EE145B Discussion Section 3/8/02

Today we'll be talking about CT, especially spiral CT. First, what is the difference between sequential CT and spiral CT? Well, including pictures, ____1a____.

But people still talk about and store data in "slices." Here is a general idea of how you get projections to reconstruct a given slice: ____1b____.

Also, if the object you're imaging isn't too large (i.e. doesn't attenuate too much), here is what you can assume about the attenuation at 180 degree angles, and why you need to have an object that is not too large for this assumption: ____2a____.

Now if we accept that assumption, we can use it to get a more accurate image without radiating the patient more because ____2b____.

So why do we want to use spiral CT? For one thing, it can affect the amount of time needed for a given scan, for you see, ____3a____.

While my partner answers this next question, I will help demonstrate it by holding my breath. The length of time that the scan takes is important for reducing motion artifacts because (deep breath and hold...) ____3b____.

So this spiraling can decrease scan time. But with the following arrangement, it can also take data for overlapping slices, which is good because ____4a____.

Having a multi-slice scanner can also improve resolution or reduce scan time by ____4b____.

So now that we've talked generally about how spiral CT works, we want to clarify the difference between collimation thickness and slice thickness: ____5a____.

Also, let's introduce a term to help us talk about these issues. This term is pitch. Here is the definition and what it means: ____5b____.

So with pitch, we want to have a low pitch because ____6a____.

But wait, we want to have a high pitch because ____6b____.

So now let's talk about artifacts. Let's start with beam hardening, what it is and what can be done about it: ____7a____.

And we'll go on to scattering and what can be done about it ____7b____.