

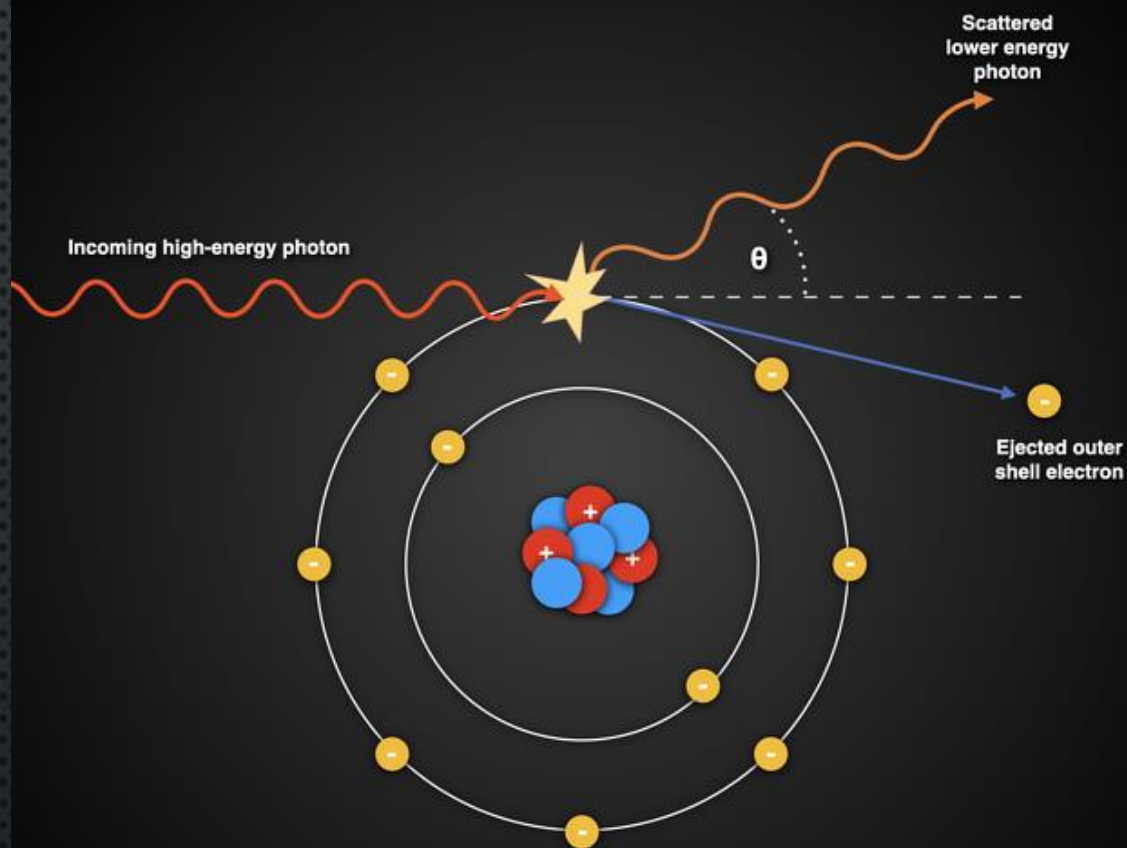
DUAL ENERGY HEAD CT

IS IT BLOOD OR CONTRAST

APPLICATION: NON-CON HEAD CT

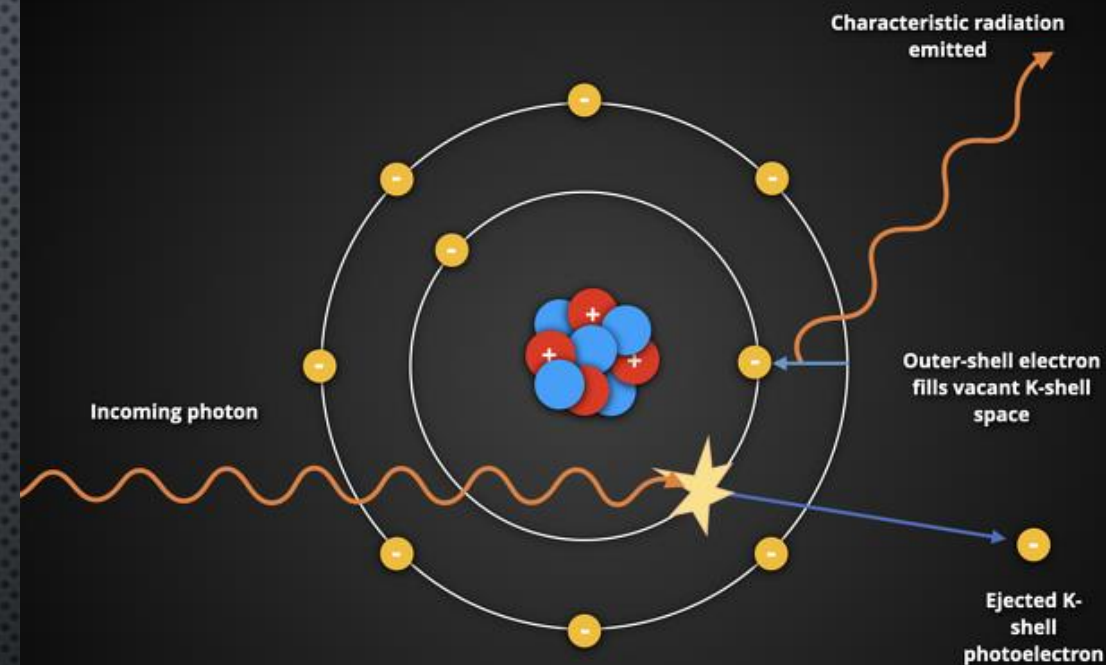
- AFTER ENDOVASCULAR THERAPY/THROMBECTOMY: CONTRAST VS HEMORRHAGE?
- HYPERPERFUSION AFTER CAROTID REVASCULARIZATION: IS THAT BLOOD, OR JUST CONTRAST?

Compton effect



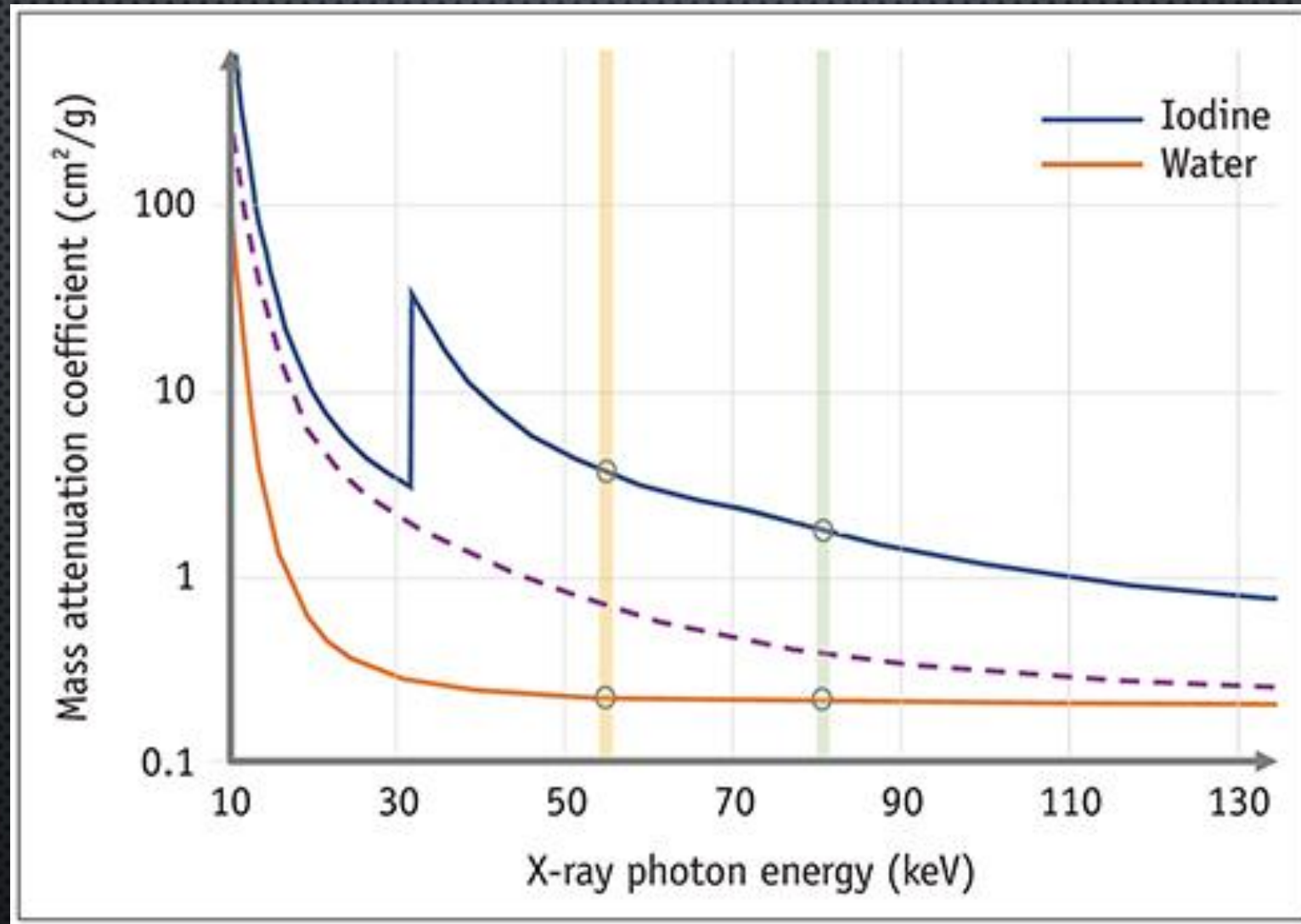
Frank Gaillard
CC BY NC SA
Radiopaedia

Photoelectric effect



Frank Gaillard
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Radiopaedia

At lower kVp, photoelectric effect of Iodine makes it really stand out.

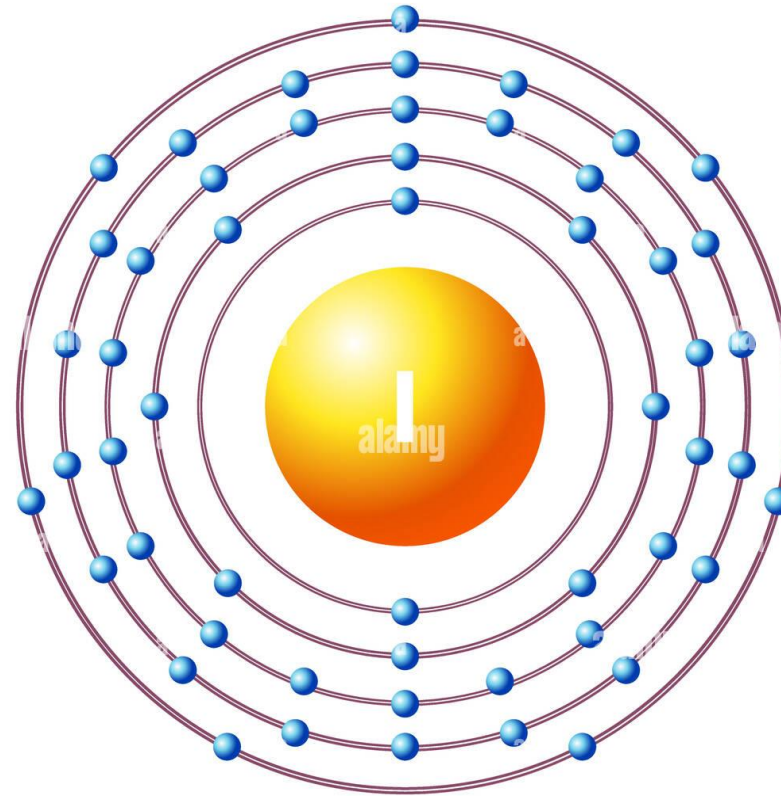


Linear attenuation curves where Iodine's K-edge finds great utility.

- IODINE IS A BIG MOLECULE WITH SEVERAL ELECTRON SHELLS. THIS IS THE PROPERTY THAT MAKES THE PHOTO ELECTRIC EFFECT SO IMPORTANT IN CT/XRAY IMAGING.
- AT LOWER KVs, THIS EFFECT IS AMPLIFIED.

53

Iodine



Atomic mass: 126.90

Electron configuration: 2, 8, 18, 18, 7

alamy

Image ID: 2GWFPWG
www.alamy.com

SIEMENS – USES A
DUAL SOURCE, DUAL
RECEPTOR MODEL,
ROTATING IN SYNC.

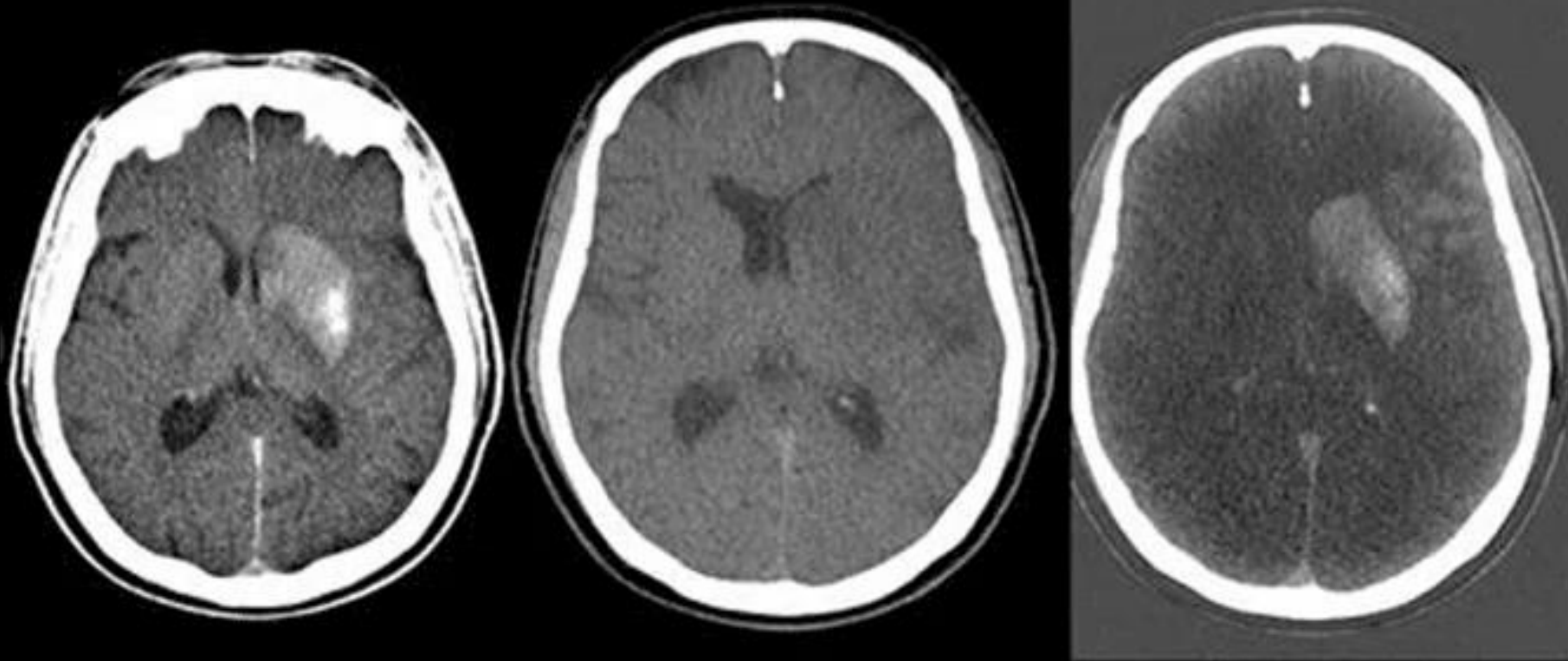


Feature	Hemorrhage	Contrast Staining
attenuation at low energy (80 kVp)	hyperdense	strong hyperdensity
attenuation at high energy (140 kVp)	similar to low energy	lower attenuation (less bright)
VNC Image	hyperdensity persists (real blood)	hyperdensity disappears or markedly decreases
Iodine map image	no iodine detected	iodine is highlighted

- WITH TWO KVP ACQUISITIONS, IODINE'S PHOTOELECTRIC EFFECT IS MAGNIFIED AND THE COMPUTER CAN DELINEATE WHAT IS IODINE AND SUBTRACT IT INTO A VIRTUAL NON-CON (VNC). THEN WHAT IT KNOWS THAT IT SUBTRACTED CAN BE PRESENTED AS AN IODINE MAP (IOM). THE IOM IS THE SEQUENCE WITH THE RED-ORANGE COLORING IN OUR PACS.

VNC

IOM



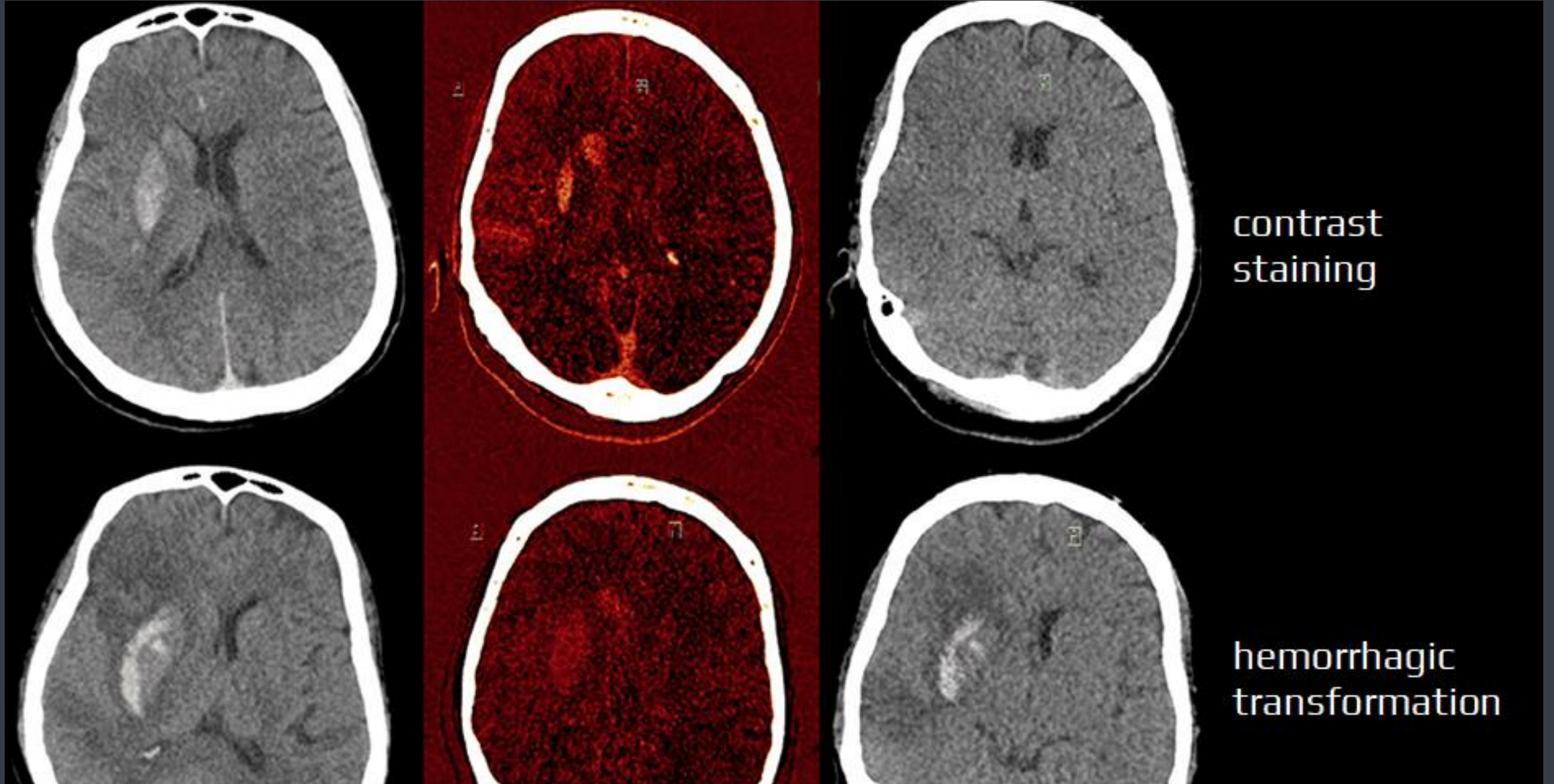
contrast staining

Source image

Virtual Non-con

Iodine Map

stroke-manual.com



ORDER: CT HEAD DUAL ENERGY WO CONTRAST

- REASON FOR EXAM: WITH DUAL ENERGY FOR FOR EVALUATION OF BLOOD VS CONTRAST
- GOOD SAM AND BETHESDA NORTH ON THE FORCE SCANNERS ONLY