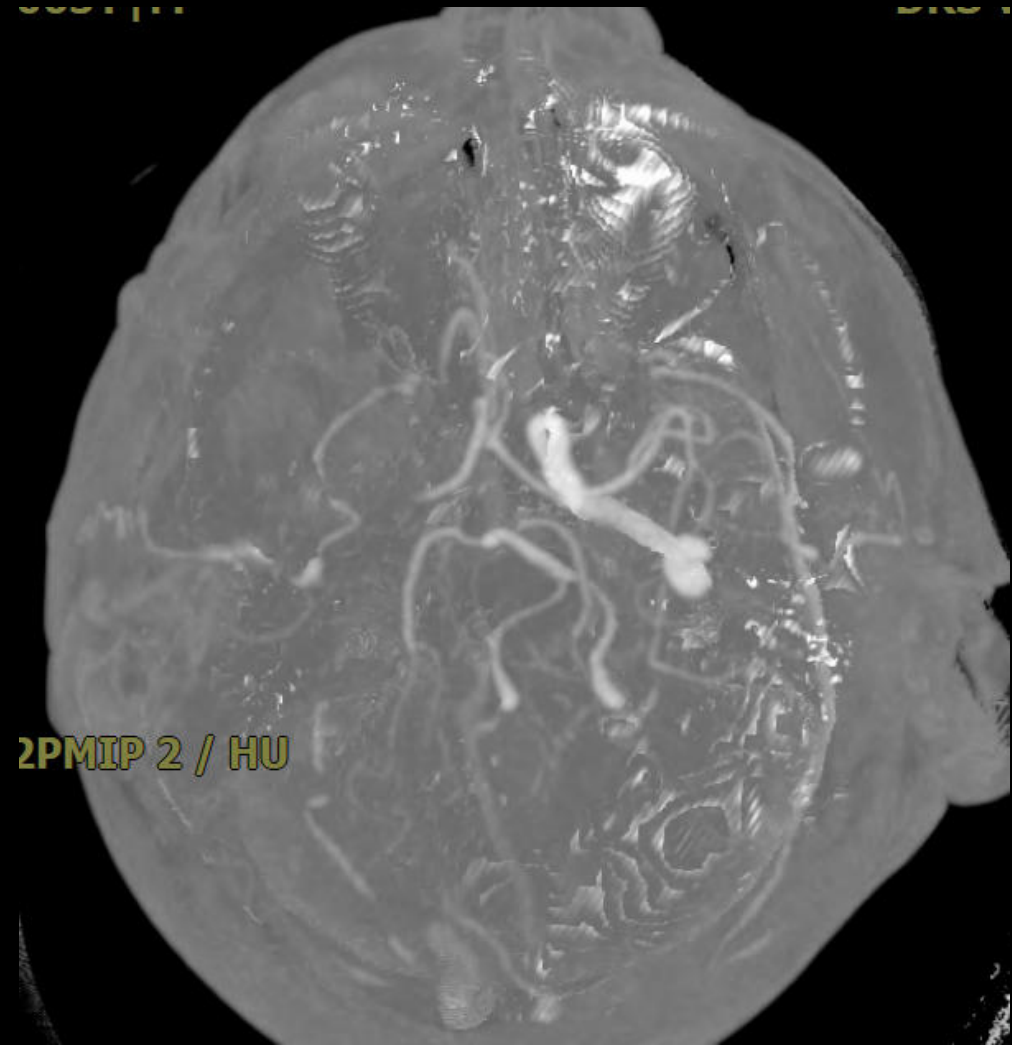
Early stroke changes



“Dense right MCA” sign



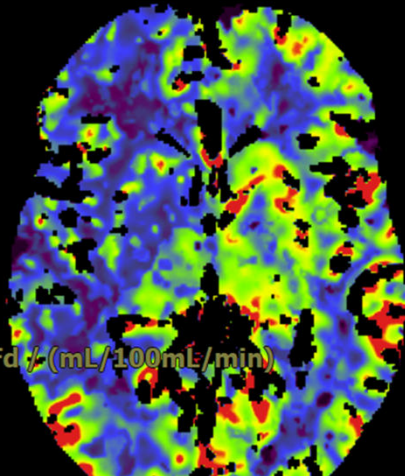
CT Angiogram  
Done as Perfusion scan  
Not a dedicated angiogram



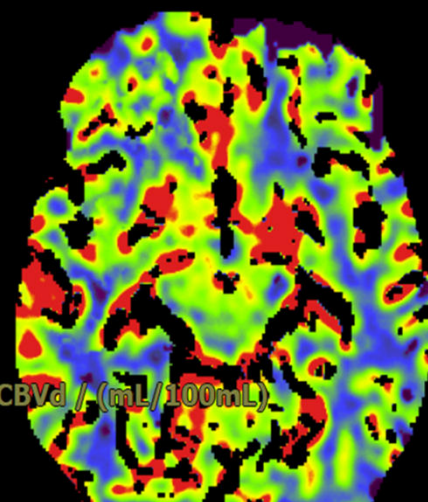
# Case 1- CT Perfusion scan

17:10:31

Cerebral Blood Flow CBFd / (mL/100mL/min)

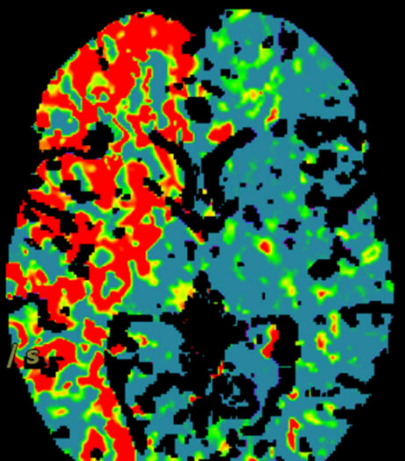


Cerebral Blood Volume CBVd / (mL/100mL)



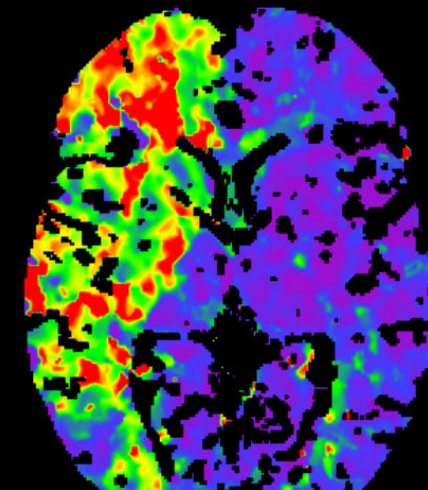
27/04/2017  
17:10:43

Mean Transit Time MTTd / s



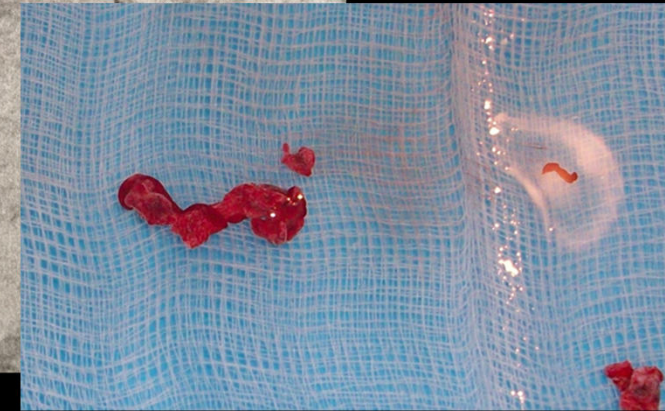
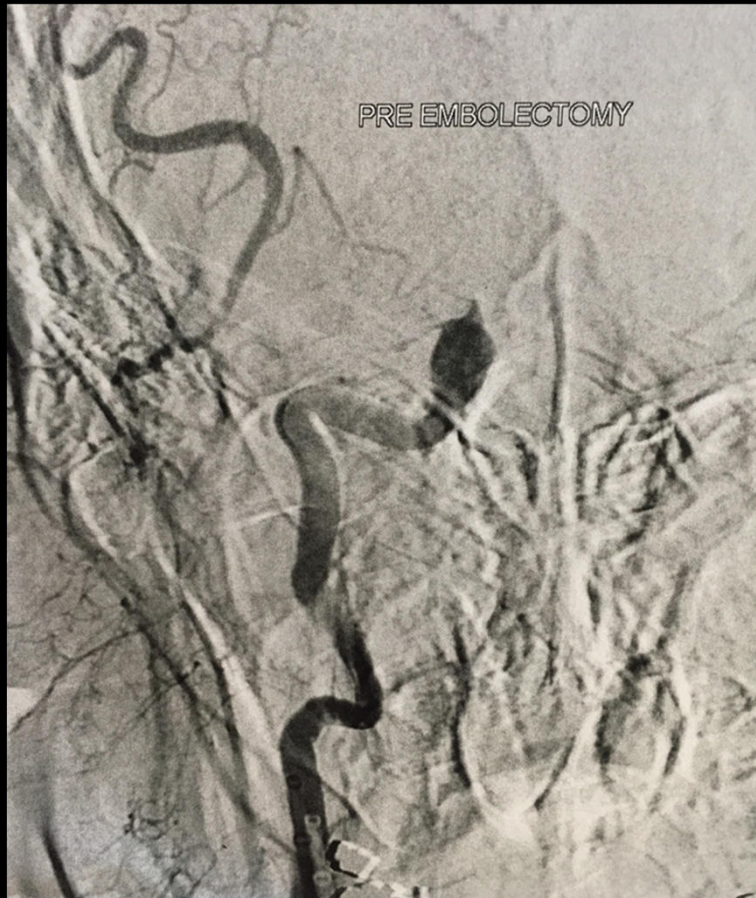
17:10:50

Time To Drain TTDd / s



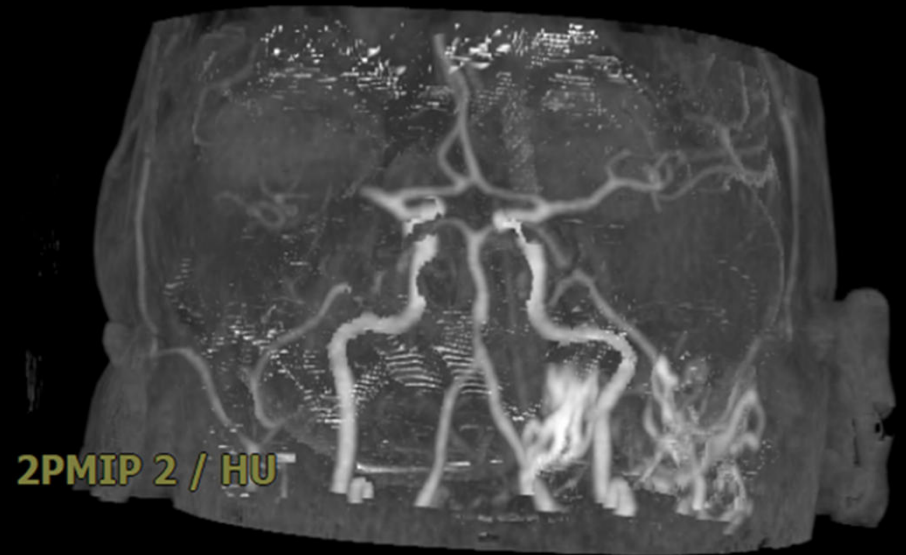


## Right ICA-T occlusion – Pre and Post Stent-retriever



## Case 2 – Problems with perfusion scan

- 77y old male AF with dense left hemiplegia of 2 hours duration





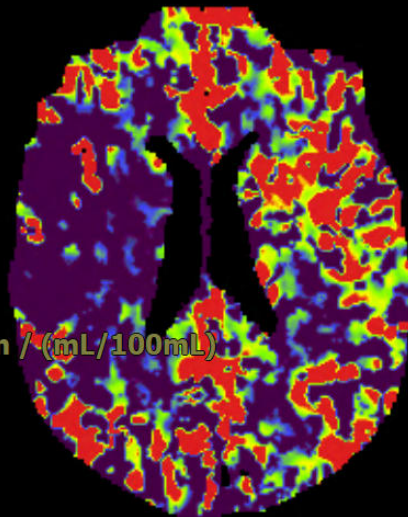
## Case 2

Perfusion scan shows large infarction

High Aspects Score and only 2 hours duration – intervention done  
MRS = 0

11/09/2015  
11:11:35

Cerebral Blood Volume CBVm / (mL/100mL)

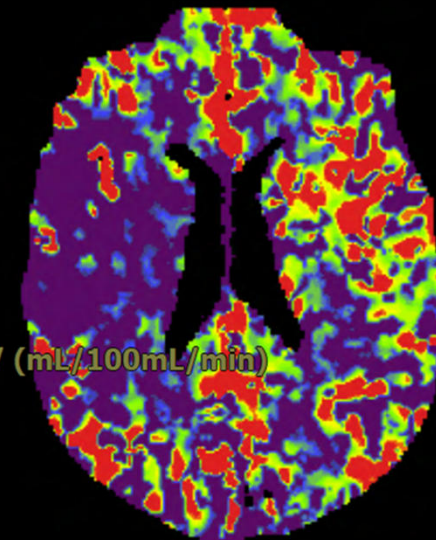


kV:

11:11:39

Zoom  
WL : kV

Cerebral Blood Flow CBFm / (mL/100mL/min)



Zoom :  
1000 : 1000

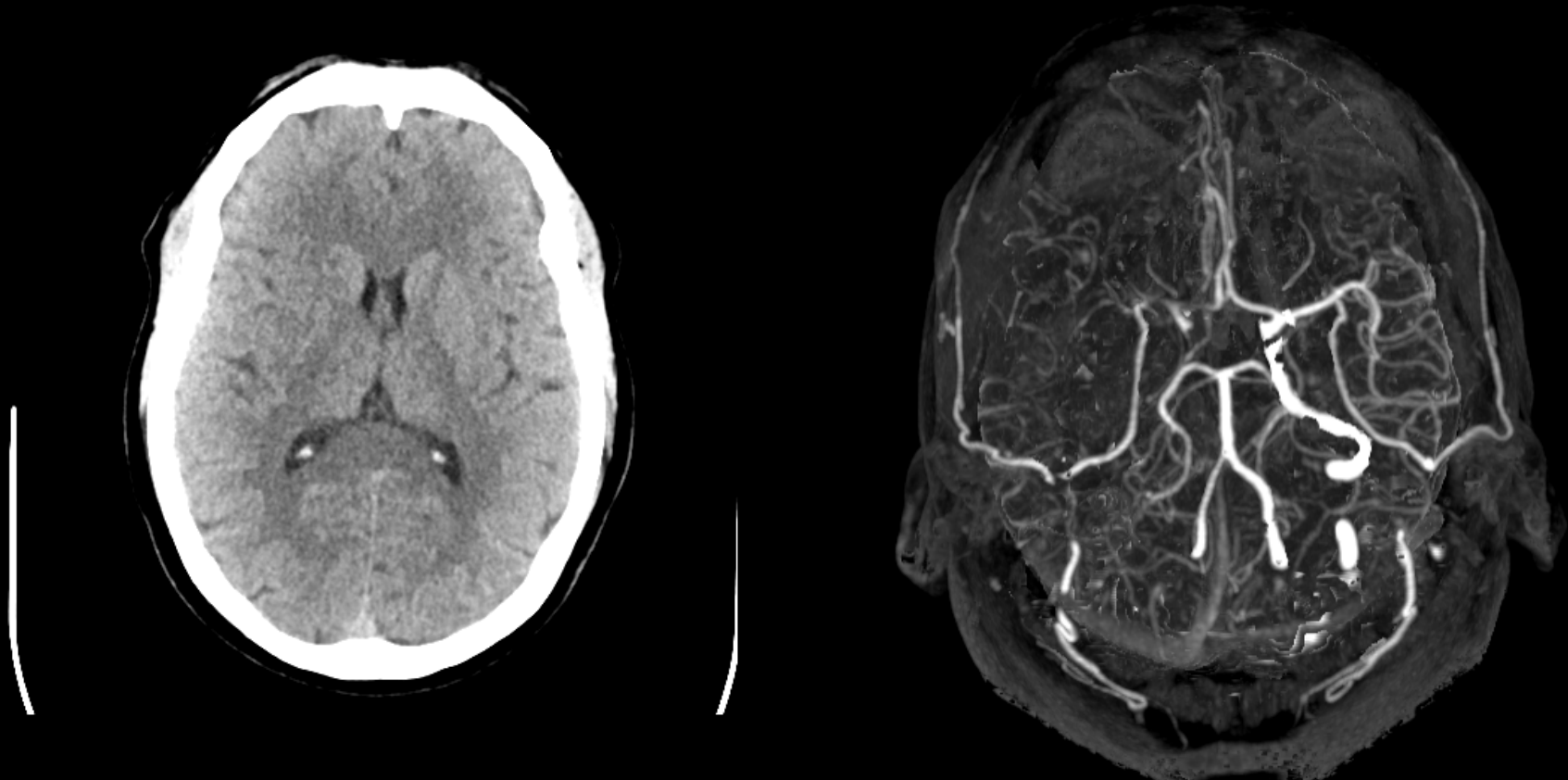
## Case 3 – When symptoms and scan don't match?

- 62y old male presents with left hemiplegia
- After CT scan NIHSS =1. Mild facial weakness only.
- 5 Months prior had TIA – similar left hemiparesis



Ct – minimal changes

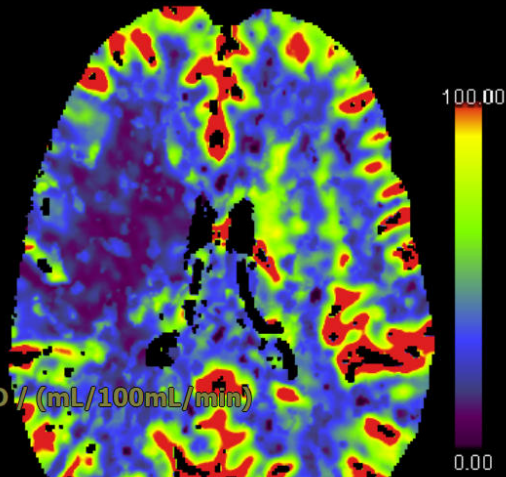
Complete ICA and proximal MCA occlusion– good collateral supply



Perfusion scan showed large area of brain at risk  
However patient minimal symptoms (NIHSS=1) – so no intervention done

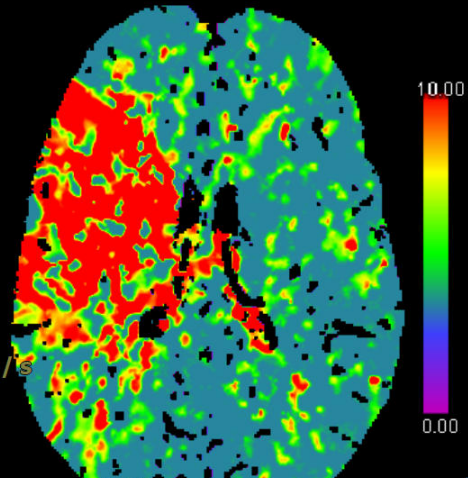
26/10/2017  
17:03:58

Cerebral Blood Flow (d)CBFD / (mL/100mL/min)



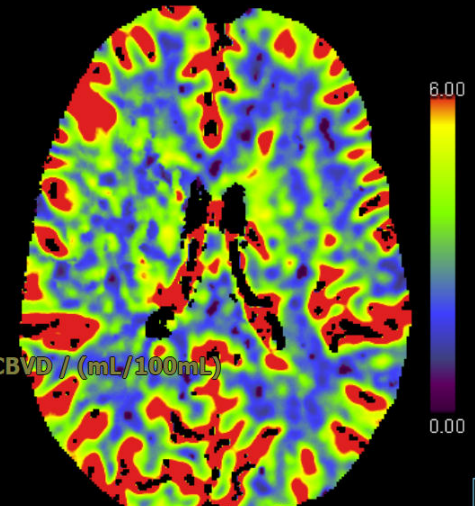
26/10/2017  
17:04:02

Mean Transit Time (d)MTTD / s



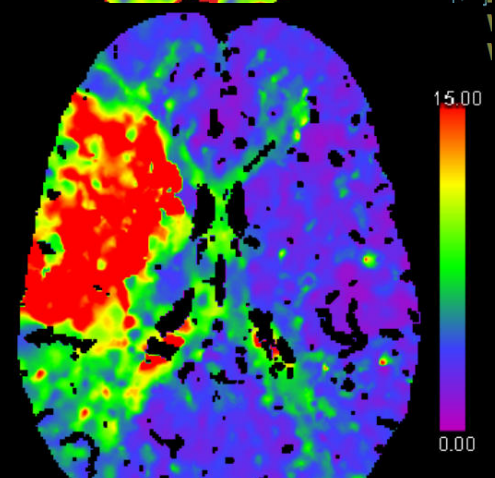
26/10/2017  
17:04:00

Cerebral Blood Volume (d)CBVD / (mL/100mL)



26/10/2017  
17:04:04

Time to Drain (d)TTDD / s



CT scan 2 days later



## Case 4 – Who is on call reporting on the scans?

- 69y old lady presents with Right hemiplegia of 4 hours duration
- 9pm at night
- Ct scan – Early changes left cortex
- Allergic to iodine

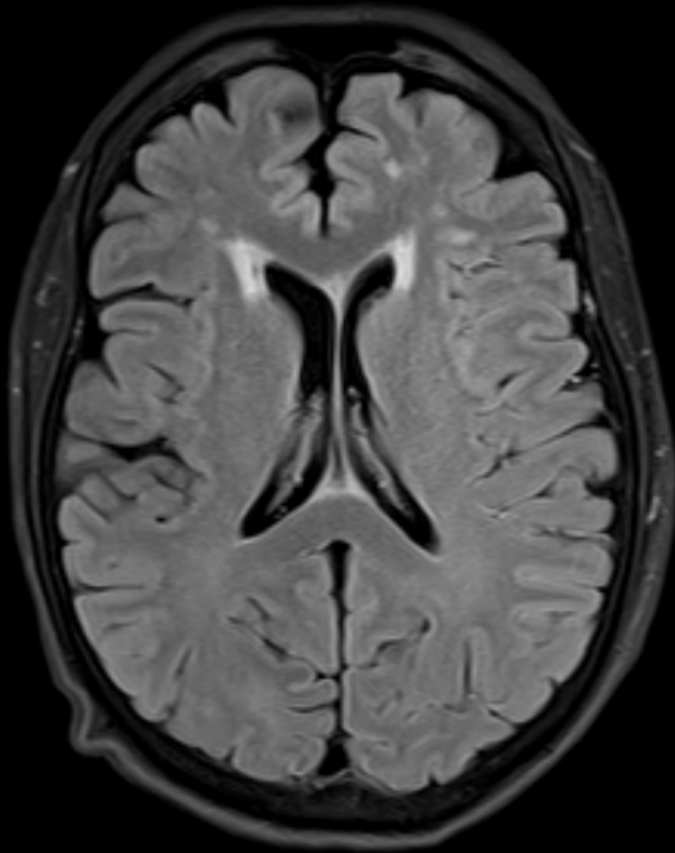




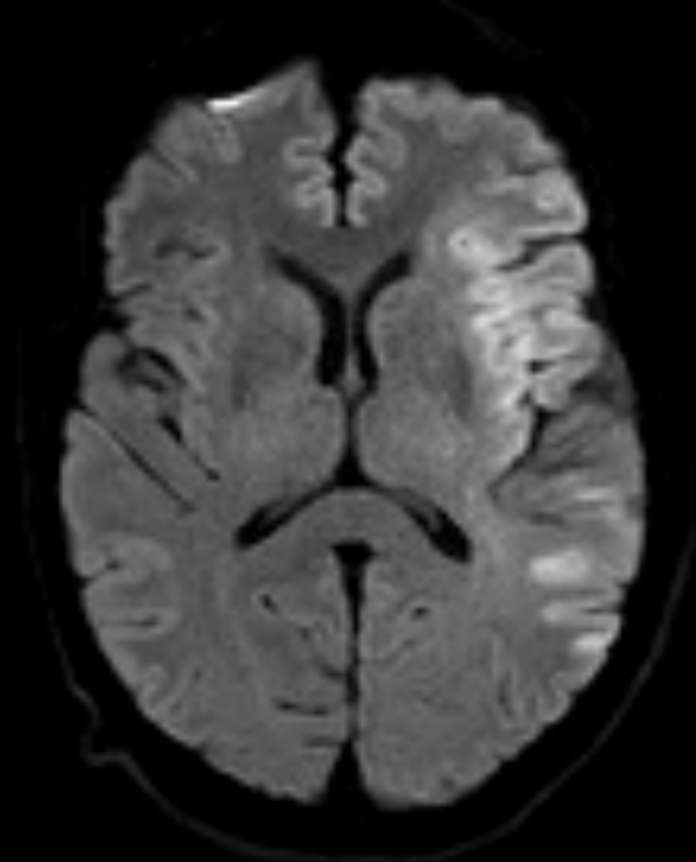
## Case 4 — MR angio shows Left MCA M2 occlusion



## Case 4 - Who is on call?



Flare sequence / T2 weighted scan



Diffussion / DWI scan

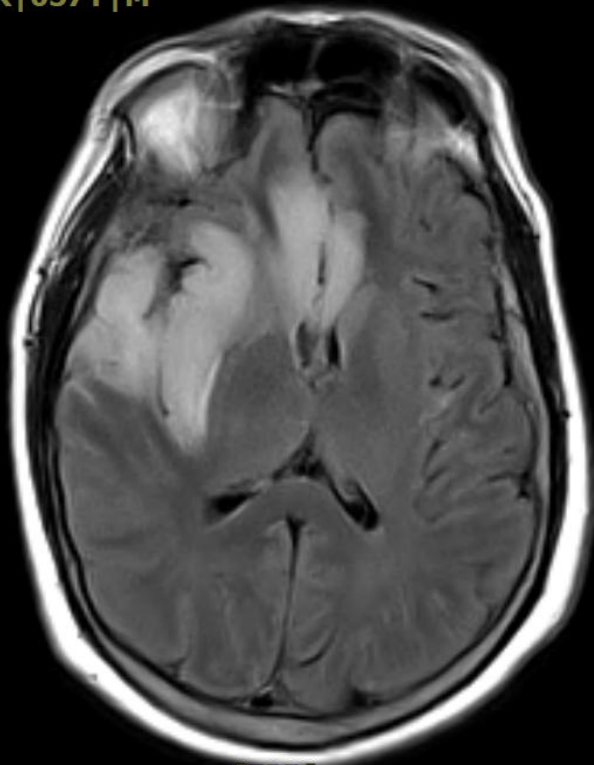
## Case 5 – Stroke Mimics

- 57y old male presents with left weakness few hours duration
- Obtunded, Mild fever
- Ct – normal
- No CTA available
- Lytic given for stroke
- No response



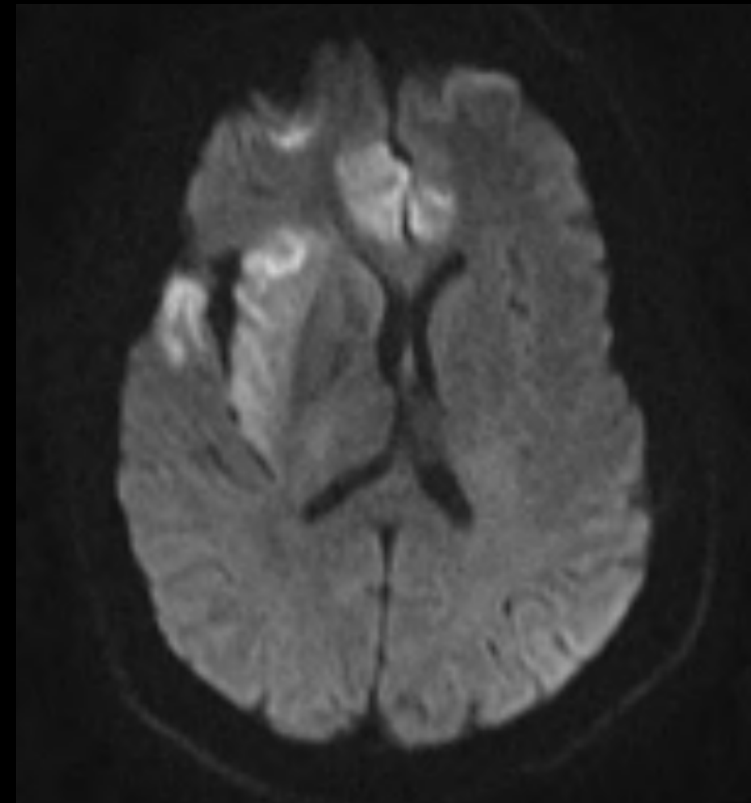
# Case 5 – Stroke mimics

IR|057Y|M



[FPR]

Flare sequence



Diffusion scan

## Case 6 – Coma ? Cause

- 68y old lady HPT, DM. No previous stroke
- Collapsed at home
- ER – GCS 5/15, intubated, quadraplegia
- 2 Hours duration at time of CT
- Diagnosis?

# Coma ? cause

Normal Scan  
Further Investigations?





# CT Angiogram – Bilateral Carotid Occlusions



# Conclusion

- Sometimes difficult to decide on what is the best management for the patient
- Not all cases straight forward
- Need to consider all the various factors
  - symptoms and signs + stroke duration
  - CT and MR findings
  - Who is reporting on the scans afterhours?

# Conclusion

- If in doubt – pull it out!