

Problem

In the clinical setting, PCC Radiologic Technology students are not exposed to enough surgical training. The students rotate through many sites and not all of them offer surgery. When our students graduated and entered the workforce, feedback from employees was that they were weak in surgical performance. Our goal was to take that information and create more opportunity for the students to have hands-on experience with individual instruction and assessment of skills and performance. In the past, surgery simulations were done only a couple of times in the course of a program.



Plan

We changed our schedule to surgical simulation twice a semester during Clinic Review classes in the Fall and Spring of both years of the program. That increased the exposure to surgery with individual instruction through the program by six additional sessions. One of the surgical sessions at the end of the Spring semester is a student learning assessment. This is a written assessment of skills and performance, through observation, in understanding and manipulation of equipment. The motivation for the assessment is to identify individual opportunities for learning in the upcoming senior year. The second year simulation was more personalized with each individual to answer specific questions and to additional training that would make them more prepared for entering the workforce in the near future.

Assessment Activity



The clinical staff for the Medical Imaging department are involved in the surgical simulation of both junior and senior radiology students. St. Mary Corwin hospital allows us to use the C-arm from their Radiology department. We set up the Sim Lab surgical suite with a common surgical circumstance, such as a fractured ankle repair, with our full body phantom that was acquired through a CHEO grant. (Many other exams are performed throughout the program, ranging in difficulty and anatomical structures.) This phantom allows the students to shoot x-rays that are just the same as if they were imaging a patient while a surgery was being performed, to help guide the physician through the procedure. The phantom is made of human bones and has moving joints so the simulation is very close to an actual surgical setting and situation because it can be positioned as if it were a live patient. The students are then able to simulate, both giving directions (playing physician), and manipulating the C-arm and creating images (technologist). After the creation of images, students identify correct orientation and landmarks of anatomy that they have x-rayed.

The analysis is done through observation and one of the simulations has a written assessment performed at the end of the 1st year by the Clinical Coordinator. Individual skills are assessed and needs are identified for each student. The results provide information regarding future efforts for the individual student. For example, if a student has difficulty in understanding the anatomical structures and their annotation on the C-arm image display, it would be recommended that the student pay specific attention to that in the clinic setting. Because the initial assessment pin-pointed the area of interest, we can then concentrate on the progress that has been made through further simulation assessment, reviews by technologists, etc. in the following semesters and provide more individualized performance skills and information for practice and research.



Results and Data

Past students have sent emails regarding the benefits of the simulations. They say that surgical simulations helped with confidence in finding jobs where surgeries are performed. A recent graduate suggested that the simulations taught her about how to set up the C-arm, rules about radiation protection everyone in the surgery suite, details regarding patient protection procedures in the OR, C-arm manipulation and special considerations for more difficult exams. These are skills that most clinic sites either cannot provide or simply do not have the ability to demonstrate with individual attention and allow the students to be hands-on during procedures. All students were deemed competent through both instructional assessment in clinical setting and American Registry of Radiologic Technologists requirements for national competency.

Closing the Loop & Next Steps



We will not have definitive results or supporting data of the implementation of this initiative until we have a class that has graduated with the two years of experience with the simulations. A survey will be given to the students graduating in Spring 2018 for effectiveness of the process and feedback on how they think we can make changes that are beneficial to the future student learning opportunity in the Radiologic Technology program. We will also reach out to facilities and employers regarding the increased level of skills and understanding.