JOSEPH SCHOEPF: I think we're entering, again, a very exciting era at MUSC and our Medical Imaging Department. We have taken delivery of the SOMATOM Force, which is the latest and greatest in computer tomography technology at our institution. And we were among the first institutions in the country to work with this particular scanner.

It is important to understand what role computer tomography plays. It is our premier modality to detect disease. It is our premier modality to rule out disease with unprecedented clarity. We are very excited about our capabilities in medical imaging when it comes to computer tomography in particular. But, as radiologists, we're also the stewards of radiation that is inherently involved with computer tomography.

This particular CT scanner is another quantum leap over its predecessors in many different respects. What we see implemented here is vastly enhanced x-ray tube power. We see vastly enhanced speed in image acquisition, and, even more importantly, in temporal resolution-- the shutter speed with which we can freeze cardiac motion.

The upgraded components of the CT unit make it very interesting for a variety of applications throughout the field of medicine. When we're talking about radiation dose, this instrument is clearly lowest in class when it comes to radiation exposure to our patients. And that is beneficial for everybody. It is of particular concern in patient populations that we consider vulnerable to radiation, and these are, of course, very young patients.

It is important in folks who have repeated CT examinations for cancer surveillance, for instance, which we also do at this institution. So everybody who has a particular concern of having their imaging study done with the lowest possible radiation that's currently achievable will benefit from this scanner.

For a normal population of people, the contrast material that we inject is of no consequence. It just gets excreted by the kidneys. If an individual has decreased renal function-- decreased kidney function-- there is a slight chance that the injection of this contrast material will at least temporarily be further deteriorating the kidney function.

That's what we are afraid of. It's not a big problem when it comes to computer tomography, but it is a problem that we have to deal with on a daily basis.

This scanner is also beneficial for patients on the brink of congestive heart failure, because this problem is related to decreased renal function that we just discussed. We would like to keep the dye amount-- the volume of contrast material-- that we inject into our patients to the absolute minimum.

That is to protect the kidneys, but that is also to protect the heart. Because the contrast media that we inject into patients is vasoactive, meaning it pulls fluid into the vascular system. So if you have a heart that's already compromised, it has problems keeping up with that increased fluid load.

We have a table speed that enables us, for instance, to image a trauma victim in less than two seconds. It can scan a chest in a patient who is unable to hold their breath in less than one second. It can scan a heart within a single diastole of a cardiac cycle.

We have a shutter speed now that enables us to freeze cardiac motion at 66 milliseconds, which is the best in class in what we have in current equipment. This enables us to obtain crisp and clear images of the beating heart and of the heart vessels to look for blockages and for narrowings, instead of an invasive coronary catheterization.

I'm very happy to have the scanner accessible to the physicians here at MUSC and to our referral base in Charleston, in South Carolina, and throughout the country.