



Category B

Category C

Category D

Category E

Category F

• **What are values?**

• **What is the difference between a value and a variable?**

• **What is the difference between a variable and a constant?**

• **What is the difference between a variable and a parameter?**

• **What is scope?**

• **What is a local variable?**

• **What is a global variable?**

• **What is a function?**

• **What is a parameter?**

MRI Brain Sequences

VIDEO #2

* pulse sequence: Radio frequency + Acquisition

- (1) give energy (excite proton spin)
- (2) turn off
- (3) observation & when you get back difference in relaxation: contrast

T_1 vs. T_2

1) within a sequence
· water, fat = opposite signal intensities

2) between a sequence (T_1 vs T_2)
· given substance = opposite intensities

T_1

- fat is bright (white) \otimes
- water = dark
- new blood = bright \otimes

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useful for

- anatomical detail
- vascular channels + C
- disruption blood, brain barrier

T_2

- fat is dark
- water = white (CSF) ... in center
- flow = dark (blood vessel where high velocity)

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useful for

- anatomical detail (CSF space)

but must \rightarrow can distinguish lesion from CSF

FLAIR

- fluid attenuation inversion recovery

↓

- $T_2 +$ free-flowing water (CSF) is dark \Rightarrow difference between T_2
- non-free-flowing water is white
- fat is dark

W/ W/ W

- same as T_2
- delineation of lesion near ventricle
- edema: bright

CONTINUATION

CINE → like T₁, but clear up hemorrhage

- gradient echo
- paramagnetic substances: dark
 - blood
 - calcium
 - other metals
 - Wilson, metal... (Cu)

help w/

- early hemorrhage
- old hemorrhage

DWI → measure Brownian motion of H₂O molecules

- diffusion weighted imaging
- pick up on early ischemia (DWI) / abscess / seizure
- perform quickly

KELLOG

- fluid restriction: bright (hypotoxic edema)

DWI: multiple images
layered to give you one.
ADC = one image, T_2 : parcellated on top

In area of ischemia

- cells begin to start swelling
- cytotoxic edema

· MRI correlate findings w/ ADC

· fluid restriction: dark

· rule on "T₂ shine through"

extracellular space
begins to shrink

↓
thus (L)I space... so bright

can trick into thinking
there is edema

apparent diffusion coefficient

· fluid restriction would be dark

↑ problem?

lots more... many basic overviews

Khan Academy
videos.. for
actual diagnosis
can watch...