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Quality Management for Radiology

This is not intended to be a complete listing of quality management activities. It is a list that we have found to be important.

Section	Task	Description	Reference	OK or Needs work
State Regulations Missouri Radiation Control Program (MRCP)	Register x-ray equipment with the state at installation and every two years.	Complete the form and submit. Make sure they have your correct email address.	http://health.mo.gov/safety/radprotection/	
In MO Beginning in 2014	Radiation producing equipment must be inspected (survey) by a qualified expert. The frequency depends on the type of facility.	The state has a list of qualified experts who meet the state requirements. You will receive a notification from the state with the deadline date for your inspection. You must have the equipment inspection completed before that date. The QE will complete the state required form. If there are any malfunctions found in the equipment you will be required to take corrective action and notify the state.	Link to MRCP frequently asked questions. http://health.mo.gov/safety/radprotection/pdf/QE-FAQ.pdf Question #8 the survey frequencies for the various types of facilities	
New x-ray room	Shielding calculation	A qualified expert (physicist) will need to perform a calculation of the shielding needed in the walls of the room.		
Radiation Safety	Have your radiation producing equipment inspected before you pay for it or use it on a patient then	This inspection should include for radiography: Visual Inspection Light Field/Field Size/PBL kVp Accuracy:		

	annually by a qualified expert. You should receive the report within a few days. Review the report imediatelly and take corrective action to repair the equipment. Keep documentation of the corrective action and report to the state when appropriate.	Timer Accuracy Half-Value thickness mR/mAs Linearity Reproducibility kVp Time Exposure Phototimed Table Phototimed Chest		
		For fluoroscopy: Visual Inspection Scattered Radiation Entrance Skin Exposure Fluoroscopic Timer Collimation Spot Film: collimation Radiation reproducibility Image Quality		
	Check Aprons, gloves and shields for cracks	Fluoro or x-ray new aprons, gloves and shields before the first use. Mark each one with an identifying number. Keep an inventory of all items and check them each year. Make an entry on the same form each year. When you discard one mark it on the form along with how you disposed of it. Lead is a hazardous material, ask the supplier of the new apron to take your old one. The organization's safety officer can arrange for disposal. Don't fold aprons or shield. It causes them to crack and leave gaps in the shield.		
	Technique Charts. These include the exposure time, mA, kVp, Distance and the grid used.	Posted by the generator, accurate and current. The techniques for an exam and view are arranged by the centimeter thickness of the body part. The standard method is to choose a kVp that will penetrate the anatomy and give the desired exposure latitude. Then vary the mAs to achieve the appropriate exposure. The vendor that provides your image receptor may have a technique chart to give you a	There is a white paper on the subject on the website: issphysics.com under the "client resources" tab titled "Technique Still Matters"	

		starting point. Each piece of x-ray equipment will have a unique technique chart. See the white paper and presentation "Technique Still Matters" for guidance on the website. issphysics.com		
	Exposure Charts	You must be able to tell the patient their radiation exposure. When the physicist performs inspection a new exposure chart should be provided based on the technique chart and the output of the tube. The chart must be posted in the room and the technologist must be able to use it in order to give the information to the patient.		
	Documentation of the exam in the patient record.	The patient record should indicate the equipment (room number) used so that a radiation does can be reconstructed if required. In the case of fluoroscopy the fluoro time used must be included. This must be archived for 5 years. I f the patient is a woman of child bearing age, she must be questioned regarding possible pregnancy before the test. The response must be documented in the record.		
	Signage of the room	Each room must be posted "X-ray room", and have a warning sign for pregnant or potentially pregnant patients.		
	Patient Holding Log	If a patient must be held during an exposure or another person must be in the room to help the patient this must tracked. The record should include the date, the procedure, why, who did the holding. These should be reviewed periodically to check for: 1. Is the same person holding every a high percentage of the time? 2. Are patients, in general, being held too frequently, are there other ways to achieve the same outcome? 3. is holding patients a reason for high badge readings or overexposure? 4. Was a pregnant person exposed while holding?		

	Reject Analysis	Keep track of the images that are rejected. Use the information to reduce the number of rejected or repeated exposures. The rejected/repeated exposures should be reported as a percentage of the total exposures made. When you do the reject analysis look at the type of exams being rejected, the reason for the reject, the equipment used and the person performing the procedure,. Use this information to train staff and make them aware of frequent problems. Use of the information can reduce the number of rejects.	When you repeat an image you are doubling the patient's radiation exposure.	
	Patient overexposure	Review the exposure index on patient images. You can do this by going through a sample of images periodically or there may be software in the imaging system that will flag over exposed images for your review. When you review the images look at the type of exam , the person performing the procedure, the equipment used, and whether or not automatic exposure control used. Use this information to find the cause of the over exposures. Make equipment repairs or change technique charts. Train the staff to be aware of the exposure index and the target level.	A good technique chart and automatic exposure control calibrated properly can reduce over exposure and exposure creep.	
Radiation safety policies.		Make sure there is a policy of who should wear a personal dosimeter. (badge) . Usually anyone who is exposed to occupational radiation and is likely to receive 500 mrem/year.		
		Make sure there is a policy for the pregnant radiation workers and pregnant patients.	Ask ISS,Inc. for a suggested policy if you need one.	
Equipment Quality Control	Monitoring the performance of the equipment.	You can use a paper based system or your facility may have a software based way to keep track of equipment performance. This can be useful to identify problems with poor service when repairs are need. It can also be helpful to justify replacing the equipment when it is old or down a lot. If it is costing a lot to keep it repaired it may be better to replace it.	Ask ISS, Inc. to help with this procedure and a good form to use.	
Equipment Quality Control	Perform the quality control recommended by the equipment manufacturer.	Tube warm up procedures are important to prolong x-ray tube life. Computed Radiography (CR), phosphor plate systems, have QC programs that should be followed. Erasing the plates that have not been used for several hours is very important. Procedures to check the function of the plate reader are	Ask ISS, Inc. about CR QC.	

		necessary. Digital Radiography (DR), solid state detector systems require daily procedures to insure image quality. Be sure you know what they are and perform them at the recommended frequency.		
Patient Satisfaction	Survey patients	Do a patient satisfaction survey and analyses the results. Use it to identify problems. Correct the problems or don't do the survey. Use the surveys to complement employees. Keep a record of complaints and look at them every month. Is there a problem that reoccurs?		
Policy and Procedures	Review the manual every year and make changes	The job descriptions are important. Make sure the appropriate administrator or medical staff officer has signed off. This also drives the list of competencies for each job.		
The Joint Commission National Patient Safety Goals	Know	Use in your Quality Management program		
Equipment Management and acquisition	New equipment	Write a request for proposal to go out to vendors. In the RFP list the specifications that are important to the purpose of the equipment. Set a deadline for vendors to return the RFP. Write consequences if the vendor does not do what they said they would do in the proposal. Other points to add: • Site prep. What will I need to do and pay for before the equipment can be installed? • Is there QC hardware or software? Is the QC program included in the price? Is the applications specialist able to train the staff or will service personnel need to do it? • Delivery time • Warranty • % of uptime • Applications training • Cost of service after warranty • Response time for service • Local service people or training for in-house service	Ask ISS,Inc. to help with your RFP design or reviewing the proposals when they come back	