

**Association of Collegiate Educators in Radiologic Technology**  
**45th Annual Conference**  
**Course Abstracts**

**1. Navigating the Curves**

This Course is design to discuss the history of transition from hospital based education to Colligate Based education for the Radiologic Sciences. Whether you are a student, newly certified or highly experienced Member of the Radiologic Sciences team you are always in a state of transition. Coping with progressing along a career path, coping with organizational change, and dealing with the daily pressures placed on our healthcare systems and educational programs.

**3. Build the Wall**

The history of the peoples of the world is filled with many different types of walls. Most recently we have been consumed by consideration of a wall between the USA and Mexico, the Trump wall. But for medical imaging there have always been walls designed for our protection. This presentation will describe the how and why of the walls.

The lecture will begin with a brief description of some of the more important historical walls followed by the early history of radiation protection in medical imaging. At the turn of the twentieth century life expectancy in the United States was 47 years. Today it is 79 years and much of that extended longevity is due to Medical Imaging.

Protection from occupational radiation exposure has been particularly successful and will therefore be covered quickly. Patient protective walls have taken many forms and each will be addressed after discussing the sources of patient radiation exposure and the suspected and known responses. Recently, several authors have begun promoting the idea that we should abandon the linear non-threshold (LNT) radiation dose-response relationship for the linear-threshold (LT) relationship. The proposal by the AAPM to abandon gonadal shielding is another example of a wall that needs discussion.

Walls have been developed to deal with the 90 million CT imaging studies performed annually in the USA. Estimates of lethality from radiation-induced cancer from such medical exposures range to 30,000 per year, twice that from automobiles. Computed Tomography is one of the four imaging modalities that require walls for patient protection. Radiography, interventional radiology, and nuclear medicine are the other three. Each has unique wall designs that will be addressed. Finally, there will be a brief discussion on where medical imaging is headed– Tomosynthesis, Functional Imaging, Molecular Imaging, Phase Contrast Imaging, Quantitative Imaging, Radiogenics and Artificial Intelligence – each of which will require a wall for patient protection.

#### **4. Gamifying the Classroom with Digital Simulation Tools**

The use of Game-based learning (GBL) theory in the classroom can be an effective tool for medical imaging programs to increase student engagement and improve students' transitions from classroom to clinic. Loma Linda University Department of Radiation Technology faculty developed an online computed tomography game-based simulation which provided control over various imaging factors. This allowed the learner to gain mastery over each factor's effect on image quality and patient dose. Using GBL, the simulation was "gamified" by establishing varying levels of skill, immediate feedback loops, animations, and a reward system (points) for completing each level. This presentation will introduce GBL from a theoretical perspective, demonstrate the practical use of GBL in the classroom environment, discuss lessons learned by the faculty, and review improved student outcomes. Participants will be introduced to the structure of a game-based learning module created by LLU faculty members and observe an interactive simulator in use.

#### **5. Scoping Out Your Practice or How to Avoid a Date with the Judge**

This presentation discusses legal terms that are part of the ARRT Content Specifications. The legal terms are defined by discussing actual court cases involving radiologic technologists. In addition a technologist's scope of practice and practice standards are discussed. The difference between these two important documents are defined. Their use in the legal community is illustrated through actual court cases. The use of these documents in writing state laws is also discussed. Liability insurance for practicing technologists is also discussed.

#### **6. The Autistic Patient in Radiology: A Personal Perspective**

This presentation will provide the audience a background into the statistics and data on the autism spectrum in the U.S. The care and treatment of the autistic child and adult requires a different approach than other patients entering radiology for examinations. The environment in the admission room, waiting room, and radiologic suite can have a major impact of the success of the examination and the comfort of the patient. Communication skills of the technologist, their approach to the patient, pace of the examination, use of immobilization, and sedation will be included in this presentation. Diana Khrystuk is a senior student in the Radiologic Science program at Boise State University. She has been one of the caregivers for her sister who has autism. Diana will describe the techniques, environment, and approaches that has made care for her sister a success when being treated for medical and dental procedures. This presentation will include perspectives from both speakers.

## **7. Ski Area Radiography**

The popularity and nature of snow sports creates a significant volume of injuries in need of diagnostic imaging. While many ski areas transport injured patients to hospitals, on-mountain clinics provide faster, less expensive, and more convenient patient care. There are common injury patterns associated with snow sports and their unique mechanisms of injury. There are common illness patterns as well, such as altitude related conditions that require imaging. Unique patient demographics are an important consideration for effective communication and care. The radiographer's role is expanded due to limitations in resources from operating in a remote setting. The healthcare team the radiographer works within is emergency oriented, and includes interactions with EMS, ski patrol, and resort operations. As ski areas have expanded their businesses to include new sports and summer activities, the injuries patterns have changed as well.

## **8. The Standards at a Glance Part 1**

The **Standards for an Accredited Educational Program in Radiography, Radiation Therapy, Magnetic Resonance and Medical Dosimetry** undergo a review and revision process every five years. The revision of the Standards is a comprehensive review process that will assist in determining the validity, reliability, and ease of interpretation of the Standards.

Part 1 of the presentation will identify significant changes in Draft 3 of the revised Standards that become effective January 2021 and the rationale for such changes. The presentation will include discussion on the need for change and/or clarification and the ease of interpretation of the objectives. The presentation will focus on the United States Department of Education (USDE) proposed accreditation requirements - Higher Education Act (HEA) - and the impact on the accreditation standards. Participants are encouraged to provide comments, seek clarification, ask questions, and make recommendations for Draft 3.

## **9. Improving the Patient Experience**

This lecture will present reasons why compassion and connection are so important. There will be a discussion regarding how the upcoming changes to reimbursements and consumerism mentality will lead to more patients selecting facilities that provide an exceptional experience. Through several examples the speaker will show a correlation between connection and experience. The Disney model will be examined as to how it can be used to change healthcare and the patient experience. There will be a discussion of techniques that will help show compassion that leads to connection.

## **10. And You Thought Physics Had to be Boring**

Though radiographers and students use these principles and equipment every day, many do not stop to think about their role in image production. This review of physics takes those attending through a review of the art and science of medical radiography. Using humorous anecdotes and strong interaction with the audience, the speaker will provide a new appreciation for a difficult topic. Emphasis is placed on reviewing this topic for the certification exam.

## **11. The Standards at a Glance Part 2**

The **Standards for an Accredited Educational Program in Radiography, Radiation Therapy, Magnetic Resonance and Medical Dosimetry** undergo a review and revision process every five years. The revision of the Standards is a comprehensive review process that will assist in determining the validity, reliability, and ease of interpretation of the Standards.

Part 2 of the presentation will provide participants with an overview of Draft 3 of the revised Standards that become effective January 2021. The presentation will focus on the United States Department of Education regulations which mandate that the **Standards** assure public transparency, accountability, and innovation. The presentation will also include discussion of types of innovative offerings, as well as the obstacles and constraints associated with such offerings. Discussion will also include the implementation process of the revised Standards document. Participants are encouraged to provide comments, seek clarification, ask questions, and make recommendations for Draft 3.

## **12. Interprofessional Competency Among Healthcare Workers**

Students acknowledged the importance of interprofessional collaboration and felt it would help them do their jobs better for the ultimate benefit of patients. In order to improve team functioning and to improve patient outcomes, it is imperative that improvements are made in the relationships between health professionals. Many collegiate institutions are not incorporating IPE into their curriculum, leaving opportunities for improvement in the education course outline. Implementing combined courses among different health care careers in a college setting could be one way of enhancing interprofessional education. Improving collaboration through interprofessional education is the way forward for preparing future generations of health professionals to work collaboratively.

### **13. I Scanned a Dinosaur! Adventures in Fossil CT Scanning**

This lecture involves demonstration and discussion of several cases using CT for evaluation and internal analysis of mineralized Cretaceous age fossil specimens. Anatomical and pathological aspects are discussed as well as techniques utilized for paleontological study and taxonomic classification. Discussion also includes ideal specimen attributes as well as scanning parameters to produce high quality images.

### **14. The Evolving Landscape of Medical Imaging and Radiation Therapy Education**

This course will assess risks that students encounter as they navigate educational programs, technological advancements in healthcare, and regulatory requirements of the medical imaging and radiation therapy fields. The presentation will review the demographic shift of students entering educational programs and the impact this shift could have on curricula and leadership roles within the profession. This course also will review the academic theory for measuring critical thinking skills in educational programs and identify methods for implementing critical thinking models. Additionally, this course will discuss artificial intelligence (AI) and the role it currently plays in medical imaging and radiation therapy. Proposed uses of AI and the potential impact of AI on education will be evaluated.

### **15. The ABC's of Hepatitis**

Hepatitis is an infectious disease spread through contact with bodily fluids. There are currently 5 forms of hepatitis and all can severely compromise liver function. There have been outbreaks of Hepatitis A across the country in 2018 and 2019. The purpose of this presentation is to highlight the routes of transmission, symptoms, prognosis, and discuss the possible causes of these outbreaks. The role of medical imaging for hepatitis will also be discussed. A comparison will be made between the 5 types. Information will also be provided to healthcare workers on best ways to prevent contracting the infection.

### **16. Compassionate Care for Patients with Addiction Disorder**

With addiction disorders continually on the rise into epidemic proportions, especially in our nation's emergency departments, teaching technologists how to safely and compassionately care for this population has become increasingly important. The lecture includes the research from the head of OHSU's Methamphetamine Research Center and the fMRI studies from OHSU's Principal Investigator on Adolescent Neurodevelopment of Addiction. The speaker has 20 years of experience working with addicted and intoxicated ER patients and will share the most effective techniques to effectively care for these patients.

## **17. Congratulations, You are an Educator! Now What?**

For many in the health sciences profession, in particular medical imaging, today's educators were clinicians first, who then transitioned into higher education. The first year in particular presents many challenges, while we are experts in our field we were not formally educated as teachers. This presentation will outline the journey of two Radiographers transition into the classroom.

## **18. Perceptions and Impact of Visible Body Art Among Radiographers**

Despite the popularity within the U.S. regarding visible tattoos and non-traditional (non-earlobe) piercings, a perceived stigma surrounds the display of body art within healthcare. Visible body art and the concept of professionalism, as well as the implications on patient perceptions of healthcare practitioners, have been studied elsewhere including medicine and nursing, but an analysis within radiography has not occurred. This study aimed to determine if there is an attitudinal difference in perceptions of visible (1) tattoos and (2) piercings in the clinical setting among radiographers without body art, those with non-visible body art, and those with visible body art. Results were compared quantitatively. The results recognize existence of bias, as well as other aspects of body art acceptability and possible body art limitations. This presentation will help program faculty, who can benefit not only from learning about this bias, but also the impact body art may have among clinical rotations.

## **19. When You Think You've Seen Everything: The Bizarre Side of Radiology**

Radiographers acquire amazing images from a wide range of patients. However, many images stand out for particular reasons. This presentation visually examines the more extreme cases where technologists were challenged to demonstrate critical thinking, strength, professionalism, and even a sense of humor. This session will take you on a journey to the bizarre side of radiology.

## **20. Putting the Applied into Radiographic Physics and Radiobiology**

This presentation discusses the social constructive theory of learning and its application in radiographic physics and radiobiology curriculum. The presenter recently added a formal lab component into the curriculum of the radiographic physics course, and outside projects in the radiobiology course. This presentation discusses what type of experiments were used for both courses and how those lessons from these experiments were linked back to what was discussed in the traditional lecture sessions. Student outcomes and experiences are discussed. Also included in the presentation are suggested activities and budgets for each activity for instructors wishing to explore this methodology of learning. The presenter will make available to participants example laboratory manuals and material lists and costs.

## **21. Mindful Pause Practice in Medical Imaging**

The education of students in healthcare programs is becoming increasingly complex. The amount of information to be learned, retained, and applied in the clinical setting continues to grow even though the length of education programs remains the same or moves to a shorter duration. In addition, studies show that student stress levels are high with issues related to finances, time management, class workload, and examinations.

## **22. A Master of Image Evaluation**

The purpose of this presentation is to provide students with a systematic method of image evaluation. Students will view radiographic images of varying quality and be prompted to perform critiques of these images based upon the anatomy demonstrated, proper positioning, and appropriate technique. After initial discussion, all criteria will be reviewed by the presenters, and this presentation will act as a board review for anatomy and positioning, as well as some physics and radiographic techniques.

## **23. Are You Sure You Want to Say It That Way?**

Accuracy in representing educational programs to the public is an accreditation and governmental requirement. The primary avenue for providing information is the program website and online student handbook / policy manual. This presentation draws on the speaker's 34 years of experience as a program director and builds on his research of over 700 radiography program websites and student handbooks. It includes suggestions for a clear and accurate mission statement that reflects the real purpose of the program. Examples are provided of website and program policy inaccuracies/misrepresentations and provides suggested clarifications to promote the program clearly and accurately.

## **24. New Advancements in Radiation Therapy Treatment**

Radiation Therapy treatment techniques for cancer have changed dramatically over the past forty years. At one time, radioactive sources were the primary means for delivering radiation in the oncology setting. Since the first linear accelerators were introduced to produce and deliver the radiation, the field of radiation therapy has been constantly evolving. Today, linear accelerators, equipped with on-board CT imaging, commonly treat with photons and electrons and also have the capability to perform radiosurgery, which was once performed on separate devices. Additionally, treatment times and lengths have become shorter, and disruption of healthy tissues has decreased. Newer technologies such as Proton therapy have improved survival outcomes for patients while simultaneously reducing harmful side effects. Exciting new technologies such as Biologically Guided Radiation Therapy and Proton Grid Therapy promise to further improve treatments. Advances also promise to reduce patient dose by using linear accelerators with MRI imaging on-board rather than CT.

## **25. ARRT Continuing Quality Requirements**

As the time approaches for more individuals to get started on the continuing qualifications requirements, or CQR for short, the interest in learning more about the requirements has increased. This presentation will provide you with the information you need to know.

## **26. As You Wish...What Educators Can Learn from the Princess Bride**

With all the talk regarding the new generation of students coming through Radiologic Science departments, it's not only imperative that educators understand the student but to evolve pedagogical methods and interactions to help facilitate a successful experience for the student as well as for the educators. Included will be helpful tips and reminders on how educators can engage the student and have successful communication channels.

## **27. Bone Density Research for Endurance Athletes**

The presentation will cover the importance of imaging to screen, monitor, and diagnose bone density in a specific population. The presentation will explain the importance of bone density research and testing for endurance athletes. It will also discuss the benefits of both DEXA and CBCT in evaluating bone density. Current research will be discussed.

## **28. Pioneering Efforts to Provide Medical Imaging on a Medical Mission**

Different global opportunities will be introduced that are available for Imaging Technologists to serve. Examples: (RAD-AID), Mercy Ships, and medical mission organizations. The presentation will focus on the medical mission served with Idaho Condor in Cusco, Peru and the speakers will share the success of providing ultrasound imaging. Patient statistics will be reviewed and all services offered on the medical mission including surgery, dental, audiology, vision, general medicine, imaging, and Days for Girls will be discussed. More emphasis will be placed on ultrasound imaging and future hopes of providing x-ray imaging. Interesting surgery and clinic cases will be shared including limb length discrepancy, pediatric spina bifida, and pediatric cases with orthopedic and plastic surgery. Overall experience highlights from the imaging volunteers (educator, sonographer, and two senior radiology students) will be reviewed.

## **29. Concept Mapping as an Active Strategy**

Concept mapping is an excellent way for imaging students to build upon previous knowledge by linking new information to learned concepts. This is particularly important within an imaging curriculum designed to build toward student competency in both theoretical knowledge and clinically applied skill. Program faculty are responsible for ensuring students build on their knowledge as they progress through the curriculum. However, a lack of specific training exists on how best to build scaffold from existing knowledge in a way that facilitates this progression.



Concept mapping is an effective scaffold on which imaging students can “hang” new knowledge. This session will provide faculty with tips, tools and tricks to incorporate concept mapping within their courses. Benefits of concept mapping and how to assess a concept map will be discussed and opportunity for attendees to design a concept mapping activity will be included.

### **30. Speak Up: Your Profession Wants to Hear You**

This presentation will focus on ways in which students/clinical faculty can become involved in their profession. It will discuss the importance of leadership, and it will highlight opportunities in which one can lead.

### **31. Schools Out, But Not Over: The Importance of Continuing Education**

Continuing education is a vital component in radiology since technologists operate in a complex discipline that is continuously evolving because of social, technological, and medical changes. Radiologic technologists who acknowledge continuing education as a lifelong exercise are well suited to remain well-informed of innovative developments. Attitude toward participation can depend on the individual and a vast number of negative and/or positive factors that influence the process. Intrinsic importance and motivation is a critical component concerning whether or not a technologist actively participates in educational activities. This presentation will explore these factors and discuss how continuing education activities are related to enhanced career development, improved morale, and compliance. An emphasis will be placed on how an informed and educated workforce is prepared to consistently deliver the gold standard of patient care.

### **32. Keys to Success in Curriculum Development**

This presentation will cover the systematic design of instruction, as laid out in Dick and Carey’s “The systematic design of instruction”, relating it to medical imaging education. The construction and building of course goals will be discussed as well as building an instructional analysis, and explain the development of unit goals, derived from the instructional analysis. A breakdown of building criterion referenced test items and assessment tasks, as well as the construction of quality rubrics will be presented. The importance of having an instructional strategy, and show a model of an acceptable instructional strategy and building effective performance objectives, using Bloom’s Taxonomy will be covered. There will be a discussion of the importance of unit, course and program assessment and revision, if needed. At the end of the presentation, the audience will be able to describe the development of a course and unit of instruction.

### **33. The Radiation Safety Dance**

Diagnostic imaging professionals have an ongoing responsibility to ensure radiation safety during all diagnostic imaging procedures. Radiation protection, radiation safety, is used by radiologic technologists to safeguard patients, personnel and the general public from unnecessary exposure to radiation. This interactive session will review all of the material from the content specifications outline for the safety section of the ARRT exam. Topics include radiation physics, radiobiology and radiation protection. Topics also include biological aspects of radiation, minimizing patient exposure, personnel protection, and radiation exposure and monitoring. Additionally, there will be review questions built into the presentation, in the form of an interactive Kahoot session.