Correct patient positioning and scanning range reduces radiation dose
Caryn Damits, RT (R) CT

Isocenter
- In imaging physics and radiation oncology, the “isocenter” is the point in space through which the central ray of the radiation beams passes
  - Why is this important?
  - Influences the MA table

POSITIONING AND LANDMARKS

**WHY IS THIS IMPORTANT?**
1. Dose
2. Isocenter
3. Consistency with Stanford CT Scans

XY axis
Centering Importance
Useful when using SMART MA with GE Scanners

MA Table demonstrating X Y Axis
Smart MA
Auto MA

Perfect Head RX
Scan Range: Skull base to vertex
Angle: Base of skull to Supra-orbital Meatal Line
The Perfect Head Scan

AVOID THE LENS

Worse Case Scenario

The KYPHOTIC Head

Worse Case Scenario

Post-op

Head holder

What can you do?

• Do your best to CENTER and Stabilize patient
• Scan an AP and LAT scout *
• Large Scan FOV
• Revert FOV Back to 25
• Use Tools available

Options

Tools available to stabilize patient: tape, sponges, wedges

Example of wedge
C-spine

Range: IAC's to T2
No Angle
Coronal/Sag Reformats

HEAD AND CSPINE SCOUT

Long

COLLIMATED

C-spine

Coronal and Sagittal Reformats

- Defining True Coronal and True Sagittal
- Reformat to the body part not the table
- Collimation of the Reformat
- Sagittal aligned with dens
- Coronal aligned with the spinal column
- Iac's seen on the same image

Alignment and Collimation

Reformatted to the Table
Reformatted to the Anatomy

C-spine

Soft Tissue Neck

Range: Frontal Sinus to Clavicles
Coronal/Sagittal Reformats
Reformat to body part

Overkill

How many slices?
Head and Neck Angio
Scan Range: Aortic Arch to Vertex
Coronal/Sagittal Reformats

Head/Neck Angio Reformats
True Sag: Align falx with Dens
True Cor: Align to angle of Neck

Facial/Orbits
Range: Frontal sinus to mid Maxillary/ Chin
Bone/Soft tissue if contrast.

Facial/Orbit Reformats
Coronal
Sagittal
Align Horizontally with Hard Palate
Align vertically with nasal septum

Reformat Option Windows GE Scanners

Soft Tissue in a Bone Setting
- IV Contrast
- Soft Tissue of interest (swelling/edema)
- Infection
- Cellulitis
Chest
Scan Range: Apices to the Adrenal Glands
Reformats: Coronal/Sagittal & MIPS

Adrenal Glands

PE Chest
Range: Lung Base to Apices
Coronal/Sag/MIPS

Pacer/Defibrillator
Limit if applicable
May not be avoidable

Breasts

Breast Attenuation
Abdomen and Pelvis
Scan Range: Diaphragm to Pubic Symphysis
Coronal Reformats

Scout Ranges
CT1
S 0-1 500
CT2
S 50-1 700

Scout Ranges
A/P Default Range
A/P Adjusted Range

Upper Extremities
Forearm: Supinate and Center
**Lower Extremities**

- Stable
- Centered
- Defined

**FOV Comparison**

- 40 FOV
- 50 FOV

**What Can You Do**

- Examine the Reason
- Define the Frame
- Collimate Appropriately
Collimate to the Frame

Did you know?
- Initial scan from tablesid?
- Scan in a Decube position
- Tables have Markers

Decube scanning

Table Marker

Gantry Buttons

What have we learned
- Isocenter
- Utilize tools available
- True Coronal and Sagittal
- Scan Ranges
- Collimation
- Initiate scan from Tableside
- FOV’s
What happened?

What do you see?

BRA = Streak artifact

What is this?
RADIATION DOSE AND CONTRAST MEDIA IN NEURO & BODY CT

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THANK YOU!