



**School of Medicine  
and Public Health**

UNIVERSITY OF WISCONSIN-MADISON

# Positioning Guidance

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# Positioning Guidance

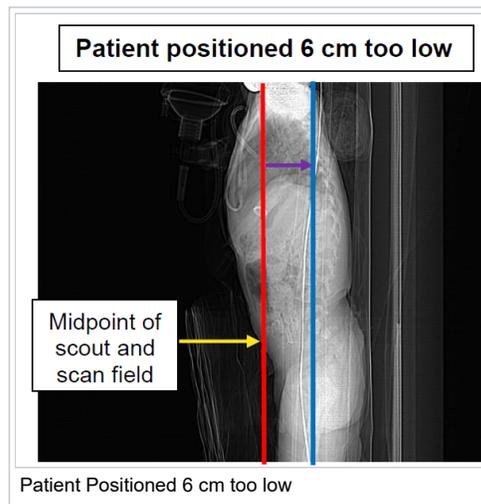
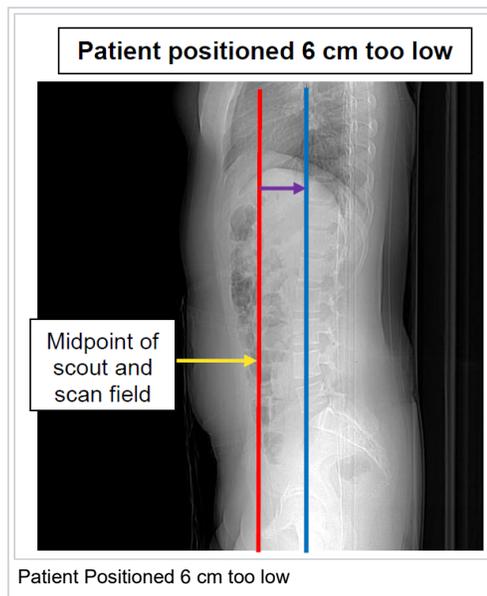
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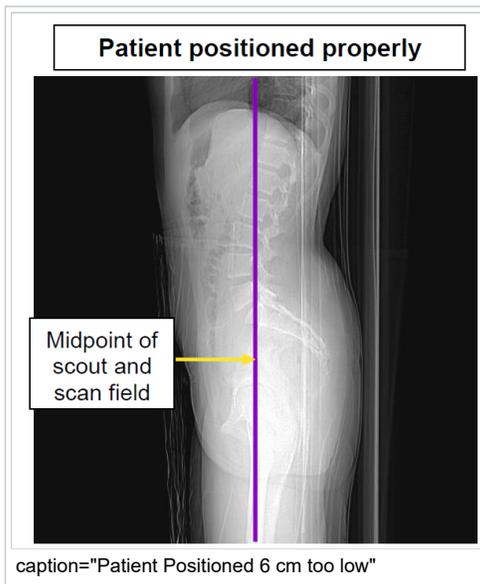
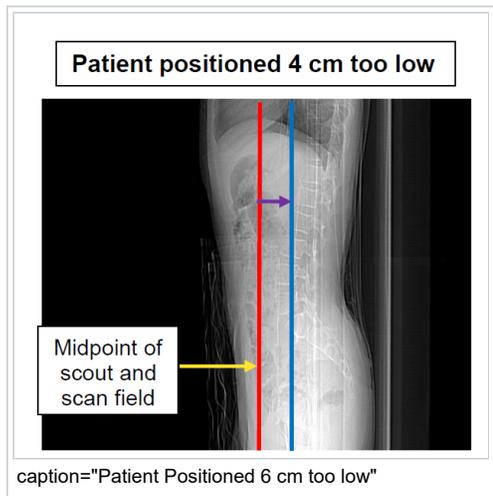
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## Body Positioning

- **Particularly important for Pediatrics and Small Adults**

To provide the best image quality at the lowest dose, proper patient positioning is always important. It is particularly important with the smaller patients scanned as small adults and in pediatric imaging using low kV techniques. Positioning errors usually occur with the patient being positioned too low. This error causes significant problems with pediatric protocols in which the patient may actually need to be positioned a bit high to outward appearances: Ideally the most attenuating part of the patient should be centered in the scan. To accomplish this, one should position the patient high enough so that the horizontal laser light is centered on the lumbar spine and is just anterior to the thoracic spine. This is demonstrated in the scout images below, where the red line is the actual midpoint of the scout image and the blue line is where the patient should have been centered on the scout. Only the scout on the upper right shows correct positioning; the midpoint of this scout is shown as a purple line. All the rest are centered too low.





## Decubitus Positioning

- **Proper positioning for the decubitus portion of the CTC screening exam**

Just as patient positioning is critical in our routine supine and prone exams, it is also critical in the decubitus portion of our virtual colonoscopy screening exam. To provide the best image quality at the lowest dose, proper patient centering in the scanner gantry is critically important. You cannot simply have the patient roll to their side, this will leave their pelvis in an off center position! You must have the patient roll and then confirm that they have shifted their pelvis back to the center of the couch. **Roll and shift!** Aim to get the patient's ilium bones centered in the scanner.

Note, it is also possible that after proper positioning, the patient may tilt to the side before the scan. Tilting to the side is a natural response to being placed in the decubitus position. Please watch for this and instruct the patient to return to the proper position.

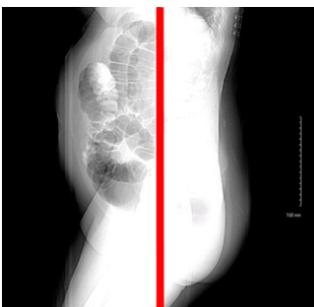
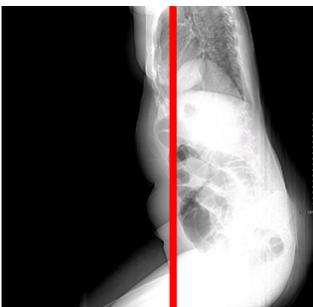
**Poor Position**

**Good Position**

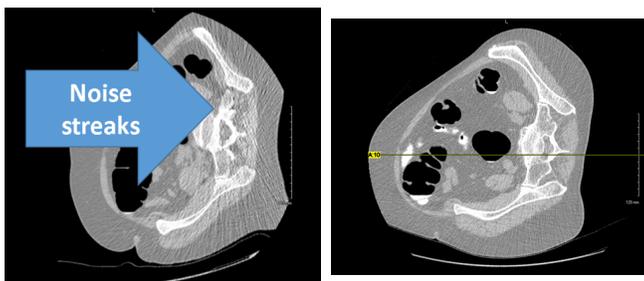


**Bad Looking Scout**

**Good Looking Scout**

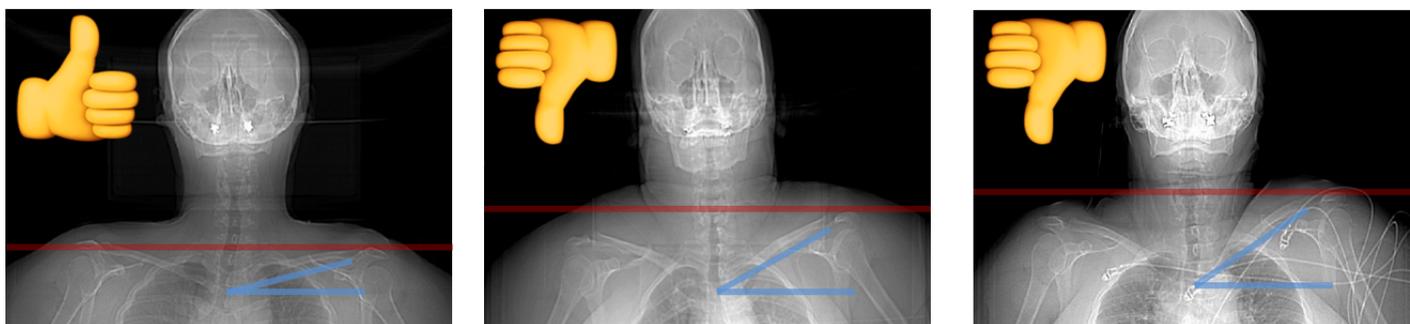


**Resulting Bad Looking Image Resulting Good Looking Image**



## Shoulder Relaxation

- Lowering the position of the shoulders is important in both allowing adequate visualization of the cervicothoracic junction and in lowering the dose required for the exam.
- Fastening the CT table strap around the torso only, as compared to around the torso and arms, decreases the level of the shoulders by one vertebral body level.
- Simply encouraging appropriate patients to “pull” their shoulders down has also been found to be effective.
- Having patients “walk” their hands down a folded bedsheet wrapped around the feet is also helpful for challenging cases.



Examples of good and bad shoulder position relative to the neck. The techniques listed above can get a patient from having a poor positioning of the shoulder to a good position. Note: try to recognize improper shoulder relaxation before you scout. If, however, you only notice this after you scout, there is no need to re-scout the patient after they move their shoulders.



Bad shoulder positioning. Patient has shrugged their shoulders up.



Bad shoulder positioning, shoulders shrugged up.



Good shoulder positioning, patient has walked their hands down their sides lowering their shoulders.



Good shoulder positioning, shoulders relaxed down.

## Patient unable to raise arms for torso (CAP Torso & Thoracic Spine) scanning

- Cannot **raise** arms, but can **move** them
  - Position the patient centered in the scanner as usual, then lay as many pillows as you can on their abdomen and place the patient's arms up on the pillows. This will move the arms away from the body, largely mitigating any streaking artifact they would have caused in the scan.



Leaving patient's arms directly at their side results in streak artifact through the torso or spines please place patient's arms on a pillow.



To avoid streak artifact through the torso please place patient's arms on a pillow.

## Patient with arms down technique Guidance

- Cannot raise or move arms (i.e. arms are broken) and **unable to employ pillow trick**:
  - Position the patient centered in the scanner as usual.
    - If you are scanning a ROUTINE Abdomen/Pelvis: Scan the patient with the HIQ Cancer Follow-Up protocol, it delivers more dose than the Routine A/P protocol.
    - If you are NOT scanning a Routine Abdomen/Pelvis, go to the next higher size protocol which should increase the kV mitigating some of the noise streaking and beam hardening caused by the arms.
    - If you are already in a Large protocol, and therefore have no room to to up a size, **use the Turbo chart**. Use this link for the [Turbo Instructions](#). This applies to all scans over the torso, Body, CV and Spine protocols.

## CT Head in Large SFOV

If the situation arises that you are forced to scan a CT Head in a larger SFOV (i.e. patient kyphotic, or otherwise unable to position within a head/ or small SFOV) please use TURBO to increase the dose so your images will not be noisy. Follow this link to the [Turbo Instructions](#)