

Computerized Axial Tomography or COMPUTED TOMOGRAPHY

Vincent Carrasco, MD, MSIS
NLM Postdoctoral Fellow & Doctoral Candidate
Carolina Health Informatics Program & The Laboratory for Applied
Informatics iSchool@UNC
The University of North Carolina Chapel Hill

AGENDA

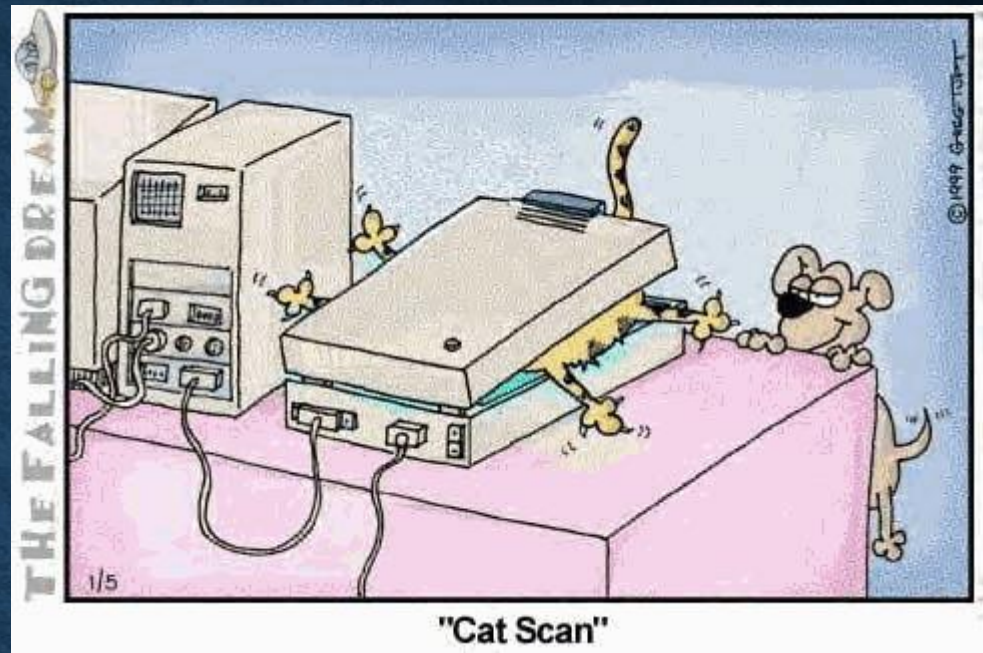
1. Computerized (Axial) Tomography

2. Clinical Applications: CT

3. Optical Coherence Tomography

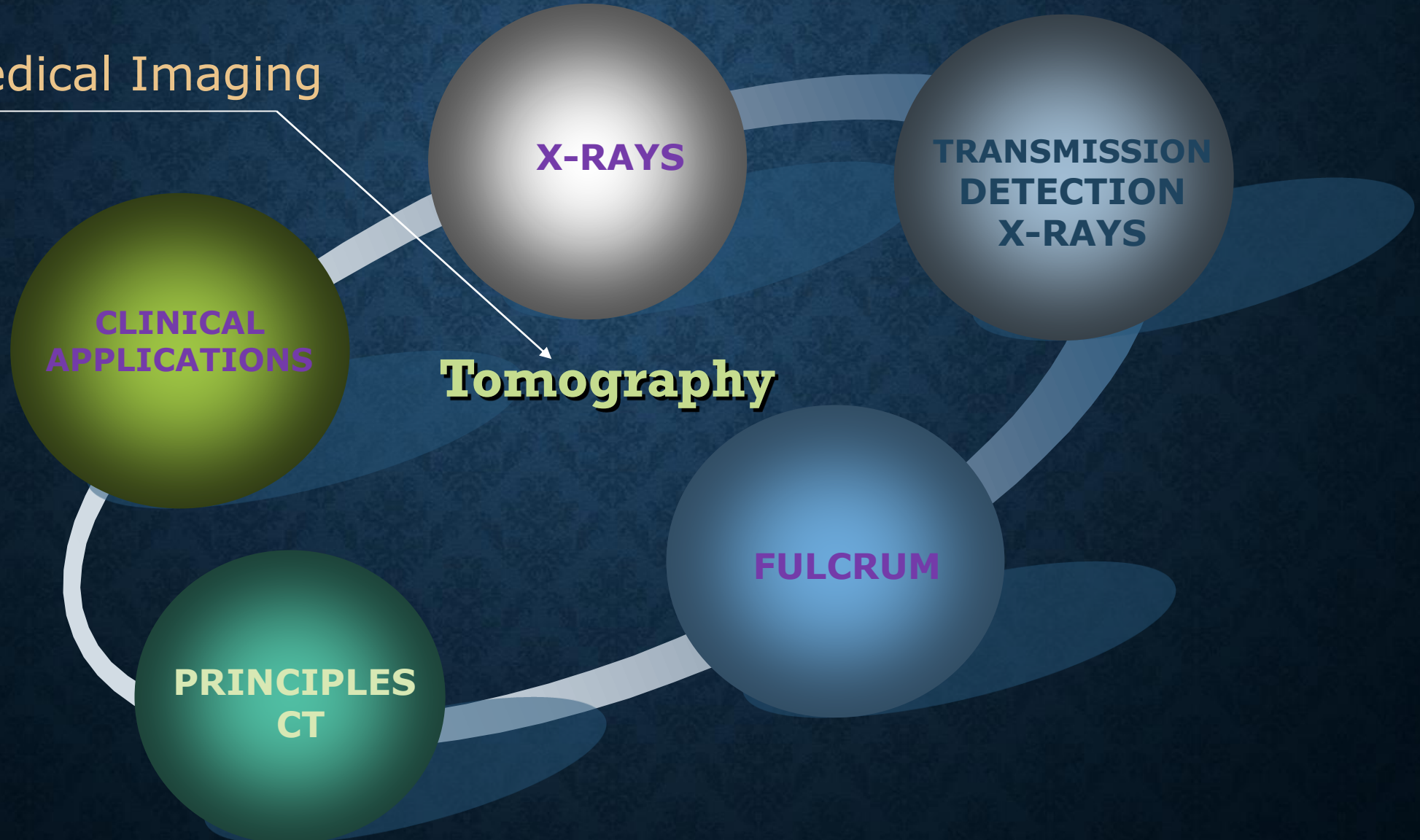
4. Clinical Applications: OCT

5. Ultrasound _maybe

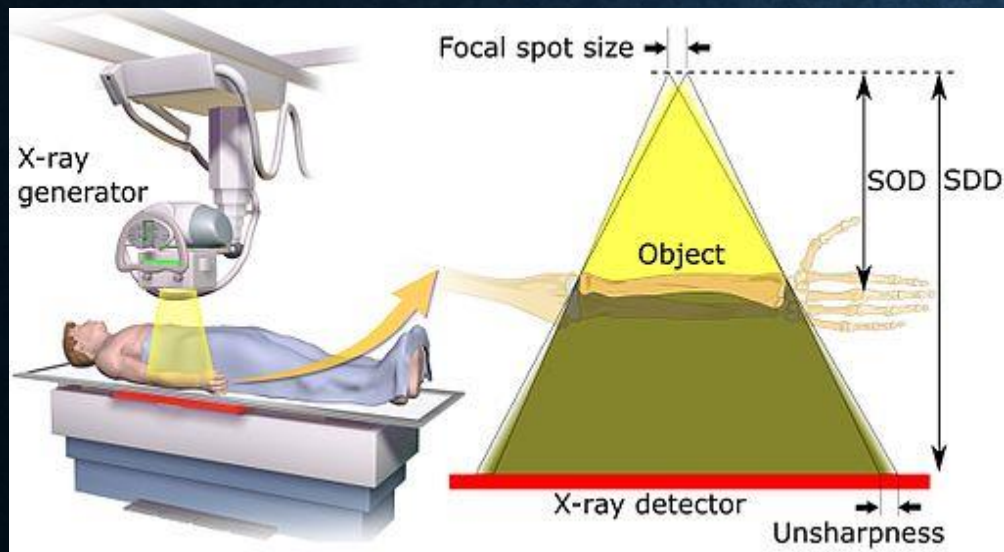
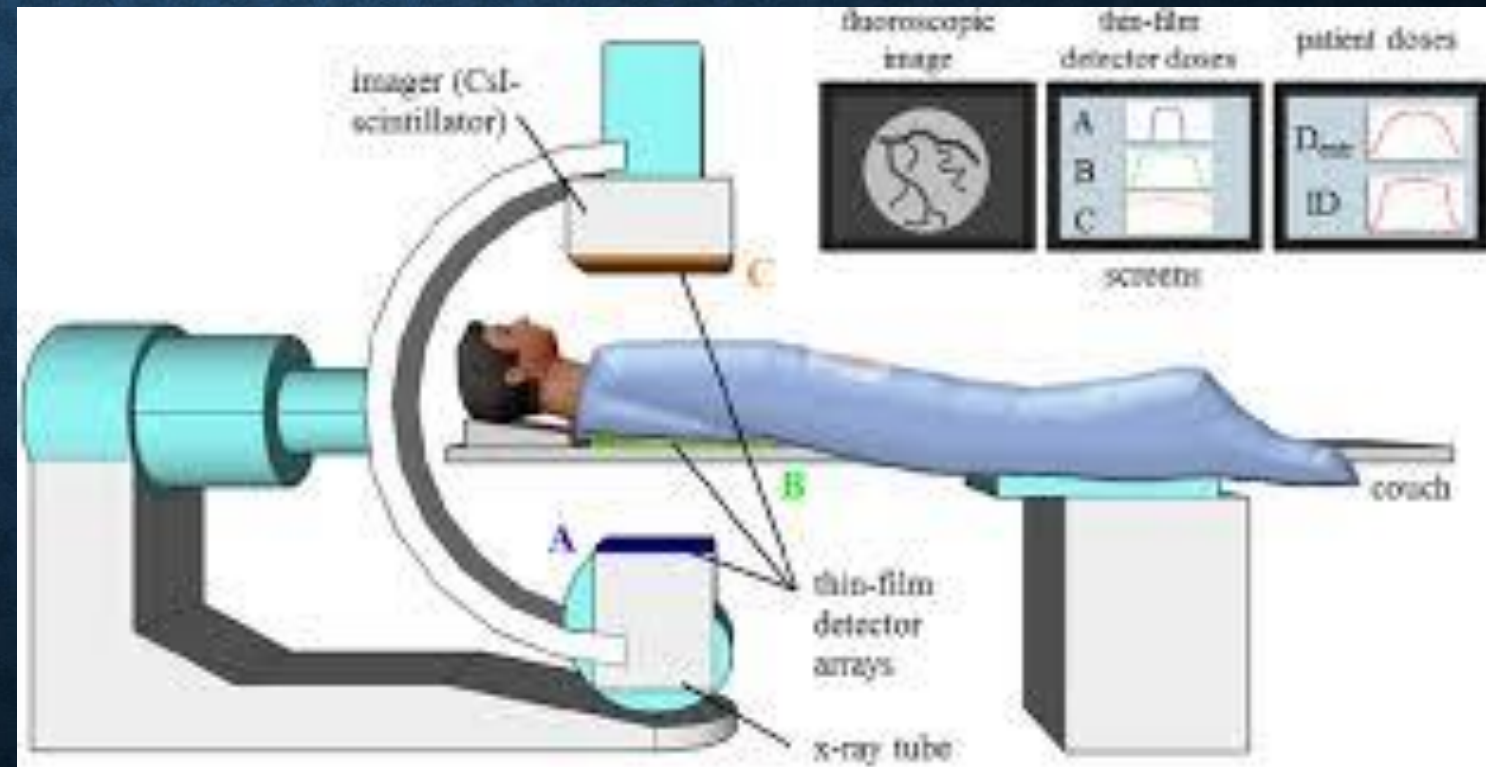
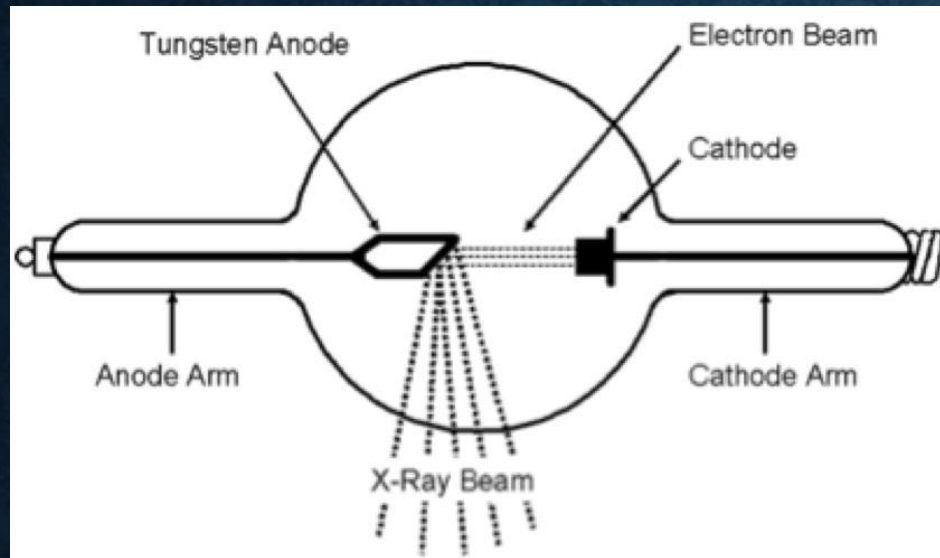


INTRODUCTION TO IMAGING AND IMAGE ANALYTICS

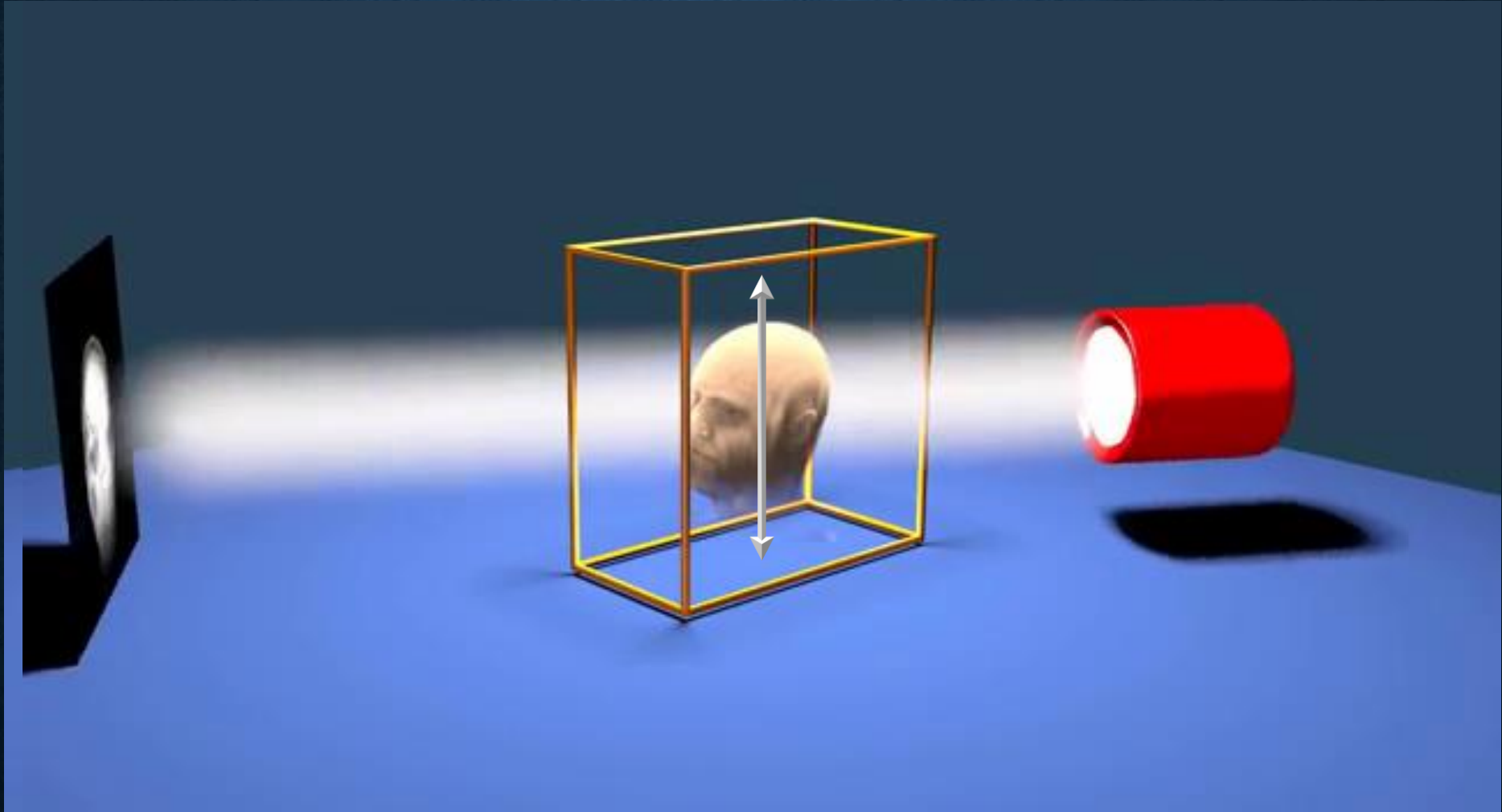
Medical Imaging



RADIOLOGY



PRINCIPLE OF FULCRUM IN TOMOGRAPHY



PRACTICAL INTRODUCTION TO CT

Practical Intro to CT

Rajesh Bhayana

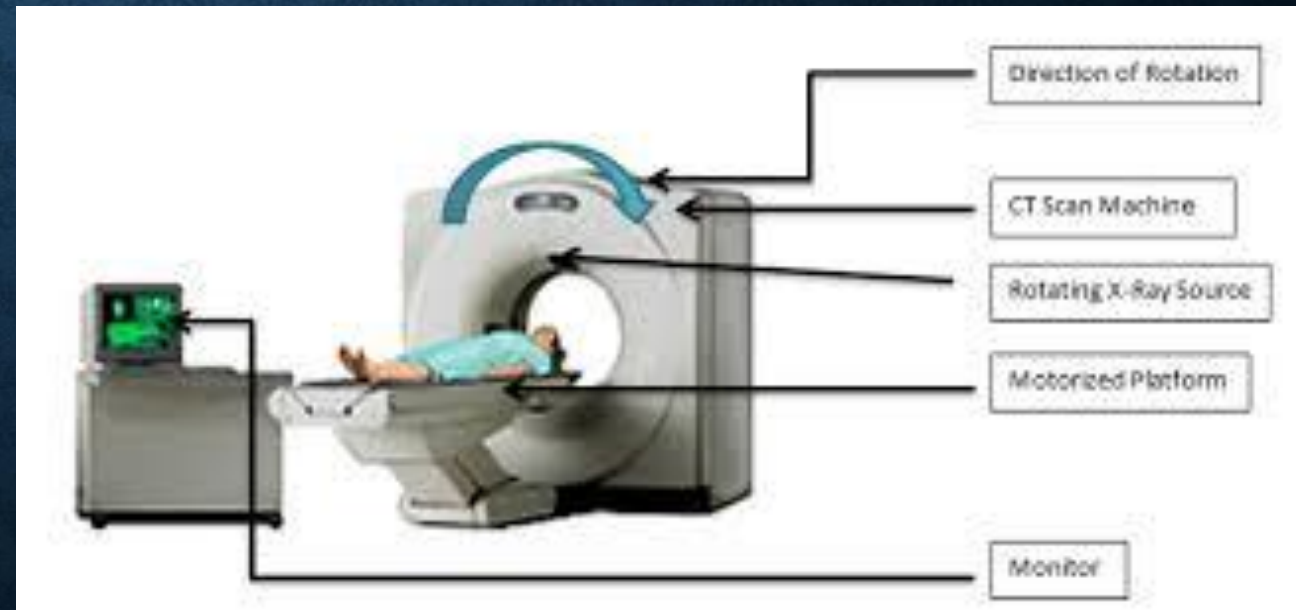
**Introduction
to CT 25min**



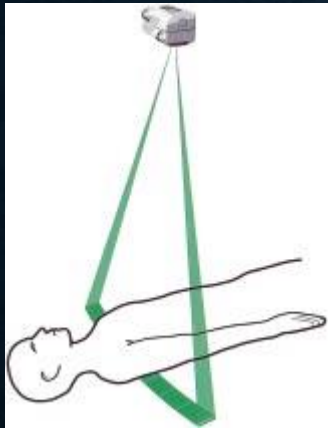
Horses get sick too!

MECHANICS OF CT

- Lie on a narrow table that slides into the center of the CT scanner
- X-ray beam rotates around you
- Must be still for 30 seconds to a few minutes
- Computer creates separate images of the body area, called slices
 - Stored
 - Viewed on a monitor
 - Printed on film
 - Three-dimensional models



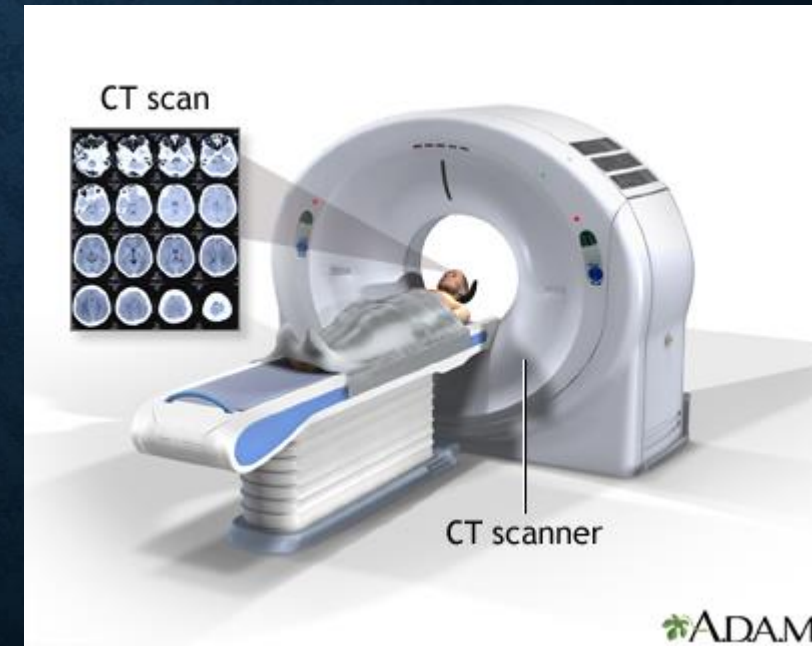
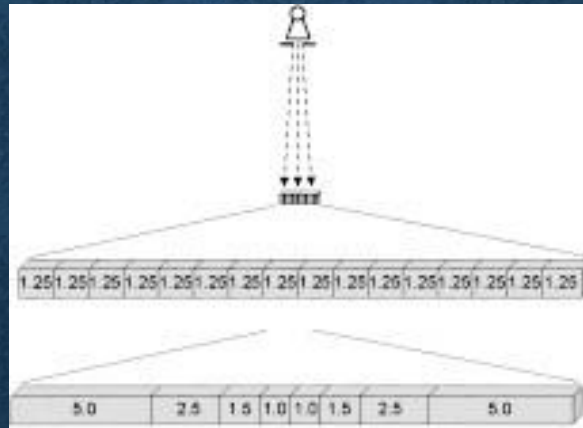
MECHANICS OF CT



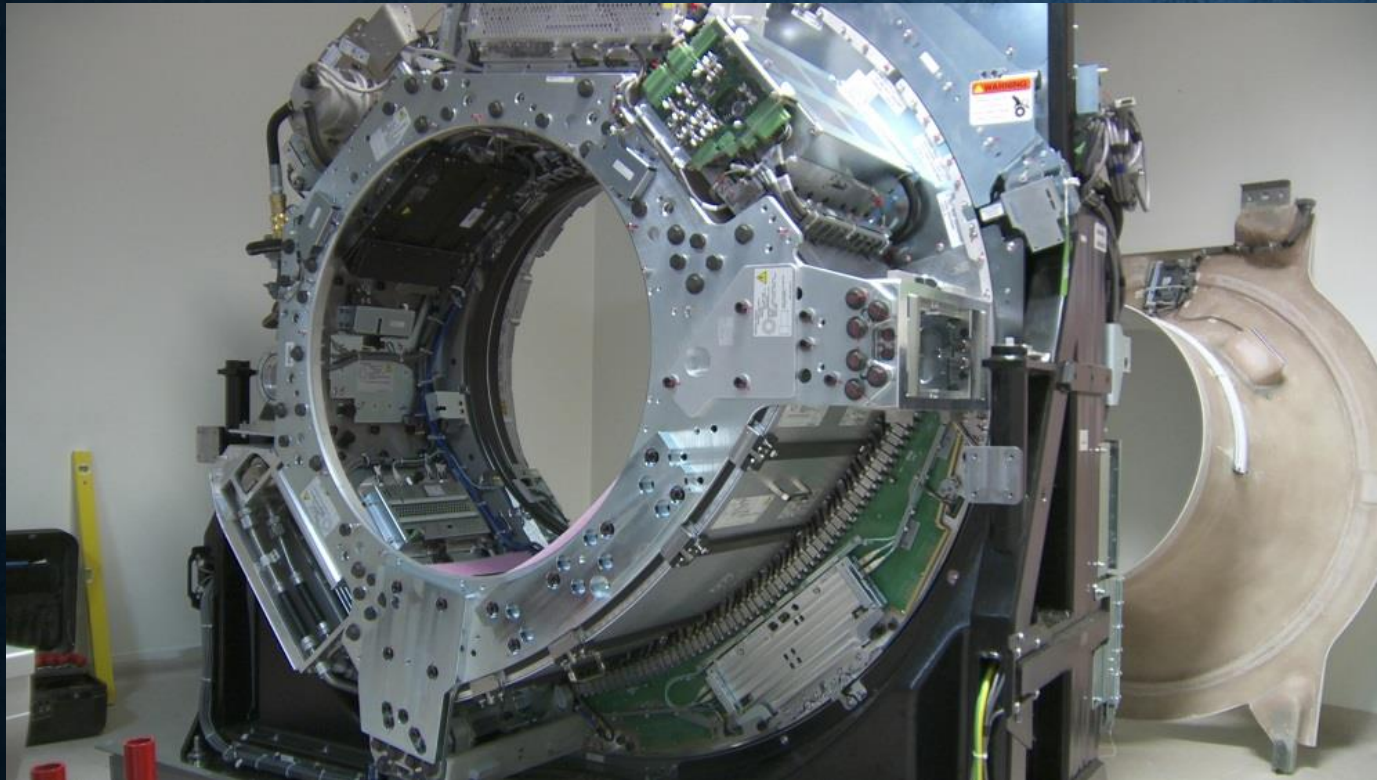
1988
Single
“slice” CT



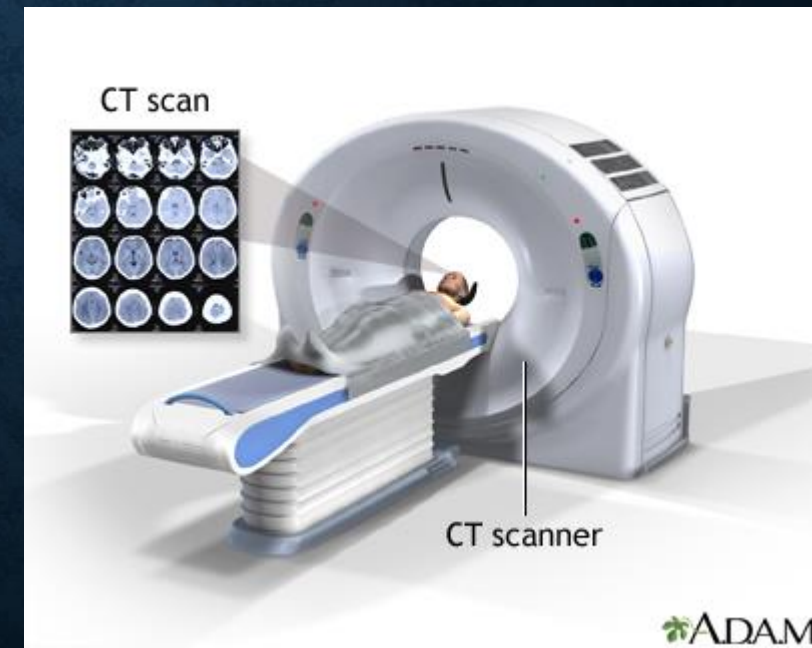
1992
Multiple
“slice” CT



MECHANICS OF CT



**Full Speed
CT 1min**



TYPES OF DIAGNOSIS MADE FROM HEAD CT

- Birth (congenital) defect of the head or brain
- Brain infection
- Brain tumor
- Buildup of fluid inside the skull (hydrocephalus)
- Injury (trauma) to the brain, head, or face
- Stroke or bleeding in the brain

WHAT HAPPENS TO MAKE CT

- Contrast can be given through a vein (IV) in your hand or forearm
 - Slight burning feeling
 - Metallic taste in the mouth
 - Warm flushing of the body
- Must be still for 30 seconds to a few minutes
- Caution about:
 - Reaction to contrast.
 - Medications
 - Kidney function
 - Weight

INDICATIONS FOR HEAD CT

- Abnormal head size in children
- Changes in thinking or behavior
- Fainting
- Headache
- Hearing loss (in some people)
- Symptoms of damage to part of the brain,

ABNORMAL HEAD CT

- Abnormal blood vessels ([arteriovenous malformation](#))
- Bulging blood vessel in the brain ([aneurysm](#))
- Bleeding (for example, [subdural hematoma](#) or bleeding in the brain tissue)
- Bone infection
- [Brain abscess](#) or infection
- Brain damage due to injury
- Brain tissue swelling or injury
- Brain tumor or other growth (mass)
- Loss of brain tissue ([cerebral atrophy](#))
- Fluid collecting inside the skull ([hydrocephalus](#))
- Problems with the hearing nerve
- Stroke or [transient ischemic attack](#) (TIA)

QUESTIONS



Guest Lecturer
after Lunch
from NC TraCS

If we have time next week will
review some clinical CTs

Τι με φορ Λυνχη?



Τι με φορ γουλχη?



Time for Lunch?

TIME for LUNCH?