Nuclear Medicine Updates (Q&A not answered during Session)

Question/Comment	Answer
@Carly: Regarding TJC shielding integrity tests, how do you handle SPECT (non-CT) Scan Rooms and Hotlabs (non-PET) where there may not be any additional lead shielding typically used in walls?	For a SPECT room, I would do a scatter type survey around the room. Use a syringe with your typical maximum patient dose (ex: 30 mCi Tc-99m) and place it on the camera bed. You can put a couple of saline bags around it to simulate patient attenuation (or you could disperse the dose in a water phantom). With a survey meter, take measurements around the room. Use the expected workload and occupancy factors to calculate expected annual exposure and show it will be below the limit. You could do something similar for the hot lab. Or you could simply evaluate the hot lab after it is setup and ensure there is a proper L-shield and source storage area and generate a letter with those findings.
I just wanted to clarify a few things for becoming a RSO. If you need a temporary RSO (35.24), you still need to submit notification (34.14) to the regulatory agency or you will set yourself up for citations.	Yes, 35.14(b) requires that you "notify the Commission no later than 30 days after" an individual is permitted to function as a temporary RSO. My understanding is that advanced approval is not required for a temporary RSO – which could be helpful if an emergency situation creates the need for a temp RSO.
@Carly can you provide the regulatory reference for the IATA training requirement?	IATA Dangerous Goods Regulation Table 1.5.A
@Carly_Hansen Do you make adjustments to lens dose based on badged persons wearing Pb equiv glasses?	This is not commonly done. As far as I know, there is not regulatory guidance for correcting lens doses like the EDE & EDE2 for DDE corrections.
Is a radiographic x-ray room a true "Radiation Area"? In Arizona, such a sign is not needed where a responsible person is controlling the initiation of the exposure.	Definition of Radiation Area from 10 CFR Part 20: Radiation area means an area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (0.05 mSv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.
Regarding reviewing Fluoroscopy dose alert cases, how do you document - do you speak with the physicians, technologists, etc.	This will depend on what your reference levels are set at. If your DRL is set at a level where you could potentially see skin injury, then the physician should be notified so they can follow up with the patient as needed. Whatever your procedure is, it should be documented in a policy that physicians and techs are familiar with so everyone is on the same page. An example workflow for a case exceeding DRL may be

	something like this: § Immediately following the procedure, the fluoro dose should be documented in the EMR (or wherever fluoro doses are logged) § Tech should notify physician at the completion of the procedure about the dose § Instructions provided to patient on skin changes to watch out for § Physics or radiation safety should be notified § Peak skin dose evaluation done by physicist o So in that example, I would use the notification made to radiation safety and the peak skin dose evaluation as documentation for TJC.
How about RSO certification from NMTCB and ABMP	For RAM, NMTCB would need to qualify under training and education. ABMP certificate in Health Physics is and accepted board certification for RSO
Do all PET/CT vendors show you the total prompts and randoms? What do you do when they aren't? Philips is often an issue	I know from experience that GE and Siemens give you this information, and instructions on where to find it are in TG-126. TG-126 also has instructions of where to find this for Philips, although I haven't done it myself. It looks to me like you have to record these values during the acquisition for Philips, which I agree could be an issue for the overnight baseline scan. I do not know about other vendors, such as Canon. I do not have experience with any other vendors' PET systems, and TG-126 only mentions GE, Siemens, and Philips.
How long it takes to perform these tests annually relative to ACR and what clinical benefits are gained from performing them that might not be captured with just ACR?	It takes me about 5-6 hours to do TG-126 testing (not including the overnight baseline scan). This is just for the actual scanning, not including data analysis. It is much longer than the ACR testing, which requires about an hour of prep time and then maybe 15-20 minutes on the scanner. I think the main clinical benefit is increased sensitivity to subtle changes in system performance. Other than mis-calibrated SUV accuracy, it would take a fairly catastrophic failure to detect an issue with the ACR phantom. Even a single bad detector probably wouldn't be visible – you would need a detector block to fail before any impact is noted on image quality. The TG-126 tests are more sensitive to bad or mis-calibrated detectors, energy drift, and slow declines in performance. They are also more useful for assessing quantitative accuracy across detector rows.
Why is there a separate uniformity test and phantom? Why not just use the ACR phantom? Why use 0.5 mCi?	The ACR phantom has only a very narrow section that can be used for uniformity testing. The uniformity phantom is uniform throughout the entire phantom length, so it can be used to assess the uniformity for all the detector rows. I do see significant variation from row to row. 0.5 mCi provides similar count rates to a clinical patient scan.

Just fyi, we use general public scatter surveys before clinical use for many TJC hospitals in Texas and it has always been accepted by inspectors.	Comment
Had a TJC inspection 2 weeks ago. The inspector wanted to see shielding designs and surveys for installations in the last 3 years. Further, the inspector wanted to see documentation of how we followed-up doses that were outside of the expected range	Comment
Lastly, if you are an RSO adding an additional use, you might want to use the tables from NRC's 313A (RSO) or equivalent. Taking a continuing ed class, etc. might not be enough. You still need RSO written attestation from RSO approved for the new use.	Comment