



Master of Science in Radiologic Sciences

Radiologist Assistant Program Handbook



Midwestern State University
Robert D. & Carol Gunn College of Health Sciences and Human Services
The Shimadzu School of Radiologic Sciences

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INTRODUCTION

Midwestern State University was the first educational institution in the United States to offer a discipline-specific graduate degree. Today, the MSRS program remains at the forefront of imaging and radiologic sciences education and offers three areas of concentration:

- Administration
- Education
- Radiologist Assistant (RA)

The specialized program of study is a hybrid format and allows working professionals to complete the degree in two years with minimal on-campus requirements. Although much of the course work is completed online, there are six required on-campus visits for administration and education majors and 10 required on-campus visits for RA majors. RA majors are also required to complete extensive clinical requirements.

Imaging and radiologic sciences professionals from across the United States and around the world are enrolled in the MSRS program at Midwestern State University and benefit from the diverse experiences of their colleagues. In addition, the MSRS faculty members have many combined years of experience in the field and are actively involved in the profession.

The MSRS program includes graduate level radiologic science core courses, track courses, and elective courses. RA majors also have clinical preceptorships. All students must successfully complete the core courses. Track courses offer advanced educational experiences in administrative, educational, or advanced clinical procedure areas.

Students need reliable access to computer technology including Internet and email services as well as standard word processing programs. Students can refer to MSU's [Distance Education guidelines](#) for generic technology advice or contact MSU Faculty for technology recommendations specific to a particular course.

PROGRAM MISSION STATEMENT

The Master of Science in Radiologic Science (MSRS) program strives to be the premier provider of graduate radiologic science on a state, national, and international level by offering opportunities for development in education, research, leadership, and clinical practice. The program prepares leaders in radiologic administration, radiologic education, and advanced radiologic clinical by:

- Offering opportunities to work with graduate faculty in producing scholarly works, either through applied or original research projects.
- Providing coursework where students can pursue scholarly writing, projects, presentations, and clinical experiences uniquely tailored to their interests (student-centered learning); and
- Emboldening students to pursue other educational opportunities such as doctoral work, leadership development, and advanced clinical practice.

PROGRAM DESCRIPTION

The program features a discipline-specific holistic approach to graduate education and is offered in a hybrid distance learning format which requires students to make visits to the campus each semester. The unique curriculum design permits working professionals to complete the degree with minimal on-campus requirements while preserving the

benefits of face-to-face contact with fellow graduate students. Students benefit from the diverse experiences of their colleagues. All Radiologic Science disciplines and modalities are represented in the student population including radiography, radiation therapy, nuclear medicine, magnetic resonance imaging, and sonography. Most of the course requirements are completed independently and coordinated electronically. A limited number of master's-level courses are available online.

The RA major has a core requirement of 12 graduate hours in radiologic sciences plus 43 required hours for the thesis track or 40 required hours for the non-thesis track.

The department offers an alternative route to the MSRS degree RA major for technologists who have completed an American Registry of Radiologic Technologists (ARRT) recognized RA program, have a baccalaureate degree, and have passed the national certification examination for Registered Radiologist Assistants (R.R.A.) administered by the ARRT. The alternative route offers both a thesis and non-thesis option.

During clinical experiences, RA students are always under the supervision of radiologist preceptors who determine the capacity of the students to perform any specific functions. Under radiologist supervision, the RA students will perform patient assessment, patient management, and selected clinical imaging procedures. Radiologist preceptors are responsible for the safe practice of the RA students. The radiologist may delegate training and supervision to other radiologists, physicians, or qualified and licensed members of the healthcare team, but will always retain primary supervision.

Radiologist preceptors are responsible for the RA students' clinical experiences. They will teach students patient management skills, procedures, and image observations to meet the requirements of the RA program. The required clinical competencies are based in general diagnostic radiography. They may also teach students additional skills as needed. They will work directly with students on average of 24 clinical hours each week as part of the clinical education course. This clinical time may be divided between patient management, procedures, and image observation. Preceptors will verify students are actively participating in all required clinical hours and will evaluate their clinical performance.

Radiologist Assistant (RA)

An RA enhances patient care by extending the capacity of the radiologist in the diagnostic imaging environment. The RA performs patient assessment, patient management, fluoroscopy, and other radiology procedures. This new healthcare professional also makes initial observations of diagnostic images with official interpretations and final written reports being provided by supervising radiologists (as defined by the *American College of Radiology (ACR) Standard for Communication: Diagnostic Radiology*).

ADMISSION STANDARDS and REQUIREMENTS

An application for admission to the [Midwestern State University Graduate Program](#)

In addition to completing MSU admission application materials, applicants must complete a separate online application for admission to [MSRS Program](#).

Applicants to the RA major must complete additional admission requirements including an interview. Applicants to the RA major must have current ARRT certification in radiography and must have a minimum of two years clinical experience.

Program Admission

1. Students must meet the general admission requirements to graduate study prescribed by the [Midwestern State University Graduate Catalog](#).
2. An accredited bachelor's degree from a university recognized by the Midwestern State University. Applicants who graduated from a university outside the United States may have to provide a degree equivalency evaluation.
3. Have a minimum cumulative GPA of 3.0 or greater on all college-level work and be in good academic standing. Students with a cumulative GPA below 3.0 may be required to take the Graduate Record Exam (GRE) and may be admitted under conditional status.
4. Submit a curriculum vitae (CV).
5. Submission of an essay.
6. Applicants are required to demonstrate proficiency in English when applying to Midwestern State University. Written and spoken proficiency in the English language may be demonstrated by one of the following options:
 - a. Option 1 - English is your first language.
 - b. Option 2 - Graduated from a regionally accredited four-year college/university in the United States with a bachelor's or graduate degree.
 - c. Option 3 - Acceptable scores on the Test of English as a Foreign Language (TOEFL).

A. Previous Master's Degree

Applicants who have earned a master's or higher degree from a regionally accredited institution of higher education may be accepted on the basis of such degree. Determination of conditions, if any, will be made by the Graduate Coordinator.

B. Specific additional requirements for RA majors

Enrollment in the RA courses is limited and competitive. Students must be approved by the faculty for entry into the RA professional courses following an interview. Applicants are rank ordered according to a formula based on, but not limited to, several criteria such as grade point average, endorsement of a radiologist preceptor, clinical environment, essay, interview, and previous experiences in medical imaging environments.

1. Students must submit the following with the MSRS application:
 - a. Students must provide documentation of Professional Certification. The RA curriculum is based on general diagnostic radiography clinical practice. Applicants must have a working knowledge of general diagnostic radiography procedures. Evidence = Copy of current ARRT card showing certification in radiography.
 - b. Students must provide documentation of the Formal Written Agreement with the Radiologist Preceptor/Group. Although one radiologist will be identified as the preceptor, it is better for students to develop an arrangement with a group of radiologists rather than with an individual radiologist. The Preceptor Agreement must be approved and accepted by the MSU faculty.
 - c. Students must submit the email addresses of at least one radiologist and one current work supervisor for references.

2. Before entry into **clinical rotations**, students must submit the following:
 - a. Students must provide documentation of two (2) years of clinical experience within the previous ten (10) years. Evidence = Letters from appropriate employers/human resource departments.
 - b. Students must provide documentation of current American Heart Association (AHA) Basic Life Support (BLS) AND Advanced Cardiac Life Support (ACLS) Provider status. Evidence = Copy of current BLS and ACLS card.
 - c. Students must follow Texas Mandated Immunizations.
 - d. Students must provide documentation of the Clinical Affiliation Agreement. The students, their preceptors, and the Clinical Facility need to be aware of the variety and quantity of procedures required. The Clinical Affiliation Agreement must be approved and accepted by the MSU faculty.
 - e. Students must pass a 10-panel drug test and background screening.
 - f. Students may have other requirements listed in the clinical affiliation agreement.

The MSU RA Program reserves the right to adjust its degree requirements to ensure safe professional practice and to satisfy the ARRT eligibility requirements for certification.

ANTI-DISCRIMINATION STATEMENT

The MSRS Program, as a part of MSU, is an equal opportunity/affirmative action entity that complies with all federal and Texas laws, regulations, and executive orders regarding affirmative action requirements in all programs and policies. The MSRS program does not discriminate against any individual because of age, race, creed, color, sex, sexual orientation, gender identity, national origin, or handicap.

SPECIAL NEEDS

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the [Disability Support Services](#) in Room 168 of the Clark Student Center, (940) 397-4140.

POSITION DESCRIPTIONS AND RESPONSIBILITIES

RA STUDENT

Qualifications

- Admission to MSU
- Application to the MSRS Program
- Current ARRT certification in RADIOGRAPHY -RT(R)
- Bachelor's degree from an MSU recognized institution.
- Students must be recommended for the program following an interview.
- Students must provide documentation of two (2) years of clinical experience within the previous ten (10) years.
- Current American Heart Association Basic Life Support (BLS) Provider status.
- Current American Heart Association or American Red Cross Advanced Cardiac Life Support (ACLS) Provider status.
- Compliant with Texas Mandated Immunization requirements.
- Clear criminal background check and 10-panel drug tests before entry into the clinical environment.
- Students must provide documentation of the Formal Written Agreement with the Radiologist Preceptor/Group.
- Students must provide documentation of the Formal Written Agreement with the Clinical Facility.

Responsibilities

The clinical environment for an RA student will present special challenges. Even though they are certified radiologic technologists, RA students are not expected to function as radiologic technologists during their clinical hours. RA clinical hours are dedicated to learning from the radiologist preceptors and mastering the skills necessary to function as an RA.

There is no standard MSU RA uniform. RA students should dress professionally and practically in accordance with their clinical environments. Any questions regarding appropriate clinical dress should be directed to the clinical instructor, RA radiologist preceptor and the MSU RA Clinical Coordinator.

There is a commonly accepted progression in medically related education. The first step is academic preparation. The assignments in the RA procedures courses and the on-campus seminar classes are designed to provide this component. RA students will have a minimum of 24 contact clinical hours each week to achieve the remaining steps. The next step is observation. The RA student should carefully observe the activities of the radiologist preceptor, especially those directly related to the RA Clinical Competencies as well as the more subtle aspects of direct patient care. The third step is assisting the radiologist preceptor, working side by side for the patient's safety. The fourth step is competency evaluation and documentation. At this point, the radiologist preceptor documents that the RA student can perform the specific clinical task competently. The final step is performance maintenance. RA students are expected to show continued clinical competence by their willingness and ability to repeat previously documented clinical procedures.

RA students will work with the RA clinical instructors to coordinate orientation, on-boarding, rotations, and continue ongoing communication. RA clinical instructors **are not** substitutes for the radiologist and a radiologist must be on-site during clinical rotations. The RA clinical instructors can evaluate performance of the procedures and communicate progression of the student to the radiologist and RA Clinical Coordinator, but the radiologist preceptor will verify clinical competency.

RA students are responsible for maintaining all clinical course records including the clinical portfolio. They must communicate regularly with the RA clinical instructor, radiologist preceptor, and the MSU RA Clinical Coordinator about their clinical experiences.

RA CLINICAL INSTRUCTOR (MAY NOT BE AT ALL CLINICAL SITES)

Qualifications

- Registered by the ARRT as a Registered Radiologist Assistant (RRA) or the Certification Board for Radiology Practitioner Assistants (CBRPA) as a Radiology Practitioner Assistant (RPA) in good standing.
- At least two years of experience as a RA.
- Must be recommended by a student, Clinical Coordinator, or radiologist.
- Proficient in supervision, instruction, and evaluation.

Responsibilities

Professional Guidance

Students learn by example as well as by practice. The ability to perform examinations with technical competence is only a part of the overall picture of an RA. The student must also be proficient in:

- Relationships with other students, staff, and physicians.
- Quality performance under stressful conditions.
- Demonstrating a desire to improve the profession.
- Presenting a positive attitude toward patients and patient care.

For the student to achieve competence in these areas, the clinical instructor must be an example and strive for improvement through communication with students, technologists, the clinical environment, and the RA Clinical Coordinator.

Supervision

During clinical experiences, RA students are always under the **direct** supervision of Radiologist Preceptors who determine the capacity of the students to perform any specific functions. Direct supervision is defined as the radiologist present in the radiology facility and immediately available to furnish assistance and direction throughout the performance of the procedure, but not required to be present in the room when the procedure is performed. Under direct radiologist supervision, the RA students will perform patient assessment, patient management, and clinical imaging procedures. Best practice for all exams requiring consent includes the radiologist meeting the patient.

Clinical Instructors **cannot** take the place of radiologists and there always must be a radiologist on site during the clinical rotation. Clinical Instructors or other providers may assist in the evaluation of the student's competency and may sign the bottom of the clinical competency form, but it must be countersigned by the radiologist.

Rotation Schedules

The student will set rotation schedules with the Clinical Instructor and radiologist. Clinical hours need to be scheduled to provide as much opportunity as possible for unique and varied examinations. Students are to be scheduled on average 24 hours per week when the radiologists are at the clinical site. Care must be taken to ensure equality among student schedules.

Specific Duties

- Acting as a role model for students and a liaison between the school, radiologists, and clinical sites.
- Providing assigned students with professional guidance, clinical instruction, and supervision in performing radiologic procedures under the supervision of the radiologist preceptor.
- Coordinating rotation schedules, which will ensure that each student has an assortment of experiences to develop the skills necessary to function as a radiologist assistant.
- Communicating students' clinical competence and their progress toward the established program objectives to radiologists or clinical coordinator to aid in evaluation.
- Assuring that adequate assistance and proper radiologist supervision is provided to all assigned students.
- Conducting an orientation session or facilitating the hospital onboarding for new students to include hospital policies.
- Ensuring safe radiation protection practices in accordance with ALARA.
- Participating in program assessment and RA Advisory Committee meeting (as needed).

RADIOLOGIST PRECEPTOR

Qualifications

- Current Medical Degree or Doctor of Osteopathic Medicine Degree (Criterion 3.6.1)
- Licensed by the State Medical Board
- Current diplomat of the American Board of Radiology or the American Osteopathic Board of Radiology
- Proficient in supervision, instruction, and evaluation.

Responsibilities

During clinical experiences, RA students are always under the **direct** supervision of Radiologist Preceptors who determine the capacity of the students to perform any specific functions. Direct supervision is defined as the radiologist present in the radiology facility and immediately available to furnish assistance and direction throughout the performance of the procedure, but not required to be present in the room when the procedure is performed.¹ Under direct radiologist supervision, the RA students will perform patient assessment, patient management, and clinical imaging procedures. The radiologist may delegate training and supervision to other radiologists, physicians, or qualified and licensed members of the healthcare team, but will always retain primary supervision.

Inclusion of clinical activities and educational requirements in the RA program does not indicate that all activities may be legally performed in all states nor that the activities, if performed, are eligible for reimbursement under current Centers for Medicare and Medicaid Services (CMS) regulations. Individual state and/or institutional regulations and policies may place additional limitations on the activities and responsibilities authorized for an RA student in each clinical setting.

Radiologist preceptors will verify clinical competence using the Clinical Competency Evaluations and evaluate the student's professional development twice each semester. Radiologist preceptors will also verify final summative clinical documentation at the end of the program.

The clinical activities required by MSU will be updated as needed to comply with or exceed the ARRT certification standards.

¹This definition of *direct supervision* is based upon that of the CMS.

Specific Duties

- Providing input to the RA Program Advisory Committee to ensure program quality (Criterion 3.3)
- Signing a formal written agreement with the MSU RA Program. The agreement must include an authorizing signature from the group practice (Criterion 3.5.4)
- Committing the time and effort to assure the students receive the appropriate depth and scope of clinical education consistent with the ARRT's requirements (Criterion 3.6.2)
- Performing clinical competence assessments (Criterion 3.6.3)
- Completing the documentation of clinical experience and competence required by the ARRT and the MSU RA Program (Criterion 3.6.4)
- Working with the MSU RA Program officials, including the Medical Advisor, to ensure that the medical components of the clinical preceptorship meet acceptable standards (Criterion 3.6.5)
- Verifying that clinical activities emphasize the education of the student rather than focus on the productivity of the department (Criterion 3.8.1)
- Committing the minimum number of clinical contact hours with the students required by the program to meet the ARRT and MSU RA Program clinical education requirements (Criterion 3.8.2)
- Committing to the duration of the clinical preceptorship to meet the ARRT and MSU RA Program clinical education requirements (Criterion 3.8.3)

RA CLINICAL COORDINATOR

Qualifications

- Master's Degree in a related field (preferred M.S. degree in Radiologic Sciences)
- Holds ARRT R.R.A. certification OR documents two years' experience as an academic faculty/instructor.
- Possess proficiency in curriculum development, supervision, instruction, evaluation, and counseling.

Responsibilities

Clinical experiences are a component of clinical courses. The MSU RA Clinical Coordinator will coordinate any activities related to clinical rotations. This includes managing all clinical forms and the clinical portfolio. The MSU RA Clinical Coordinator will work with other RA Program Faculty to integrate clinical and didactic information each semester. (Criterion 3.8.4)

Specific Duties

- Administers, reviews, develops the RA Program curriculum, and ensures effectiveness. (Criterion 3.8.5).
- Represents the MSU RA Program in campus affairs, meetings, and national level professional meetings.
- Coordinates with the RA Program Director and the Medical Advisor to ensure that medical components of the clinical preceptorships meet acceptable standards.
- Enforces the policies and procedures in the MSRS Program and the RA Program Handbook.
- Conducts on-going RA Program assessment (Criterion 3.8.5).
- Maintains current knowledge of program policies, procedures, and student progress.

- Maintains current knowledge of the professional discipline and educational methodologies through continuing professional development.
- Assumes a role in the continued development of the RA Program.
- Serves on the RA Program Advisory Committee.
- Coordinates any activities related to clinical rotations, including managing all clinical records.
- Maintains the official list of completed clinical competences for each RA student based on the clinical competency evaluations submitted in the clinical portfolios.

RA PROGRAM MEDICAL ADVISOR

Qualifications

- Diplomate of the American Board of Radiology (ABR), or equivalent in the appropriate discipline. (Criterion 3.3.2)
- Possess a current unrestricted license to practice medicine. (Criterion 3.3.2)
- Is proficient in supervision, instruction, and evaluation.

Responsibilities

A medical advisor uses their experience and training to advise the RA Program on the development and improvement of the program. The duties of a medical advisor may also involve teaching, consulting, evaluating, and advising students.

Specific Duties

- May serve as an adjunct faculty member in the RA Program.
- Collaborates with the Radiologist Preceptors, the RA Clinical Coordinator, and the RA Program Director to ensure that medical components of the clinical preceptorship meet acceptable standards. (Criterion 3.3.1, Criterion 3.3.4, Criterion 3.8.5)
- Maintains current knowledge of program policies, procedures, and student progress (Criterion 3.3.4)
- Serves on the RA Program Advisory Committee (Criterion 3.3.3).

RA PROGRAM DIRECTOR

Qualifications

- Minimum of a Master's Degree in a related field (doctorate preferred).
- Holds ARRT R.R.A. certification OR documents two years' experience as an instructor in a JRCERT accredited program. (Criterion 3.2.1)
- Documents the equivalent of three years full-time experience in the professional discipline.
- Holds American Registry of Radiologic Technologists certification in Radiography. (Criterion 3.2.1)
- Possess proficiency in education administration, curriculum development, supervision, instruction, evaluation, and counseling. (Criterion 3.2.1)

Responsibilities

The RA Program Director is responsible for the overall administration of the program. This responsibility includes a periodic review of the curriculum and its development. The Program Director shall see that the objectives of the

curriculum are met, and evaluations of the program's effectiveness are routinely assessed. The Program Director shall work cooperatively with the RA Clinical Coordinator to insure logical sequencing of the curriculum objectives through the didactic, laboratory, and clinical components of the program.

Specific Duties

- Organizes, administers, reviews, develops, and assures RA Program curriculum. (Criterion 3.2.2)
- Advises current and prospective RA students. (Criterion 3.2.2)
- Represents the MSU RA Program in campus affairs, meetings, and national level professional meetings.
- Coordinates with the RA Clinical Coordinator and the Medical Advisor to assure that medical components of the clinical preceptorships meet acceptable standards. (Criterion 3.2.3)
- Enforces the policies and procedures in the MSRS Program and the RA Program Handbook.
- Conducts on-going RA Program assessment (Criterion 3.2.2 and Criterion 3.8.5).
- Participates in budget planning.
- Maintains current knowledge of program policies, procedures, and student progress.
- Maintains current knowledge of the professional discipline and educational methodologies through continuing professional development.
- Assumes a leadership role in the continued development of the RA Program.
- Serves on the RA Program Advisory Committee. (Criterion 3.2.3)

RADIOLOGIST PRECEPTOR INFORMATION

At any time and at the discretion of the radiologist, the radiologist preceptor (or designee) can permit or restrict an RA student from performing a procedure based on patient condition, procedure difficulty, technical skill of the RA student, or other rationale. To ensure patient safety, the radiologist (or designee) can interrupt any procedure being performed by the RA student or assist the RA student in the performance of the procedure.

RA students MUST always have a radiologist preceptor willing to conduct their clinical education. If an RA student loses his/her radiologist preceptor, the student must notify the MSU RA Clinical Coordinator immediately. Clinical education is suspended until a suitable radiologist preceptor is established for the student.

If the loss of a radiologist preceptor is based on unacceptable, intolerable, or illegal actions by a student which violate the clinical policies outlined in this Program Handbook or which violate any local, state, or federal laws, the student will be removed from the clinical site and released from the MSU RA Program. Under these circumstances, a student will not be allowed to reenter the RA Program at any time in the future.

CLINICAL ATTENDANCE

Students must document clinical contact hours working with their radiologist preceptors during clinical courses. More specific requirements about clinical attendance will be provided in the clinical course syllabi. RA Major clinical competencies meet or exceed the required clinical competencies set by the ARRT.

At least five semesters in the RA Major include clinical preceptorships with at least 24 contact hours per week including at least four hours a week of direct image review with the radiologist preceptor. The Program currently requires about 1440 total clinical contact hours.

First Summer Semester = 216 clinical contact hours

First Fall Semester = 336

First Spring Semester = 336

Second Summer Semester = 216

Second Fall Semester = 336

Because all RA students are experienced healthcare professionals, in cases of severe weather conditions, they should use their judgment about attending clinical. RA students and radiologist preceptors should have an established system of communication for such situations. The students should inform the MSU RA Clinical Coordinator as soon as possible of any missed clinical time.

REQUIRED VS. ELECTIVE CLINICAL COMPETENCIES

Students are encouraged to participate fully in all procedures during clinical experiences. Radiologist preceptors must verify clinical competence for each required clinical competency identified by the Program. Additionally, the radiologist preceptors must verify clinical competence for elective procedures. Elective clinical competencies will vary from student to student depending on the setting and clinical focus.

By the completion of the Program, students must demonstrate competence in all mandatory and selected elective procedure competencies.

COMPETENCY/PROFICIENCY

Students will operate under the supervision of the radiologist preceptors until the radiologists determine **competency** is achieved. Clinical competence means the radiologist preceptors are satisfied that the students can perform the procedures or functions independently. Students must document their clinical competency with the Clinical Competency Evaluation Form. The radiologist may delegate training, supervision, and evaluation to other radiologists, physicians, or qualified and licensed members of the healthcare team, but will always retain primary supervision and will co-sign the competency form.

Students must document their clinical **proficiency** through continued and repeated competence with procedures. This will be documented in the clinical portfolio.

CLINICAL DOCUMENTATION- RADIOLOGIST PRECEPTOR

The following are clinical documentation completed by the radiologist preceptor.

FORM CR-1 - ARRT Summary of Clinical Experience and Competence Assessments

FORM CR-2 (A-E)- ARRT Clinical Competence Assessments

ARRT Summative Evaluation Rating Scales

Clinical Experience Evaluations

ARRT CR-1 Form

This form is completed by the student as he/she (a) completes the requisite number of cases for the mandatory and elective procedures and (b) is evaluated by a radiologist on the mandatory and elective procedures.

The student records the number of cases completed for each mandatory and elective procedure he/she performs. The student records only the date the competency assessment was completed. ***The preceptor and program director must verify and sign the bottom of Form CR-1***

Clinical Procedure Competency Evaluations – FORM CR-2 (A-E)

When an RA student feels competent to perform a procedure, he/she will request that the radiologist preceptor complete an ARRT Clinical Competency Evaluation (FORM CR2).

After teaching the student and determining the student can safely attempt the clinical procedure, the radiologist preceptor (or designee) will observe and evaluate the student as he/she attempts the clinical competency and score the student on the appropriate ARRT CR2 Form.

The MSU RA Clinical Coordinator has the final word in the acceptance or denial of clinical competencies. Competency evaluations must be submitted to the RA Clinical Coordinator by the student and will contribute to the portfolio grade. Clinical Instructors, or other providers, may assist in the evaluation of the student's competency and may sign the bottom of the clinical competency form, but the form must be countersigned by the radiologist.

ARRT Summative Evaluation Rating Scales

The purpose of this form is to obtain from the radiologist preceptor a final overall evaluation of the student's clinical skills as demonstrated during his or her preceptorship. The form should be completed by the radiologist preceptor during the final stages of the preceptorship and included in the student's final clinical portfolio. To be eligible for certification, the student must receive a rating of three or higher in each skill area.

Clinical Experience Evaluation

The radiologist preceptor evaluates students at the midpoint and end of each semester. These evaluations are sent via an email link to the radiologist directly from the course instructor. They constitute a portion of the student's clinical course grade. Areas of evaluation include- communication skills, professional and ethical behavior, technical ability and procedural skills, critical thinking skills, acceptance of criticism and willingness to learn, patient/management skills, patient safety/radiation protection practice, patient assessment and documentation, image observation skills, and overall achievement level. The radiologist preceptor may solicit comments from other radiology personnel concerning the students' overall performance to formulate his/her evaluation.

RA students must maintain all requested program summaries including FORM CR-1 and ARRT Summative Evaluation Rating Scales

CLINICAL DOCUMENTATION- STUDENT

The following are clinical documentation completed by the student.

Patient Log Sheets

FORM CR-2 (A-E)- ARRT Clinical Competence Assessments

MSU Clinical Competency Worksheets

Clinical Portfolio

FORM CR-1- ARRT Summary of Clinical Experience and Competence Assessments

Patient Log Sheets

A student must maintain a daily log of all examinations (assisted and performed) in the Trajecsys student reporting system. The supervising radiologist, the procedure performed, date, location, and 5 digits of the patient's identification or exam number must be documented in the log sheet.

Clinical Procedure Competency Evaluations – FORM CR-2 (A-E), and ***MSU Clinical Competency Worksheet***

When an RA student feels competent to perform a procedure, he/she will request that the radiologist preceptor complete an ARRT Clinical Competency Evaluation (FORM CR2- (A-E)) and an MSU Clinical Competency Worksheet.

After teaching the student and determining that the student can safely attempt the clinical procedure, the radiologist preceptor (or designee) will observe and evaluate the student as he/she attempts the clinical competency. The radiologist preceptor (or designee) will interrupt the procedure being evaluated if a patient's welfare is compromised and/or questionable.

The MSU RA Clinical Coordinator has the final word in the acceptance or denial of clinical competencies. Competency evaluations must be submitted to the instructor and will contribute to the portfolio grade.

ARRT CR-1 Form

This form is completed by the student as he or she: (a) completes the requisite number of cases for the mandatory and elective procedures, and (b) is evaluated by the radiologist on the mandatory and elective procedures.

The student records the number of cases completed for each mandatory and elective procedure he/she performs. The student records the date that the competency assessment was completed. Note that the actual competence assessments are completed by a radiologist using ARRT FORM CR-2 (A-E).

The radiologist preceptor and the MSU RA Program Director must verify and sign the bottom of FORM CR-1. This form is submitted to the ARRT at the time of application.

Clinical Portfolio

RA students submit clinical paperwork **AND** maintain the ARRT portfolio throughout the program.

Specific guidelines for submitting clinical paperwork will be provided in the clinical course syllabi. This will include but is not limited to, documentation such as Clinical Goals, Patient Log Sheets, Clinical Competency Evaluations, Clinical Experience Evaluation, Case Studies, etc. The clinical paperwork will be submitted to the course instructor for grading at the end of each semester. The ARRT portfolio must be available and current upon request by the MSU RA Clinical Coordinator.

RA students must maintain all requested program summaries including FORM CR-1 and ARRT Summative Evaluation Rating Scales

RA PROGRAM POLICIES

(In Alphabetical Order)

ACADEMIC STANDARDS

Demonstrates mastery in various disciplines, before matriculation and after; as judged by faculty members, examinations, and other measurements of performance. Once a student matriculates at the MSU RA Program, levels of mastery are required in six broad areas of competency.

These six areas of competency are:

- Medical Knowledge
- Interpersonal and Communication Skills
- Patient Care
- Professionalism
- Practice-based Learning and Improvement
- Systems-based Practice

Academic Standards are addressed in detail in the MSU MSRS Program Handbook. Students with specific questions about academic performance requirements in a course should reference the course syllabus or contact the course instructors. Any student who has specific questions about performance requirements in a course should speak with the individual course instructor.

ADVANCED CARDIAC LIFE SUPPORT (ACLS) AND BASIC LIFE SUPPORT (BLS)

ACLS issued by the American Heart Association, Red Cross, or American Health and Safety Institute must be completed before the student enters the clinical portion of the Program and must be current during all clinical experiences. BLS must be issued through the American Heart Association. A current copy of the student's ACLS and BLS cards must be kept in the student file. It is the student's responsibility to keep these certifications current. The cards issued must cover the entire program enrollment (minimum five semesters). If a student's ACLS or BLS certification expires during the time he/she is in clinical, the student must be re-certified in ACLS and/or BLS.

AFFILIATION AGREEMENTS

Many departments, schools, and colleges require students to have clinical or field training as a part of the curriculum necessary to graduate. Such training experience is usually attained with the cooperation of an outside agency which agrees to participate in a cooperative effort with the school or college. An affiliation agreement is a written contract detailing the legal obligations of both the school and the clinical site to facilitate experiential learning for students. There must be a formal written agreement(s) between the educational program and practice/clinical facility (or facilities) with which the Preceptor is associated. The RA Program Director or Clinical Coordinator will work with the facility to establish an affiliation agreement. An affiliation agreement, insurance, and other requirements must be executed before the student can begin clinical rotations. (Criterion 3.5)

ATTENDANCE

Clinical Attendance

RA clinical sites cover a wide geographic area and are arranged by the students. Students are responsible for their own transportation, housing, and living expenses during their clinical courses. Additionally, students must also arrange to have Internet access.

Students must document clinical contact hours working with their radiologist preceptors during clinical courses. More specific requirements about clinical attendance will be provided in the clinical course syllabi. At least five semesters in the RA Major include clinical preceptorships with at least 24 contact hours per week including at least four hours a week of direct image review with the radiologist preceptor. The Program currently requires about 1440 total clinical contact hours.

Because all RA students are experienced healthcare professionals, in cases of severe weather conditions, they should use their judgment about attending clinical. RA students and radiologist preceptors should have an established system of communication for such situations. The students should inform the MSU RA Clinical Coordinator as soon as possible of any missed clinical time.

Didactic Attendance

Because of the unique distance learning format for this program, students must be present for all on-campus class sessions or mandatory teleconference meetings each semester to receive a passing grade in any course which includes on-campus hours. There are no exceptions to this policy. If MSU is closed on an on-campus seminar day because of severe weather, MSU Faculty will contact students with specific instructions. The RA program must have current contact information for all students. Timeliness when attending classes is required and may result in grade reduction or dismissal from the program.

BACKGROUND CHECK & DRUG SCREENING TEST

The MSRS RA Program is committed to ensuring public and professional trust and providing safe patient care. To meet this goal, background investigation, immunization clearance, and drug screening of students are required. Many clinical education settings require additional criminal background investigations of all employees and students. To comply with these requirements, accepted students will be asked to submit to these tests to ascertain the student's suitability for clinical rotations.

Criminal Background Check

All students will be required to submit to a criminal background check facilitated by [CastleBranch.com](https://www.castlebranch.com) before clinical rotation. The background check will include, but is not limited to, a review of prior criminal records, review of nationwide sexual offender records, review of nationwide healthcare fraud and abuse records, review of the nationwide Patriot Act records, review of residency history, and Social Security verification. Students with any felonies on the criminal record will be ineligible for admission into the MSRS RA Program. The submission of any false information to MSRS RA program shall be cause for immediate dismissal. Students are responsible for the payment of the criminal background check. *The criminal background check included criminal records for the state of Texas; additional counties outside of Texas will be searched for an additional fee.

Drug Screening Test Policy

All students will be required to submit to submit for 10-panel urine drug screening (cocaine, amphetamines, barbiturates, benzodiazepines, marijuana, opiates, phencyclidine, propoxyphene, methadone, and synthetic opiates) facilitated by CastleBranch.com. Students may be required to submit to a drug test before clinical rotation and at any time in the program. The student will be responsible for payment of the screening test. If the student tests positive for any illegal substance, he/she will be withdrawn from the program immediately. Non-negative results will be processed further and may require additional testing. Additional drug screening will be at the student's expense. Failure to pass drug screening will result in immediate dismissal from the program. The submission of any false information to MSRS RA Program shall be cause for immediate dismissal.

This information will remain confidential and will only be viewed by the RA Clinical Coordinator or designee. Any criminal conviction which is found during the background investigation that may deem a student unsuitable for clinical rotations will be considered on a case-by-case basis. Additional information regarding the conviction may be required to make an informed decision. The background investigation will be made available to clinical education settings that require such. Individuals at the clinical education setting, who are authorized to make decisions regarding an individual's eligibility to attend a setting, will inform the Program Chair if a student will be allowed to attend clinical at that setting. If an offense appears on the criminal background check that disqualifies the student from attending clinical experiences, the clinical site(s) will notify the program regarding any students' disqualification for attending clinical at that site. The student will receive written notification. Students who receive notification of ineligibility and who wish to dispute the results of the background investigation may follow the Gunn College of Health Sciences and Human Services Grievance Procedure.

If a student has been convicted of a crime, including a felony, a gross misdemeanor, or a misdemeanor with the sole exception of speeding and parking violations, these must be reported to the American Registry of Radiologic Technologists (ARRT). All alcohol and/or drug related violations must be reported. All potential violations must be investigated by the ARRT to determine eligibility. Individuals must file a pre-application with the ARRT to obtain a ruling of the impact of their eligibility for the examination. This pre-application may be submitted at any time either before or after entry into an accredited program. For pre-application contact the ARRT at:

ARRT
1225 Northland Dr.
St. Paul, MN 55120-1155
Tel: (651) 687.0048

COMMUNICABLE DISEASE

Any student who suspects he/she may have been exposed to or contracted a communicable disease must notify the radiologist preceptor and the MSU RA Clinical Coordinator immediately. If a student has been exposed, appropriate action will be taken to ensure the health and well-being of the student, hospital patients and staff and fellow students.

Students are encouraged to make use of any protective devices available. Students must use surgical gloves and other protective or precautionary measures (consistent with institutional policies) for all procedures in which there may be contact with body fluids (urine, blood, excretion, saliva, etc.). Those students found not in compliance will come back to MSU for retraining on universal precautions for the first offense. Subsequent offenses will lead to a one-day suspension for the second offense; a three-day suspension for the third offense, and termination from the program for the fourth offense. Most contact will be with patients who have not yet been diagnosed, and therefore, the precautionary procedure of wearing gloves is of paramount importance. Students will use strict isolation techniques if the patient has

been diagnosed as having a contagious disease. Students may not refuse to perform radiologic services for these patients.

If a student should be the carrier of a contagious disease, he/she must contact the radiologist preceptor and the MSU RA Clinical Coordinator immediately. A temporary suspension of training may be necessary for legal reasons and for the protection of the patients. In the event a student is barred from the clinical education center because of a communicable disease, the RA Program will work with the student to make up the missed clinical education with a minimum of lost time to the student.

HEALTH/MEDICAL INSURANCE

RA students are responsible for any personal injury that occurs at the university or hospital. Purchase of health/accident insurance is required. A copy of the student's medical insurance information must be submitted to CastleBranch and will be kept in the student's file. It is the student's responsibility to keep this information current.

Any MSU student may purchase health insurance through the University. Contact the RA Program Director for additional information.

HIPAA

All patient records are confidential in nature. Requests for information concerning a patient should be referred to the radiologist preceptor. Students are expected to maintain confidentiality in a professional manner. In accordance with Health Insurance Portability and Accountability Act (HIPAA) of 1996, all patient information will be confidential. Students will maintain the privacy of protected health information by limiting discussion of protected health information to private areas and conference rooms, not discussing health information outside the health care facility unless such discussion is with an appropriate faculty member and in private, not discussing protected health information with other students, and refraining from copying any part of the medical record for use outside of the health care facility. Medical images with all protected health information (PHI) removed may be used for MSU coursework, if allowed by the clinical affiliate.

ILLNESS/INJURY

RA students who are injured or become ill (unable to perform duties or contagious) prior to the start of a clinical shift should stay home and not go to the clinical site. He/she should contact the radiologist preceptor and the MSU RA Clinical Coordinator. If a RA student becomes ill at the clinical site, he/she should notify the radiologist preceptor before leaving the facility.

If a RA student is injured at the clinical site, he/she should contact the radiologist preceptor immediately and follow the clinical facility's protocol for on-the-job accidents. This usually involves filing an incident report and being evaluated by a physician in the emergency room or one's own physician. The hospital may not have any responsibility for payment of emergency room charges, or any other charges incurred because of the injury; therefore, the decision to seek treatment is up to the student. The MSU RA Clinical Coordinator should be apprised of the situation as soon as possible.

IMMUNIZATION REQUIREMENTS

By Texas state law, each RA student entering the clinical environment must have the currently required immunizations:

- MMR (measles, mumps, rubella)

- Tdap (tetanus/diphtheria/pertussis)
- Varicella (Chicken Pox)
- Hepatitis B
- Influenza
- Bacterial Meningitis (if under 22 years of age)
- TB (tuberculosis) screening

All required immunizations must be completed prior to the first clinical day. Students who have not completed their immunizations will **NOT** be allowed to participate in clinical until cleared. All immunization records will be submitted to [CastleBranch.com](https://www.castlebranch.com) for evaluation and compliance.

Vaccination Exemption Policy

The Midwestern State University's RA Program requires students enrolled in courses with clinical requirements and all faculty who are physically present in the clinical environment to follow the clinical site's vaccination/immunization policies, standard transmission-based precautions, and infection control guidelines.

Certain clinical sites may allow students to request an exemption from the vaccination requirements for medical or religious reasons. Philosophical, political, scientific, or sociological objections to immunization do not justify an exemption.

- Individuals requesting an exemption for medical reasons will be required to submit a **Medical Exemption from Vaccinations Form** from a doctor or advanced practice provider.

- Individuals requesting an exemption for religious reasons will be required to submit a **Request for Religious Exemption from Vaccinations Form**. Sincerely held religious belief, practice, or observance includes any traditionally recognized religion as well as beliefs, observances, or practices, which an individual sincerely holds and which occupy in their life a place of importance parallel to that of traditionally recognized religions.

All exemption requests will be submitted to the Program's Clinical Coordinators for review and validation. While the Program will carefully review all requests for medical or religious exemptions, approval is **not guaranteed**. The Program will carefully review each request and determine if the request should be granted. After the individual's request has been reviewed and processed, the individual will be notified, in writing, if an exemption has been granted or denied. The decision is final and not subject to appeal. Individuals are permitted to reapply if new documentation and information should become available.

Individuals with an approved exemption may be required to comply with COVID-19 testing and/or other preventive protective measures as per the clinical site's requirements. The clinical site's requirements will be specified in the exemption approval notice.

Individuals must immediately notify the RA Clinical Coordinator, Radiologist Preceptor, department leader, or unit manager if experiencing COVID-19 symptoms (recent loss of smell or taste, or a fever of 100 F and new unexplained cough), diagnosed with or presumed to have COVID-19 by a licensed medical professional, or tested positive for COVID-19. The Program's Clinical Coordinator will verify the individuals are following the clinical site's requirements and communicate with the clinical site as needed.

No individual will be placed in the clinical environment unless the clinical site's or Program's requirements are met

before placement. Individuals currently in the clinical environment will be removed from the clinical site immediately if they do not abide by the Program's or clinical site's requirements. The Program reserves the right to restrict or alter assignments based on vaccination status for patient safety.

LIABILITY INSURANCE

RA students must carry professional liability insurance during the clinical education phase of their training. These fees are to be paid biennially to the Radiologic Sciences Department. The liability insurance is effective on the day clinical education begins and ends on the day the RA program is completed. The coverage is only valid during the students scheduled clinical hours and does not cover students when they are employed. (Criterion 3.5.5)

PROFESSIONAL CONDUCT AND HONESTY

Professional conduct and honesty are essential for radiologist assistants. The impression a student makes on the patients and others reflects not only upon the student, but on the RA Program and the University. The RA Program and the University will not tolerate unacceptable behavior in the classroom clinical setting or public events where students represent the RA Program or the University. Students are to abide by the ARRT Radiologic Science Professional Code of Ethics, especially regarding patient protection, patient confidentiality, and patient care.

Professional conduct includes, but is not limited to:

Commitment to Excellence

- Refrain from performing any professional service which requires competence that one does not possess, or which is prohibited by law unless the situation morally dictates otherwise.
- Strive to always exceed expectations.
- Commit to life-long learning by taking responsibility for one's own learning.
- Reflect on the adequacy of one's knowledge, skill development, and personal barriers to accomplishing learning and growth.
- Take responsibility for learning in group settings by being present, prepared, and engaged.
- Strive for mastery learning appropriate for one's level of training.
- Reflect with colleagues on the success of group work.

Honesty and Integrity

- Identify truthfully and accurately one's credentials and professional status.
- Communicate appropriately in an honest and timely manner.
- Accurately represent actions and events.
- Avoid cheating, plagiarism, and misrepresentation of the truth.
- Reflect on one's personal reaction to encounters with others and accepts responsibility for personal actions.
- Recognize and appropriately disclose and manage conflicts of interest.
- Be forthcoming with information; do not withhold and/or use information for power.
- Admit mistakes.

Compassion

- Recognize and respond to the fears, sufferings, and hopes of patients and their families.
- Assist colleagues in dealing with the challenges of professional work.

Respect for Others

- Respect confidentiality of patients.
- Recognize and respect personal and sexual boundaries.
- Avoid bias (e.g., gender, race, age, sexual orientation) in interactions with others.
- Articulate and embrace the many positive aspects of difference among people and demonstrates awareness of how such differences affect personal interactions.
- Demonstrate a commitment to resolving conflicts in a collegial manner.
- Show sensitivity and respect for the needs, feelings, ideas, and wishes of others in clinical and education settings.
- Demonstrate humility in interactions with others.
- Recognize that appropriate dress and appearance demonstrate respect for others and for the profession.

Professional Responsibility

- Be present and punctual for scheduled activities.
- Take responsibility to notify others for unavoidable absence or tardiness.
- Cope with the challenges, conflicts, and ambiguities inherent in professional work.
- Identify and appropriately deal with problematic behaviors of oneself and colleagues.
- Be cognizant of and adhere to the chain of command.
- Appropriately displace clinical responsibilities when personal needs demand it.
- Adhere to established professional codes of conduct.
- Practice according to accepted standards of care.
- Identify ethical issues in professional situations and act in an ethical manner.
- Regard as strictly confidential, all information concerning each patient and refrain from discussing this information with any unauthorized individual, including the patient.

Social Responsibility

- Understand and actively address the multiple social factors that threaten the health of patients.
- Actively work for appropriate social change to improve the health of populations.
- Model healthy behaviors.

Altruism

- Place the interests of others above self-interest.
- Be able to give up some personal needs to meet needs of patients.

Unprofessional conduct will **NOT** be tolerated and may result in a recommendation for dismissal from the RA Program.

Serious infractions can result in immediate dismissal from the RA Program. Any student under the influence of drugs or alcohol that impairs clear clinical decision-making and functioning in the classroom or clinical area will be recommended for immediate dismissal from the RA Program. Alteration or falsification of clinical documentation or evaluations will result in dismissal from the RA Program.

RADIATION PROTECTION AND MONITORING

It is the goal of this program to keep radiation exposure to students as low as reasonably achievable. NCRP Report # 102 will be used to establish maximum dose values.

The RA Program Clinical Coordinator will ensure a radiation monitor available for each student to wear during clinical hours. If a student performs radiographic procedures when not engaged in RA clinical education activities, the radiation monitors will not be used (Criterion 3.5.6).

Students will wear their radiation monitor at collar level in front, outside of the protective apron, and will follow the storage policy and other related policies of the clinical site (radiation monitor should remain at site). Upon request, the RA Clinical Coordinator will supply the student with the monthly or quarterly radiation report to place in his/her clinical portfolio.

If a student receives an exposure over a 90-day period that exceeds 300 millirems, the MSU Radiation Safety Officer will perform an investigation and provide recommendations to the student and RA Program Clinical Coordinator.

Additional general rules concerning radiation monitor use are:

- Radiation monitors are to be worn any time a student is working at the clinical site.
- Radiation monitors should not be placed on or near TVs or heat-producing appliances.
- Radiation monitors should not be exposed to sunlight for an extended period or high temperatures such as in automobiles.
- Radiation monitors should not get wet.
- Radiation monitors should not be worn when the student is having medical or dental x-rays performed.

RADIATION PROTECTION AND PREGNANCY

- The RA student *may* inform the MSU RA Clinical Coordinator and the radiologist preceptor if she is pregnant. It is the RA student's responsibility to inform the clinical site Radiation Safety Officer of her pregnancy so appropriate radiation protection measures can be taken.

TECHNICAL STANDARDS

The essential aptitudes and abilities allow RA students (and practicing RAs) to perform in the vast array of requisite ways summarized by the six areas of competency above.

Without the ability to demonstrate the essential capacities, students cannot fulfill the requirements of all the courses within the MSU RA Program. Meeting these academic and technical standards are required for a) matriculation (in so much as the abilities can reasonably be determined before matriculation), b) advancement toward candidacy, and c) graduation.

The listed standards are essential in meeting the core competencies as defined above by the MSU RA Program.

Students enrolled in the MSU RA Program must have capacities in five broad areas:

1. Perception/Observation
2. Communication
3. Motor/Tactile Function
4. Cognition

5. Professionalism

Perception/Observation

Students must perceive, using senses and mental abilities, the presentation of information through:

- Small group discussions and presentations.
- Large group lectures.
- Online lectures.
- One-on-one interactions.
- Demonstrations.
- Laboratory experiences.
- Patient encounters.
- Diagnostic findings.
- Procedures.
- Written materials.
- Audiovisual materials.

Students' diagnostic skills will be lessened without the functional use of the senses of equilibrium, smell, hearing, and taste. Additionally, they must have sufficient exteroceptive sense (touch, pain, and temperature), sufficient proprioceptive sense (position, pressure, movement, stereognosis, and vibratory), and sufficient motor function to permit them to carry out these functions.

Communication

Students must skillfully communicate, both orally and in writing (in English), with faculty members, the healthcare team, patients, families, and other students to:

- Elicit information.
- Convey information.
- Clarify information.
- Create rapport.
- Develop therapeutic relationships.
- Work collaboratively.

Students must speak, hear, and observe patients in order to elicit information, describe changes in mood, and perceive nonverbal communications. Students must communicate effectively with patients, including speech, reading, and writing.

Motor/Tactile Function

Students must have sufficient motor function and tactile ability to:

- Attend and participate in classes, groups, and activities which are part of the curriculum.
- Examine patients (including observation, auscultation, palpation, percussion, and other diagnostic maneuvers).
- Conduct basic radiologic procedures and tests.
- Perform diagnostic/therapeutic procedures.
- Provide patient care appropriate to the circumstances.
- Function in a wide variety of patient care venues.

- Perform in a reasonably independent and competent way in potentially high speed/high demand environments.
- Stand, sit, push, pull, bend, lift, stoop, and perform other necessary functions to provide care to the patient.

Students must demonstrate coordination of both gross and fine muscular movements, equilibrium, and functional use of the senses of touch and vision.

Cognition

Students must demonstrate higher-level cognitive abilities, which include:

- Rational thought.
- Measurement.
- Calculation.
- Visual-spatial comprehension.
- Conceptualization.
- Analysis.
- Synthesis.
- Organization.
- Representation (oral, written, diagrammatic, three-dimensional).
- Memory.
- Application.
- Clinical reasoning.
- Ethical reasoning.
- Sound judgment.

Students must possess the above abilities to reach diagnostic and therapeutic judgments. They must also comprehend three-dimensional relationships and the spatial relationships of structures.

Professionalism

Students must consistently demonstrate the core attributes of professionalism. MSU has defined the following behaviors as indicators of professionalism. See MSU Professional Conduct and Honesty policy:

- Commitment to Excellence
- Honesty and Integrity
- Respect for Others
- Empathy and Compassion
- Professional Responsibility
- Social Responsibility
- Altruism

Students must possess the emotional health necessary for full utilization of their intellectual abilities, the exercise of sound judgment, the prompt completion of responsibilities attendant to the diagnosis and care of patients, and the development of mature, sensitive, and effective relationships with patients and co-workers. Students must tolerate physically taxing workloads and to function effectively under stress. They must adapt to changing environments, display flexibility, and learn to function in the face of uncertainties inherent in the clinical problems of many patients. They must have a high level of compassion for others, motivation to serve, integrity, and a consciousness of social values, and

sufficient interpersonal skills to interact positively with people from all levels of society, all ethnic backgrounds, and all belief systems.

STUDENTS WITH DISABILITIES

It is the experience of the MSU RA Program, that students with disabilities (as defined by Section 504 of the Rehabilitation Act and the Americans with Disabilities Act) are qualified to study and practice as a RA with the use of reasonable accommodations. To be qualified for admission to the MSU RA Program, individuals must meet the Program's Academic Standards and Standards of Capacity without reasonable accommodation. Accommodation is viewed as a means of assisting students with disabilities to meet essential standards by providing them with an equal opportunity to participate in all aspects of each course (reasonable accommodation is not intended to guarantee that students will be successful in meeting course requirements).

Students needing clarification are encouraged to contact the MSU RA Program Director or Disability Support Services. Disability Support Services assessments are confidential, and it is the students' responsibility to submit written documentation to the RA Program Director in a timely manner.

USE OF AUXILIARY AIDS AND INTERMEDIARIES

Students with documented disabilities are provided with accommodations, which may include involvement of an intermediary or auxiliary aid. No disability can be reasonably accommodated with an aid or intermediary that provides cognitive support, substitutes for essential clinical skills, or supplements clinical and ethical judgment. Thus, accommodations cannot eliminate essential program elements or fundamentally alter the RA program curriculum.

APPENDICES

APPENDIX A

COURSE SCHEDULE RADIOLOGIST ASSISTANT MAJORS – NON-THESIS OPTION

FALL START – COHORT A	SPRING START – COHORT B
FALL I (2 MSU campus visits) RADS 5013 – Contemporary Trends in Radiologic Sciences RADS 5023 – Legal and Regulatory Considerations in Radiologic Science RADS 5552 – Pharmacology and Clinical Decision-Making	
SPRING I (2 MSU campus visits) RADS 5043 – Advanced Patient Assessment, Mgmt, and Ed RADS 5152 – Introduction to Radiologic Advanced Practice	SPRING I (2 MSU campus visits) RADS 5013 – Contemporary Trends in Radiologic Sciences RADS 5043 – Advanced Patient Assessment, Mgmt, and Ed RADS 5152 – Introduction to Advanced Radiologic Practice
SUMMER I (1 MSU campus visit) RADS 5156 – RA Clinical Preceptorship I	SUMMER I (1 MSU campus visit) RADS 5153 – RA Clinical Preceptorship I
FALL II (2 MSU campus visits) RADS 5003 – Research Methods I RADS 5256 – RA Clinical Preceptorship II	FALL I (2 MSU campus visits) RADS 5003 – Research Methods I RADS 5253 – RA Clinical Preceptorship II
SPRING II (2 MSU campus visits) RADS 6773 – Research II RADS 5356 – RA Clinical Preceptorship III	SPRING II (2 MSU campus visits) RADS 6773 – Research II RADS 5023 – Legal and Regulatory Considerations in Radiologic Sciences RADS 5356 – RA Clinical Preceptorship III
SUMMER II (1 MSU campus visit) RADS 5456 – RA Clinical Preceptorship IV	SUMMER II (1 MSU campus visit) RADS 5456 – RA Clinical Preceptorship IV
FALL III (2 MSU campus visits) RADS 5033 – Leadership for Change in Radiologic Sciences RADS 5556 – RA Clinical Preceptorship V	FALL II (2 MSU campus visits) RADS 5033 – Leadership for Change in Radiologic Sciences RADS 5552 – Pharmacology and Clinical Decision-Making RADS 5556 – RA Clinical Preceptorship V

APPENDIX B

ARRT Forms

ARRT Summary of Clinical Experience and Competence Assessments (CR-1)

ARRT Clinical Competency Forms (CR-2 A-E)

ARRT Summative Evaluation Rating Scales

(ARRT forms may be updated at any time to reflect updates in the ARRT requirements)



Form CR-1 Summary of Clinical Experience and Competence Assessments

Procedure	Experience Documentation			Competence Assessment Date
	Mandatory or Elective	Minimum and Maximum Number of Repetitions		
		Min	Max	
Gastrointestinal and Chest				
Esophageal study – must fluoro and image the esophagus, may be with UGI	Mandatory	20	50	
Swallowing function study (participate in procedure and provide initial observations to radiologist)	Mandatory	10	50	
Upper GI study	Mandatory	15	50	
Small bowel study – direct the study and spot TI	Mandatory	10	25	
Enema with barium, air, or water-soluble contrast	Mandatory	10	50	
Nasogastric/enteric or orogastric/enteric tube placement – may not require image guidance	Mandatory	10	25	
Percutaneous, nasogastric/enteric or orogastric/enteric tube evaluation – verification with contrast injection	Mandatory	10	25	
T-tube cholangiogram	Elective	5	15	
Post-operative Esophageal or Upper GI study (e.g., bariatric surgery, anastomosis check)	Mandatory	10	25	
Chest fluoroscopy	Elective	5	15	
Genitourinary		Min	Max	
Antegrade urography through existing tube (e.g., nephrostography)	Elective	5	15	
Cystography, voiding cystography, or voiding cystourethrography	Mandatory	10	30	
Retrograde urethrography or urethrocytography	Elective	5	15	
Loopography (urinary diversion)	Elective	5	15	
Hysterosalpingography – imaging only	Elective	5	15	
Hysterosalpingography – procedure and imaging	Elective	10	25	



Form CR-1 (continued)

Procedure	Experience Documentation			Competence Assessment Date
	Mandatory or Elective	Minimum and Maximum Number of Repetitions		
		Min	Max	
Invasive Nonvascular				
Arthrogram (radiography, CT, or MR) with a minimum of 5 shoulder and 5 hip	Mandatory	20	50	
Therapeutic joint injection	Elective	10	20	
Diagnostic joint aspiration	Elective	10	20	
Therapeutic bursa aspiration and/or injection	Elective	10	20	
Lumbar puncture with or without contrast	Mandatory	10	50	
Cervical, thoracic, or lumbar myelography – imaging only	Mandatory	5	15	
Thoracentesis with or without catheter	Mandatory	15	40	
Placement of catheter for pneumothorax	Elective	15	25	
Paracentesis with or without catheter	Mandatory	20	50	
Abscess, fistula, or sinus tract study	Elective	5	20	
Injection for sentinel node localization	Elective	5	20	
Percutaneous drainage with or without placement of catheter (excluding paracentesis and thoracentesis)	Elective	15	30	
Change of percutaneous tube or drainage catheter	Elective	10	30	
Thyroid biopsy	Elective	15	50	
Superficial lymph node biopsy	Elective	15	50	
Liver biopsy (non-targeted)	Elective	20	50	
Superficial soft tissue mass biopsy	Elective	15	50	
Invasive Vascular		Min	Max	
Peripherally inserted central catheter (PICC) placement	Mandatory	10	30	
Insertion of non-tunneled central venous catheter	Elective	20	50	
Central Venous catheter or port injection	Elective	5	30	
Tunneled venous catheter removal	Elective	10	30	
Extremity venography	Elective	5	15	



Form CR-1 (continued)

Procedure	Experience Documentation			Competence Assessment Date
	Mandatory or Elective	Minimum and Maximum Number of Repetitions		
		Min	Max	
Post-Processing				
Perform CT post-processing	Elective	5	15	
Perform MR post-processing	Elective	5	15	
Total Number of Cases	500			

Chief Preceptor Signature and Date _____
 Program Director Signature and Date _____
 Candidate Signature and ARRT ID # _____



Form CR-2A

Clinical Competence Assessment for GI and Chest Procedures

(esophageal study; swallowing function study; upper GI study; small bowel study; enema with barium, air, or water soluble contrast; nasogastric/enteric and orogastric/enteric tube placement; percutaneous, nasogastric/enteric or orogastric/enteric tube evaluation verification with contrast injection; t-tube cholangiogram; ; post-operative esophageal or Upper GI study; chest fluoroscopy)

Directions: This form should be completed by the radiologist supervising the procedure after the candidate has completed a sufficient number of cases to merit evaluation. To meet the required performance standard, the candidate must perform each clinical activity safely and effectively on a consistent basis.

Procedure: _____ Date Performed: _____

Clinical Activity	Performance Standard		
	does not meet	meets	exceeds
Review patient record, lab, previous imaging, and other information. Verify appropriateness of procedure. Assess patient for possible contraindications (e.g., history, medications, pregnancy, psychological status).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interview patient to obtain, verify, or update medical history. Explain procedure (risks, benefits, alternatives) and any required pharmaceuticals. Obtain or verify informed consent, if applicable, and confirm adequate exam preparation (e.g., diet, medications).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Report findings to the radiologist from physical exam as needed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prepare and administer contrast agents prescribed by the radiologist. Position patient, operate imaging equipment, modify procedure as necessary; observe and evaluate structure and function; and document fluoroscopy time where applicable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monitor patient status and respond as needed (e.g., discomfort, drug reactions, cardiac distress).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluate procedure for completeness and diagnostic quality; recommend additional images as required; communicate initial observations to the radiologist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Educate patient regarding follow-up care and verify comprehension.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document procedure and record exceptions from established protocol.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	does not meet	meets	exceeds
Overall Evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiologist Comments			
(Note any particular strengths or areas for improvement for the candidate, or unusual features of the case that warrant consideration.)			
Radiologist Signature		Date	
Candidate Signature		Date	



Form CR-2B

Clinical Competence Assessment for GU Procedures

(antegrade urography; cystography or voiding cystourethrography, retrograde urethrography or urethrocytography; loopography /urinary diversion; hysterosalpingography)

Directions: This form should be completed by the radiologist supervising the procedure after the candidate has completed a sufficient number of cases to merit evaluation. To meet the required performance standard, the candidate must perform each clinical activity safely and effectively on a consistent basis.

Procedure: _____ Date Performed: _____

Clinical Activity	Performance Standard		
	does not meet	meets	exceeds
Review patient record, lab, previous imaging, and other information. Verify appropriateness of procedure. Assess patient for possible contraindications (e.g., history, medications, pregnancy, psychological status).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interview patient to obtain, verify, or update medical history. Explain procedure (risks, benefits, alternatives) and any required pharmaceuticals. Obtain or verify informed consent, if applicable, and confirm adequate exam preparation (e.g., diet, medications).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Report findings to the radiologist from physical exam as needed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform urinary catheterization or access pre-existing catheter; prepare and administer contrast agents prescribed by the radiologist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Position patient; operate imaging equipment; modify procedure as necessary; observe and evaluate structure and function; and document fluoroscopy time where applicable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monitor patient status and respond as needed (e.g., discomfort, drug reactions, cardiac distress).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluate procedure for completeness and diagnostic quality; recommend additional images as required; communicate initial observations to the radiologist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Educate patient regarding follow-up care and verify comprehension.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document procedure and record exceptions from established protocol.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	does not meet	meets	exceeds
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall Evaluation			
Radiologist Comments			
(Note any particular strengths or areas for improvement for the candidate, or unusual features of the case that warrant consideration.)	_____		

Radiologist Signature	_____	Date	_____
Candidate Signature	_____	Date	_____



Form CR-2C

Clinical Competence Assessment for Invasive Nonvascular Procedures

(arthrogram, therapeutic bursa aspiration and/or injection, joint injection and aspiration; lumbar puncture with or without contrast; myelography imaging only; thoracentesis; placement of catheter for pneumothorax; paracentesis; abscess, fistula, or sinus tract study; injection for sentinel node localization; ; change of percutaneous tube or drainage catheter; percutaneous drainage with or without placement of catheter (excluding thoracentesis and paracentesis); thyroid biopsy; superficial lymph node biopsy; liver biopsy; superficial soft tissue mass biopsy)

Directions: This form should be completed by the radiologist supervising the procedure after the candidate has completed a sufficient number of cases to merit evaluation. To meet the required performance standard, the candidate must perform each clinical activity safely and effectively on a consistent basis.

Procedure: _____ Date Performed: _____

Clinical Activity	Performance Standard		
	does not meet	meets	exceeds
Review patient record, lab, previous imaging, and other information. Verify appropriateness of procedure. Assess patient for possible contraindications (e.g., history, medications, pregnancy, psychological status).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interview patient to obtain, verify, or update medical history. Explain procedure (risks, benefits, alternatives) and any required pharmaceuticals. Obtain or verify informed consent and confirm adequate exam preparation (e.g., diet, medications).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Report findings to the radiologist from physical exam as needed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Administer local anesthetic; select and insert needle, catheter, or tube to required location; collect fluids and measure pressures as needed; administer prescribed contrast; maintain aseptic environment throughout procedure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Position patient: operate imaging equipment, modify procedure as necessary; observe and evaluate structure and function; and document fluoroscopy time where applicable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monitor patient status and respond as needed (e.g., discomfort, drug reactions, cardiac distress).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluate procedure for completeness and diagnostic quality; recommend additional images as required; communicate initial observations to the radiologist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Educate patient regarding follow-up care and verify comprehension.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document procedure and record exceptions from established protocol.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall Evaluation	does not meet	meets	exceeds
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiologist Comments			
(Note any particular strengths or areas for improvement for the candidate, or unusual features of the case that warrant consideration.)			
Radiologist Signature			Date _____
Candidate Signature			Date _____



Form CR-2D

Clinical Competence Assessment for Invasive Vascular Procedures

(PICC placement; insertion of non-tunneled central venous catheter; central venous catheter or port injection; tunneled venous catheter removal; extremity venography)

Directions: This form should be completed by the radiologist supervising the procedure after the candidate has completed a sufficient number of cases to merit evaluation. To meet the required performance standard, the candidate must perform each clinical activity safely and effectively on a consistent basis.

Procedure: _____ Date Performed: _____

Clinical Activity	Performance Standard		
	does not meet	meets	exceeds
Review patient record, lab, previous imaging, and other information. Verify appropriateness of procedure. Assess patient for possible contraindications (e.g., history, medications, pregnancy, psychological status).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interview patient to obtain, verify, or update medical history. Explain procedure (risks, benefits, alternatives) and any required pharmaceuticals. Obtain or verify informed consent and confirm adequate exam preparation (e.g., diet, medications).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Report findings to the radiologist from physical exam as needed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Administer local anesthetic; select and insert needle or catheter to required location; administer contrast and/or other medications as needed; maintain aseptic environment throughout procedure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Position patient, operate imaging equipment, modify procedure as necessary; observe and evaluate structure and function; and document fluoroscopy time where applicable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monitor patient status, obtain hemostasis, and respond as needed (e.g., discomfort, drug reactions, cardiac distress).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluate procedure for completeness and diagnostic quality; recommend additional images as required; communicate initial observations to the radiologist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Educate patient regarding follow-up care and verify comprehension.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Document procedure and record exceptions from established protocol.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall Evaluation	does not meet <input type="checkbox"/>	meets <input type="checkbox"/>	exceeds <input type="checkbox"/>
Radiologist Comments	_____ _____ _____		
(Note any particular strengths or areas for improvement for the candidate, or unusual features of the case that warrant consideration.)	_____ _____		
Radiologist Signature	_____	Date _____	
Candidate Signature	_____	Date _____	



Form CR-2E

Clinical Competence Assessment for Post-Processing Activities

(CT post-processing; MR post-processing)

Directions: This form should be completed by the radiologist supervising the procedure after the candidate has completed a sufficient number of cases to merit evaluation. To meet the required performance standard, the candidate must perform each clinical activity safely and effectively on a consistent basis.

Procedure: _____ Date Performed: _____

Clinical Activity	Performance Standard		
	does not meet	meets	exceeds
Retrieve image data from archive system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preview image data set.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Load image data set.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Display volume using MPR, MIP, SSD, VRT, or CPR.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use segmentation or editing tools to remove obstructive anatomy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assess final images for quality and completeness.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use measuring tools (distance, ROI, percent of stenosis calculation).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Export images to server, secure web site, or report.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall Evaluation	does not meet <input type="checkbox"/>	meets <input type="checkbox"/>	exceeds <input type="checkbox"/>
Radiologist Comments	_____ _____ _____		
(Note any particular strengths or areas for improvement for the candidate, or unusual features of the case that warrant consideration.)	_____ _____		
Radiologist Signature	_____	Date _____	
Candidate Signature	_____	Date _____	



Summative Evaluation Rating Scales

Name of Candidate _____	Preceptorship Start Date _____
Name of Educational Program _____	Preceptorship End Date _____
Chief Preceptor* _____ signature after completing this form	Date _____
Program Director* _____ signature after reviewing this form	Date _____

1. Evaluation of Medical Information

Incomplete evaluation of records and other information; inefficient use of time; does not independently determine what data to obtain or where; superficial knowledge of imaging sciences; fails to apply information to decision making; does not recognize fallibility of certain types of data.	Performance Standard does not meet meets exceeds <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> 1 2 3 4 5 6	Thorough evaluation of records and other information; autonomous in locating information; in-depth knowledge of imaging sciences literature; understands how data may or may not apply to case at hand, while clearly recognizing potential limitations of that data.
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2. Patient Communication

Fails to explain procedure in a manner that patient will understand; does not consider patient preferences or address patient concerns; neglects patient education needs; does not inspire patient confidence; inconsistent patient follow-up.	Performance Standard does not meet meets exceeds <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> 1 2 3 4 5 6	Explains procedure to patient in clear and understandable fashion; considerate of patient interests and preferences; identifies and addresses patient education needs; exhibits empathy and helps patient feel at ease; consistent patient follow-up.
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3. Professionalism

Does not participate in professional development or quality improvement; minimal benefit from peer review or supervision; lacks appreciation for the total healthcare system; shows little regard for legal, ethical and scope of practice issues; makes little or no contribution to integrity of department.	Performance Standard does not meet meets exceeds <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> 1 2 3 4 5 6	Participates in and benefits from activities such as continuing education, peer review, and other professional interactions; appreciates intricacies of the healthcare system; understands and respects legal, ethical and scope of practice issues; contributes to overall integrity of department.
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4. Safety

Limited knowledge of physics, and biological effect of imaging modalities; unaware of or does not follow regulations; fails to take precautions to minimize risk to patient, self, or others (e.g., radiation or thermal dose, MR safety, reproductive status).	Performance Standard does not meet meets exceeds <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> 1 2 3 4 5 6	Demonstrates knowledge of physics, and biological effect of imaging modalities; appreciates importance of and adheres to regulations; conscientious about minimizing risk to patient, self, and others (e.g., radiation or thermal dose, MR safety, reproductive status).
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* Complete next page before signing.



Summative Evaluation Rating Scales

5a. Procedural Skills: GI and Chest Studies

<p>Lacks knowledge of contrast (indications, contraindications, administration); awkward or imprecise when positioning patients; minimal thought given to imaging technique; inattentive to patient physiologic status during procedure; accepts images of marginal quality; does not recognize need for additional imaging.</p>	<p style="text-align: center;">Performance Standard</p> <p style="text-align: center;">does not meet meets exceeds</p> <p style="text-align: center;"> <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> 1 2 3 4 5 6 </p>	<p>Thorough knowledge of contrast (indications, contraindications, administration); positions patients carefully and precisely; thoughtful and decisive when determining imaging technique; monitors patient physiologic status during procedure; accepts only high-quality images; evaluates images to determine need for additional imaging.</p>
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5b. Procedural Skills: GU Studies

<p>Superficial knowledge of contrast (indications, contraindications, administration); awkward or imprecise when positioning patients; minimal thought given to imaging technique; inattentive to patient physiologic status during procedure; accepts images of marginal quality; does not recognize need for additional imaging.</p>	<p style="text-align: center;">Performance Standard</p> <p style="text-align: center;">does not meet meets exceeds</p> <p style="text-align: center;"> <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> 1 2 3 4 5 6 </p>	<p>Thorough knowledge of contrast (indications, contraindications, administration); positions patients carefully and precisely; thoughtful and decisive when determining imaging technique; monitors patient physiologic status during procedure; accepts only high-quality images; evaluates images to determine need for additional imaging.</p>
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5c. Procedural Skills: Invasive Nonvascular Studies

<p>Inattentive to demands of aseptic environment; superficial knowledge of contrast, anesthetics, or other medications; awkward when inserting or placing needle or catheter; little thought given to imaging technique; does not appreciate limitations of procedure; inattentive to patient physiologic status during procedure; accepts images of marginal quality; does not recognize need for additional imaging.</p>	<p style="text-align: center;">Performance Standard</p> <p style="text-align: center;">does not meet meets exceeds</p> <p style="text-align: center;"> <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> 1 2 3 4 5 6 </p>	<p>Exercises caution in aseptic environment; thorough knowledge of contrast, anesthetics, and other medications; precisely inserts or places needle or catheter; thoughtful and decisive when determining imaging technique; appreciates limitations of procedure; monitors patient physiologic status during procedure; accepts only high-quality images; evaluates images to determine need for additional imaging.</p>
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5d. Procedural Skills: Invasive Vascular Studies

<p>Inattentive to demands of aseptic environment; superficial knowledge of anesthetics or other medications; awkward when inserting or placing needle or catheter; little thought given to imaging technique; does not appreciate limitations of procedure; inattentive to patient physiologic status during procedure; accepts images of marginal quality; does not recognize need for additional imaging.</p>	<p style="text-align: center;">Performance Standard</p> <p style="text-align: center;">does not meet meets exceeds</p> <p style="text-align: center;"> <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> — <input type="checkbox"/> 1 2 3 4 5 6 </p>	<p>Exercises caution in aseptic environment; thorough knowledge of anesthetics and other medications; precisely inserts or places needle or catheter; thoughtful and decisive when determining imaging technique; appreciates limitations of procedure; monitors patient physiologic status during procedure; accepts only high-quality images; evaluates images to determine need for additional imaging.</p>
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APPENDIX C

ARRT Entry Level Clinical Activities & ARRT R.R.A. Exam Contents Specifications

(ARRT Entry Level Clinical Activities & ARRT RRA Exam Contents Specifications may be changed at any time to reflect updates in ARRT requirements)



Registered Radiologist Assistant

Introduction

Discussions among the American College of Radiology (ACR), the American Society of Radiologic Technologists (ASRT), and The American Registry of Radiologic Technologists (ARRT) culminated in 2003 with a consensus statement that defines the Registered Radiologist Assistant (R.R.A.) as an advanced-level radiographer who works under the supervision of a radiologist to promote high standards of patient care by assisting radiologists in the diagnostic imaging environment. Under radiologist supervision* and as part of a radiologist-led team, the R.R.A. performs** patient assessment, patient management, and selected clinical imaging procedures. Certification and registration as an R.R.A. does not qualify the R.R.A. to perform** interpretations (preliminary, final, or otherwise) of any radiological examination. The R.R.A. may make and communicate initial observations only to the radiologist.

The ARRT expanded this consensus definition to delineate more fully the entry-level role of a radiologist assistant and introduced the R.R.A. certification and registration program based upon a practice analysis in 2005. The R.R.A. program requirements include certification and registration in radiography (i.e., R.T.(R)(ARRT)), experience as a radiographer, as well as radiologist assistant specific educational, ethics, and examination standards. Details are available on ARRT's website (www.arrt.org).

Purpose of this Document

In order to develop certification and registration standards, ARRT first identifies a core set of activities that individuals should be qualified to perform** at entry into that role. The list of entry-level clinical activities is then used to create ARRT examination development and education requirements for certification and registration. ***The Entry-Level Clinical Activities (ELCA) is not intended as a scope of practice.*** Inclusion of activities in ELCA does not indicate that the activities may be legally performed** in all states by those certified and registered nor that the activities, if performed**, are eligible for reimbursement under current CMS regulations. Federal, state, institutional, and employer requirements should be consulted to determine the specific role allowed in an individual situation. Similarly, exclusion of activities from ELCA is not to be interpreted as prohibiting the performance** of the activities provided that federal, state, institutional, and employer requirements support the performance** of the activities and that appropriate education, training, and competency assessment have been completed for the procedures. For all ARRT disciplines, it is assumed that the requirements for certification and registration serve as the foundation for developing qualifications to perform** additional procedures.

Initial Role Delineation Development

ARRT published the initial role delineation in 2005. It was developed based upon a survey of radiologists and radiology practitioner assistants (RPAs) conducted in early 2004. Radiologists were asked to rate clinical activities as to whether the activity could be performed** by an appropriately prepared radiologist assistant and, if so, the suggested level of radiologist supervision. RPAs were asked to indicate if they performed** the activities and, if so, the level of supervision they received.

An ARRT Advisory Committee composed of four radiologists, two R.R.A. educational program directors, two RPAs, one physicist, and organizational liaisons reviewed the survey responses. A draft description of the role of a radiologist assistant was produced. Additional refinements were made by the Advisory Committee based upon organizational and community feedback. The ARRT Board of Trustees adopted the *R.R.A. Role Delineation* in January 2005 and eligibility requirements, and examination content specifications were developed based upon the Role Delineation and approved in June 2005. The Role Delineation document was later renamed ELCA.

*for the purposes of this document, "supervising radiologist" refers to a "radiologist who oversees duties of the radiologist assistant and has appropriate clinical privileges for the procedure performed by the radiologist assistant." (ASRT Practice Standards for Medical Imaging and Radiation Therapy – Radiologist Assistant 2019). This may be any radiologist on service.

**indicates "perform under the supervision of the responsible radiologist."



Updates to the R.R.A. Certification and Registration Program

ARRT's certification and registration requirements are periodically updated to incorporate changing practice patterns and expectations. Revisions to ELCA are first suggested by the ARRT committee members, which consists of a combination of radiologists identified by the ACR, physicists identified by the AAPM, and R.R.A.s and educators identified by the ARRT. Typically, a draft survey is created by the committee members and reviewed by the Inter-Societal Commission on Radiologist Assistants (ICRA). ICRA is composed of representatives of ACR, ASRT, SRPE and ARRT. Once approved, the survey is administered to Radiologist Extenders identified from ARRT's database, a sample of ACR radiologists, and radiologists who work with Radiologist Extenders. The survey results are reviewed by the ARRT committee members and ICRA to identify possible updates to ELCA. The ARRT Board of Trustees makes the final decision on changes to ELCA. This update process is repeated at least every five years and more frequently if needed.

Most Recent Practice Analysis

In 2021, the ARRT surveyed a national sample of Radiologist Assistants (identified as either R.R.A.s and/or RPAs), ACR radiologists, and radiologists who work with Radiologist Assistants to identify the responsibilities of an R.R.A. When evaluating survey results, the advisory committee applied a 40% criterion. That is, to be included on the task inventory, at least 40% of Radiologist Assistants must report that they perform** the activity, and at least 40% of radiologists must indicate that the procedure could be delegated to a Radiologist Assistant. The advisory committee could include an activity that did not meet the 40% criterion if there was a compelling rationale to do so (e.g., a task that falls below the 40% guideline but is expected to rise above the 40% guideline in the near future). The *Content Specifications for the Registered Radiologist Assistant* and the *Didactic and Clinical Portfolio Requirements for Certification and Registration as a Registered Radiologist Assistant* are updated to reflect the changes to ELCA.

Conclusion

The clinical procedures included in ELCA reflect procedures performed** by a significant percentage of Radiologist Assistants and which a significant percentage of radiologists were comfortable delegating to an R.R.A. under their supervision. The survey identified many procedures that were being performed** by some Radiologist Assistants, but not by a sufficient percentage to warrant inclusion in ELCA. Exclusion from this document is not intended to limit the procedures performed** by an R.R.A. provided that appropriate education, training, and competency assessment have been documented for those procedures and provided that federal, state, institutional, and employer requirements support the performance**.

Radiologist supervision of R.R.A. performed procedures is required as part of a radiologist-led team.** The ARRT test development and education requirements for certification and registration assume that the level of supervision for entry-level R.R.A.s will be at the direct level for clinical procedures. Direct supervision¹ is defined as the radiologist present in the radiology facility and immediately available to furnish assistance and direction throughout the performance** of the procedure, but not required to be present in the room when the procedure is performed**. The assumption of a specific level of supervision is intended to assist in the development of entry-level certification and registration requirements. The actual level of radiologist supervision for an R.R.A. in practice will depend upon the R.R.A.'s experience as well as federal, state, institutional, and employer requirements. Best practice for all exams requiring consent includes the radiologist meeting the patient.

It is expected that R.R.A.s who perform** procedures other than those listed in ELCA will have received appropriate training and competency assessment on these procedures to assure patient safety and quality imaging. The additional clinical education and competence assessment should be documented within the individual R.R.A.'s portfolio. All activities should be performed** in compliance with federal, state, institutional, and employer requirements.

¹This definition of direct supervision is based upon that of the Centers for Medicare & Medicaid Services (CMS).

**Indicates "perform under the supervision of the responsible radiologist."



Content Categories

Legend: PC = Patient Care,
S = Safety, IP = Image
Production,
P = Procedures

Clinical activities

1.	Review the patient's medical record to verify the appropriateness of a specific exam or procedure and report significant findings to the supervising radiologist.	PC.1.D., PC.1.G., PC.1.M., PC.2.B.
2.	Assist the supervising radiologist in determining whether indications meet the ACR Appropriateness Criteria® when advising those who order examinations.	PC.1.D., S.1.B.1.A.
3.	Interview the patient to obtain, verify, or update medical history.	PC.1.C.2., PC.1.D., PC.1.E., PC.1.M.
4.	Explain procedure to the patient or authorized representative, including a description of risks, benefits, alternatives, and follow-up. ***	PC.1.A., PC.1.C., PC.1.M.3.
5.	Participate in obtaining informed consent.***	PC.1.A.2., PC.1.B., PC.1.C.
6.	Determine if the patient has followed instructions in preparation for the exam (e.g., diet, premedications).	PC.1.A.2., PC.1.C., PC.1.F.
7.	Assess risk factors that may contraindicate the procedure (e.g., health history, medications, pregnancy, psychological indicators, alternative medicines). (Note: Must be reviewed with the supervising radiologist.)	PC.1.C., PC.1.D., PC.1.E., PC.1.G., PC.2.C.2.
8.	Recognize abnormal or missing lab values relative to the procedure or imaging (e.g., eGFR, creatinine, beta-hCG)	PC.1.D.3., PC.1.G.
9.	Perform** and document a procedure-focused physical examination, and review relevant data (e.g., signs and symptoms, laboratory values, significant abnormalities, vital signs); report findings to the supervising radiologist for the following systems or anatomical areas:	PC.1.C., PC.1.D., PC.1.E., PC.1.F., PC.1.G., PC.2.B., PC.2.C., PC.2.D. And P as listed below a–h
	a. abdominal	P.1.A.2, P.1.B.2., P.1.C.2., P.1.D.2., P.1.E.2.
	b. thoracic	P.2.A.2., P.2.C.2.
	c. cardiovascular	P.2.A.2., P.2.C.2.
	d. musculoskeletal	P.3.A.2
	e. peripheral vascular	P.4.B.2
	f. neurological	P.4.A.2.
	g. endocrine	P.3.B.2.
	h. breast and axillae	P.2.D.2.
10.	Observe ECG for changes and recognize abnormal rhythms.	PC.1.D.7., PC.1.F.3., P.2.B.2.
11.	Perform** urinary catheterization.	PC.1.K., P.1.D.4.
12.	Perform** venipuncture.	PC.1.I
13.	Monitor IV lines for flow rate and complications.	PC.1.I
14.	Participate in the administration of moderate/conscious sedation as prescribed by the supervising radiologist.	PC.1.F., PC.1.M., PC.2.C.

**Indicates "perform under the supervision of the responsible radiologist."

***Patient or authorized representative must be able to communicate with the radiologist if they request or if any questions arise that cannot be appropriately answered by the radiologist assistant.



Content Categories

Legend: PC = Patient Care,
S = Safety, IP = Image
Production,
P = Procedures

Clinical activities

15.	Observe and assess patients who have received moderate/conscious sedation as part of the radiologist-led team.	PC.1.F., PC.1.M., PC.2.C.
16.	Assess patient's vital signs and level of anxiety/pain and inform the supervising radiologist when appropriate.	PC.1.C., PC.1.F., PC.2.C.
17.	Recognize and respond to medical emergencies (e.g., drug reactions, cardiac arrest, hypoglycemia) and activate emergency response systems, including notification of the supervising radiologist.	PC.1.F.5., PC.1.L., PC.1.M., PC.2.
18.	Administer oxygen as prescribed.	PC.1.F., PC.1.J.
19.	Explain effects and potential side effects to the patient or authorized representative of the pharmaceutical(s) required for the examination.	PC.1.A.2.C., PC.2., P.
20.	Administer contrast agents and radiopharmaceuticals as prescribed by the supervising radiologist.	PC.1.F., PC.1.H., PC.2.A., PC.2.D., P.
21.	Administer medications (EXCLUDING contrast agents and radiopharmaceuticals) as prescribed by a licensed practitioner and approved by the supervising radiologist.	PC.1.F., PC.1.H., PC.2.A., PC.2.B., PC.2.C.
22.	Monitor patient for side effects or complications of the pharmaceutical(s).	PC.1.F., PC.1.M., PC.2.A.7, PC.2.D.2.
23.	Operate medical imaging equipment (e.g., ultrasound, fixed/mobile fluoroscopic unit).	S.1.G., P.
24.	Document fluoroscopy time and radiation dose.	PC.1.M.1.C., S.1
25.	Use sterile or aseptic technique as required to help prevent infection.	PC.1.H., P.
26.	Advocate for patient's radiation safety and protection:	S.
	a. assess the patient's past imaging history	PC.1.D.4., S.1.B.3.
	b. Be aware of radiation safety resources available with Image Wisely®, Image Gently®, and radiologyinfo.org.	S.1.B.3.B.
	c. Work with medical physicists, radiologists, and technologists in developing, reviewing, and updating imaging protocols.	S.1.B.3., S.1.I.
	d. Be familiar with ACR MR Safety document and MR zones.	S.1.H.
27.	Perform** procedures in compliance with Standards of Care, facility, and regulatory requirements, and ARRT Standards of Ethics.	PC.1.A., PC.1.B., PC.1.M., PC.2., S.1.B., S.1.F., P.
28.	Perform** the following GI and chest examinations and procedures including contrast media administration when appropriate and operation of imaging equipment:	PC.2.D., S.1.G., and P as listed below a-j.
	a. esophageal study	P.1.B.3.A.
	b. swallowing function study	P.1.B.3.B.
	c. upper GI study	P.1.B.3.C.
	d. post-operative study (e.g., bariatric surgery, anastomosis check)	P.1.B.3.F.
	e. small bowel study	P.1.B.3.D.

**indicates "perform under the supervision of the responsible radiologist."



Content Categories

Legend: PC = Patient Care,
S = Safety, IP = Image
Production,
P = Procedures

Clinical activities

	f. enema with barium, air, or water soluble contrast	P.1.B.3.E.
	g. nasogastric/enteric and orogastric/enteric tube placement	P.1.B.3.H.
	h. percutaneous, nasogastric/enteric, and orogastric/enteric tube evaluation (verification with contrast injection)	P.1.B.3.G.
	i. t-tube cholangiogram	P.1.C.3.B.
	j. chest fluoroscopy	P.2.A.3.
29.	Perform** the following GU examinations and procedures including contrast media administration and operation of imaging equipment:	PC.2.D., S.1.G., and P as listed below a-g.
	a. antegrade urography through an existing catheter (e.g., nephrostography)	P.1.D.3.A.
	b. cystography, not voiding	P.1.D.3.D.
	c. retrograde urethrography or urethrocystography	P.1.D.3.C.
	d. voiding cystography/cystourethrography	P.1.D.3.D.
	e. loopography (urinary diversion study)	P.1.D.3.B.
	f. hysterosalpingography - imaging only	P.1.E.3.
	g. hysterosalpingography - procedure and imaging	P.1.E.3.
30.	Perform** the following invasive nonvascular procedures with image guidance including contrast media administration and needle or catheter placement:	PC.2.D., S.1.G., and P as listed below a-p.
	a. therapeutic bursa aspiration and/or injection	P.3.A.3.A.
	b. diagnostic joint aspiration	P.3.A.3.B.
	c. therapeutic joint injection	P.3.A.3.C.
	d. Arthrography (radiography, CT, and MR)	P.3.A.3.E.
	1. shoulder	P.3.A.3.E.1
	2. elbow	P.3.A.3.E.2
	3. wrist	P.3.A.3.E.3
	4. hip	P.3.A.3.E.4
	5. knee	P.3.A.3.E.5
	6. ankle	P.3.A.3.E.6
	e. lumbar puncture without injection	P.4.A.3.A.
	f. lumbar puncture for myelography, or cisternography	P.4.A.3.B.
	g. cervical, thoracic, or lumbar myelography – imaging only	P.4.A.3.B.
	h. thoracentesis with or without catheter	P.2.C.3.A.
	i. placement of catheter for pneumothorax	P.2.C.3.B.
	j. paracentesis with or without catheter	P.1.A.3.A.
	k. abscess, fistula, or sinus tract study	P.1.A.3.B.
	l. percutaneous drainage with or without placement of catheter	P.1.A.3.C.

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Clinical activities

		(excluding thoracentesis and paracentesis)
	m.	removal of percutaneous drainage catheter (e.g., tunneled, or non-tunneled) P.1.A.3.E.
	n.	change of percutaneous tube or drainage catheter P.1.A.3.D.
	o.	injection for sentinel node localization P.2.D.3.
	p.	Biopsy
	1.	thyroid P.3.B.3
	2.	superficial lymph node P.4.B.4.B.
	3.	liver (non-targeted) P.1.C.3.A.
	4.	superficial soft tissue mass P.3.A.3.D.
31.		Perform** the following invasive vascular procedures with image guidance including contrast media administration and needle or catheter placement: PC.2.D., S.1.G., and P as listed below a-e
	a.	peripheral insertion of central venous catheter (PICC) placement P.4.B.4.E.
	b.	insertion of non-tunneled central venous catheter P.4.B.4.C.
	c.	central venous catheter or port injection P.4.B.4.D.
	d.	tunneled venous catheter removal P.4.B.4.F.
	e.	extremity venography P.4.B.4.A.
32.		Perform** CT post-processing. P.
33.		Perform** MR post-processing. P.
34.		Evaluate images for completeness and diagnostic quality, and recommend additional images as required (e.g., general radiography, CT, and MR). (Note: Additional images only in the same modality such as additional CT slices.) P.
35.		Review imaging procedures, make initial observations, and communicate observations only to the supervising radiologist. (R.R.A.s do not perform** interpretations (preliminary, final, or otherwise) of any radiological examination. The R.R.A. may make and communicate initial observations only to the supervising radiologist.) PC.1.M., P.

**indicates "perform under the supervision of the responsible radiologist."



Content Categories

Legend: PC = Patient Care,
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Production,
P = Procedures

Clinical activities

36.	Record initial observations of imaging procedures following the supervising radiologist approval. (R.R.A.s do not perform** interpretations (preliminary, final, or otherwise) of any radiological examination. The R.R.A. may make and communicate initial observations only to the supervising radiologist.)	PC.1.M., P.
37.	Communicate the radiologists' reports to appropriate health care provider consistent with the ACR Practice Parameter for Communication of Diagnostic Imaging Findings.	PC.1.M., S.1.B.1.A.
38.	Provide pre- and post- care instructions to the patient or authorized representative as prescribed by the supervising radiologist or other licensed provider.	PC.1.A.2.D., PC.1.C., PC.1.M., P.
39.	Perform** follow-up patient evaluation, and post-procedure care, as part of the radiologist-led team, and communicate findings to the supervising radiologist.	PC.1.F., .PC.1.M., P.
40.	Document procedure and post-procedure evaluation in appropriate record.	PC.1.M.
41.	Document patient admission and/or discharge summary for review and co-signature by the supervising radiologist.	PC.1.M., P.
42.	Participate in quality improvement activities within the radiology practice.	S.1.I.
43.	Assist with data collection and review for clinical trials or other research.	S.1.I.
44.	Assist or present at multi-disciplinary conferences as part of the radiologist-led team (e.g., tumor boards and case conferences).	S.1.I.

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Registered Radiologist Assistant

The purpose of the examination requirement is to assess whether individuals have obtained the knowledge and cognitive skills underlying the intelligent performance of the tasks typically required of Registered Radiologist Assistants (R.R.A.s) for practice at entry level. The tasks typically performed were determined by administering a comprehensive practice analysis survey to a nationwide sample of radiologists and radiologist extenders.¹ The *Registered Radiologist Assistant Entry-Level Clinical Activities (ELCA)* inventory may be found on the ARRT’s website (www.arrt.org).

The *Examination Content Specifications for the Registered Radiologist Assistant* identifies the knowledge areas underlying performance of the tasks on the *Registered Radiologist Assistant Entry-Level Clinical Activities (ELCA)* inventory. Every content category can be linked to one or more activities on the ELCA inventory.

The ARRT avoids content when there are multiple resources with conflicting perspectives. Educational programs accredited by a mechanism acceptable to ARRT offer education and experience beyond the minimum requirements specified in the content specifications and clinical competency requirements documents.

This document is not intended to serve as a curriculum guide. Although ARRT programs for certification and registration and educational programs may have related purposes, their functions are clearly different. Educational programs are generally broader in scope and address the subject matter that is included in these content specifications, but do not limit themselves to only this content.

The table below presents the major content categories and subcategories covered in the Selected Response section of the examination. The number of test questions in each category are listed in bold and number of test questions in each subcategory in parentheses. Specific topics within each category are addressed in the content outline, starting on page three of this document.

Content Categories	Selected Response Section	Case Study Section
Patient Care	56	
<i>Patient Management (38)</i>		
<i>Pharmacology (18)</i>		
Safety	28	
<i>Patient Safety, Radiation Protection and Equipment Operation² (28)</i>		
Procedures ³	116	See page 2
<i>Abdominal Section (41)</i>		
<i>Thoracic Section (25)</i>		
<i>Musculoskeletal and Endocrine Sections (25)</i>		
<i>Neurological, Vascular, and Lymphatic Sections (25)</i>		
Total Number	200⁴	
Percent of Total Exam Points	75%	25%
Testing Time Allowed	3.5 hours	2.5 hours

¹ A special debt of gratitude is due to the hundreds of professionals participating in this project as committee members, survey respondents, and reviewers.

² SI units are the primary (principle) units of radiation measurement used on the R.R.A. examination.

³ The Procedures section includes patient assessment and pathophysiology. Procedures may also refer to appropriate imaging.

⁴ The selected response section includes an additional 30 unscored (pilot) questions.

**R.R.A.s function as part of a radiologist-led team



A varied selection of the following 13 procedures (identified as mandatory on *Form CR-1 Summary of Clinical Experience and Competence Assessments*) will be included in the Case Study section of the examination. The number of items per case may vary, so this section will consist of at least 30 scored questions and 20 unscored (pilot) questions.

Abdominal Procedures

General Abdomen

1. Paracentesis

Gastrointestinal

2. Esophageal study
3. Swallowing function study
4. Upper GI study
5. Small bowel study
6. Enema with barium, air, or water-soluble contrast
7. Nasogastric/enteric or orogastric/enteric tube placement

Urinary

8. Cystography, voiding cystography or voiding cystourethrography

Thoracic Procedures

Pulmonary

9. Thoracentesis

Musculoskeletal and Endocrine Procedures

Musculoskeletal

10. Arthrogram (shoulder or hip)

Neurological, Vascular, and Lymphatic Procedures

Neurological

11. Lumbar puncture with or without contrast
12. Cervical, thoracic, or lumbar myelography – imaging only

Vascular and Lymphatic

13. Peripherally inserted central catheter (PICC) placement



Patient Care

1. Patient Management¹

A. Ethics

1. American Hospital Association (AHA) Patient Care Partnership (Patients' Bill of Rights)
2. consent and patient education (e.g., informed, oral, implied)
 - a. patient competence
 1. cognitive impairment
 2. competence assessment
 3. mental status
 4. medication
 - b. surrogate consent
 1. health care power of attorney
 2. family
 - c. informed consent components
 1. explanation of procedure
 2. risk versus benefit
 3. alternatives and options to current procedure
 4. refusal of procedure and implications
 5. radiation exposure and cumulative dose education
 - d. pre- and post-procedure care instructions
3. ASRT Practice Standards
4. ARRT Standards of Ethics

B. Medical Law

1. definitions
 - a. negligence and malpractice
 1. gross
 2. contributing
 - b. standard of care
 - c. assault and battery
 - d. false imprisonment
 - e. slander and libel
 - f. elements of tort law
2. legal doctrines
 - a. respondeat superior
 - b. res ipsa loquitur
 - c. foreseeability
 - d. personal liability
 - e. Good Samaritan Law
 - f. burden of proof
 - g. borrowed servant

C. Patient Communication

1. psychosocial support
 - a. communication skills and issues
 - b. cultural awareness
 - c. social support structures
2. patient interview
 - a. verification
 1. patient identification and correct procedure
 2. patient preparation
 3. pregnancy status
 - b. medical history
 1. chief complaint
 2. present illness
 3. past medical/surgical/psychological history
 4. family history
 5. personal and social history
 6. review of systems
 7. medications (*e.g., prescribed, OTC, natural)
 8. allergy history
3. factors affecting communication
 - a. speech, hearing, and language ability
 - b. cognitive disorders
 - c. drug and/or alcohol effects

D. Medical Data Review

1. indications for procedure (e.g., ACR Appropriateness Criteria[®])
2. contraindications for procedure
3. laboratory values
4. prior diagnostic studies
5. current medications
6. previous history (e.g., vital signs, practitioner notes)
7. assessment of vital signs, height, and weight
8. physical and/or mental limitations

E. Psychological and Cognitive Status

1. cognitive abilities
2. emotional stability

* The abbreviation "e.g.," is used to indicate that examples are listed in parenthesis, but that it is not a complete list of all possibilities.

(Patient Care continues on the following page.)

¹ Includes adaptations for pediatric, geriatric, and special needs populations.



Patient Care (continued)

- F. Patient Monitoring and Assessment (prior to, during, and post-procedure)
 - 1. physical status
 - 2. emotional status
 - 3. cardiac and pulmonary monitoring
 - 4. sedation and/or pain control
 - 5. medical emergencies
 - a. cardiac arrest
 - b. hyper/hypoglycemia
 - c. seizure
 - d. respiratory arrest
 - e. shock
 - f. stroke
- G. Common Laboratory Tests, Analysis, and Significance
 - 1. CBC
 - 2. electrolytes (sodium, potassium, bicarbonate, chloride, calcium)
 - 3. pancreatic and cardiac enzymes
 - 4. albumin and total protein
 - 5. coagulation profile
 - 6. liver function
 - 7. renal function
 - 8. glucose
 - 9. culture and sensitivity
 - 10. cytology and histopathology
- H. Infection Control
 - 1. asepsis and sterile technique
 - a. medical asepsis
 - b. sterile technique (e.g., patient preparation, procedural tray, maintenance of sterile fields)
 - 2. Centers for Disease Control (CDC) standard precautions (including mechanisms of disease transmission)
- I. Intravenous Therapy
 - 1. venipuncture
 - 2. flow rate monitoring
 - 3. complications
- J. Oxygen Therapy
 - 1. level (flow rate)
 - 2. devices
 - 3. indications and contraindications
- K. Urinary Catheterization
 - 1. technique
 - 2. complications
 - 3. contraindications
- L. Procedure Complications (Non-Contrast)
 - 1. infection
 - 2. hemorrhage
 - 3. pneumothorax
 - 4. perforation (GI or GU)
 - 5. respiratory distress
 - 6. aspiration
 - 7. vasovagal reaction
 - 8. pulmonary edema
 - 9. vascular injury or occlusion
 - 10. seizures
 - 11. pain
 - 12. neurologic deficit
 - 13. stroke
 - 14. cardiac arrest
 - 15. radiation injury
 - 16. physical injury
 - 17. death
- M. Medical Records
 - 1. components of documentation
 - a. types of documentation for patient chart
 - b. electronic and paper records
 - c. fluoroscopic and image documentation
 - 2. techniques and procedures for documentation
 - 3. document development and administration
 - a. examination findings
 - b. exceptions from established protocol or procedure
 - c. patient's questions and concerns
 - d. information regarding patient care, the procedure, and final outcome
 - e. diagnostic/therapeutic procedure and patient data
 - f. radiologists' reports to referring physician
 - g. direct communication with referring physician
 - h. discharge summary
 - i. incident reports

(Patient Care continues on the following page.)



Patient Care (continued)

2. Pharmacology

A. Terminology

1. regulations
 - a. Food and Drug Administration (FDA)
 - b. Drug Enforcement Agency (DEA)
 - c. controlled substances
2. identifying names
 - a. generic
 - b. trade
 - c. United States Pharmacopoeia (USP)
3. drug characteristics
 - a. actions
 - b. synergisms
 - c. side effects
 - d. adverse reactions
4. dosage
 - a. loading
 - b. maintenance
 - c. therapeutic dose
 - d. lethal dose
5. safe dosage calculation
 - a. ratio
 - b. proportion
 - c. pediatric
 - d. geriatric
6. administration (e.g., oral, rectal, intravenous)
7. adverse event

B. General Medications: Classifications, Indications, and Contraindications²

1. anti-infective drugs
 - a. antibiotics
 - b. antivirals
 - c. antifungals
2. cardiovascular drugs
 - a. antihypertensive
 1. calcium channel blockers
 2. beta blockers
 3. ACE inhibitors
 - b. vasoconstrictors
 - c. vasodilators
 - d. anti-arrhythmics
 - e. vascular drugs
 1. coagulation modifiers
 2. thrombolytics
3. gastrointestinal drugs
 - a. anti-reflux agents
 - b. hypomotility (glucagon)
 - c. cholecystokinetic (sincalide)
 - d. antiemetics
4. anti-inflammatory drugs
 - a. analgesics
 - b. nonsteroidal anti-inflammatory drugs (NSAIDs)
 - c. corticosteroids
5. endocrine drugs
 - a. diabetic medication
 - b. anti-hypoglycemic (glucagon)
 - c. insulin
 - d. thyroid medications
6. diuretics
7. neurologic and psychotropic drugs
 - a. anticonvulsants
 - b. antiparkinsonians

² Includes indications, contraindications, adverse reactions, dosage, routes of administration, and excretion process.

(Patient Care continues on the following page.)



Patient Care (continued)

C. Anesthetics and Sedation

1. local anesthetics²
 - a. short acting
 - b. long acting
2. moderate/conscious sedation
 - a. American Society of Anesthesiologists (ASA) definitions
 - b. ASA guidelines
 1. history and physical
 2. intra-procedure
 3. post-procedure
 4. discharge scoring system
 - a. motor activity
 - b. respirations
 - c. standing blood pressure
 - d. consciousness
 - e. oxygen saturation
 - c. medications²
 1. fentanyl
 2. morphine
 3. meperidine
 4. diazepam
 5. midazolam
 6. lorazepam
 7. naloxone
 8. flumazenil

D. Contrast Media (ACR Manual on Contrast Media)

1. agents²
 - a. negative contrast agents (e.g., air, CO₂, water)
 - b. positive contrast agents
 1. barium sulfate
 2. iodinated contrast media
 - a. osmolality
 - b. molecular structure
 - c. MRI agents
2. contrast related complications
 - a. nephrotoxicity
 - b. NSF (nephrogenic systemic fibrosis)
 - c. extravasation
 - d. allergies
 1. allergy history
 2. types of reactions (mild to severe)
 3. premedications
 - a. diphenhydramine
 - b. corticosteroids
 4. anaphylaxis
3. resuscitation
 - a. life support
 1. basic life support (BLS)
 2. advanced cardiac life support (ACLS)
 - b. basic drugs²
 1. epinephrine
 2. atropine
 3. bronchodilator
 4. nitroglycerine
 5. intravenous fluid

² Includes indications, contraindications, adverse reactions, dosage, routes of administration, and excretion process.



Safety

1. Patient Safety, Radiation Protection, and Equipment Operation

- A. Exposure and Dose
 - 1. exposure
 - 2. absorbed dose, equivalent dose, and effective dose
 - 3. measurement and calculation of quantities (e.g., CTDI, DAP, kerma area product)
 - 4. high dose exams and modalities
- B. Safety Standards
 - 1. organizations and their roles
 - a. American College of Radiology (ACR)
 - 1. Practice Parameters and Technical Standards
 - 2. Appropriateness Criteria®
 - 3. Contrast Manual
 - b. Nuclear Regulatory Commission (NRC)
 - c. Occupational Safety and Health Administration (OSHA)
 - d. Environmental Protection Agency (EPA)
 - e. Food and Drug Administration (FDA)
 - f. International Commission on Radiological Protection (ICRP)
 - g. National Council on Radiation Protection and Measurements (NCRP)
 - h. state health departments
 - 2. monitoring and measuring
 - a. personnel dosimetry
 - b. environment
 - c. devices
 - 3. benchmarking patient radiation dose
 - a. NCRP reports
 - b. ACR Appropriateness Criteria®
 - c. diagnostic reference levels
 - d. radiation safety resources (e.g., Image Wisely®, Image Gently®, radiologyinfo.org)
- C. Methods to Reduce Patient Exposure
 - 1. intermittent fluoroscopy
 - 2. limitation of field size
 - 3. exposure factors (x ray and CT)
 - 4. geometry (e.g., SID, SSD, angulation, table height)
 - 5. filtration of the x-ray beam
 - 6. vary beam angulation
 - 7. immobilization
 - 8. grid selection and/or removal
 - 9. limitation of fluoroscopic time
 - 10. proper fluoroscope use
 - a. last image hold
 - b. cumulative timer
 - c. magnification mode
 - d. dose mode
 - 1. low dose
 - 2. cine
 - 3. high-level control
 - 4. pulsed
 - 11. pediatric considerations
- D. Methods to Reduce Occupational Exposure (e.g., ALARA)
 - 1. time and location in radiation area
 - 2. shielding devices in x-ray rooms
 - 3. personal shielding devices
 - 4. proper fluoroscope use
- E. Radiation Biology
 - 1. cell growth and division
 - 2. radiosensitivity of cells
 - a. direct and indirect effects
 - b. linear energy transfer (LET)
 - c. relative biological effectiveness (RBE)
 - d. oxygen enhancement ratio (OER)
 - e. dose rate, fractionation, and protraction
 - 3. radiation effects
 - a. deterministic (tissue reactions) and stochastic effects
 - b. background radiation
 - c. dose-response relationships
 - d. skin effects
 - e. acute radiation syndromes
 - f. local tissue damage
 - g. hematological effects
 - h. carcinogenesis
 - i. fetal effects
 - j. genetic effects

(Safety continues on the following page.)



Safety (continued)

F. Regulations

1. quality assurance management
 - a. facility rules
 - b. The Joint Commission requirements
2. credentialing
 - a. institutional requirements
 - b. state licensing/registration regulations
 - c. supervisory requirements
 - d. professional standards
3. government regulations
 - a. Medical Practice Act – supervisory requirements
 - b. Health Insurance Portability and Accountability Act (HIPAA)
 - c. MQSA Act
 1. personnel requirements
 2. reporting and data system (BI-RADS)

G. Equipment Operation

1. fluoroscopy
 - a. components
 1. x-ray tube
 2. image receptors
 3. collimators
 4. recording devices
 5. generator
 6. controls
 7. display
 8. automatic exposure rate control (AERC)
 - b. static image storage
 - c. dynamic image storage
 - d. pulsed fluoroscopy
 - e. high-level or boost mode
 - f. exposure factors
 - g. cumulative timer
 - h. common artifacts (e.g., recursive filtration, DSA)
2. dose monitoring equipment:
cumulative air kerma and dose rate display

H. MRI Safety

1. screening and education (patients, personnel, non-personnel)
 - a. biomedical implants
 - b. ferromagnetic foreign bodies
 - c. medical conditions (e.g., renal function, pregnancy)
 - d. prior diagnostic or surgical procedures
 - e. topical or externally applied items (e.g., tattoos, medication patches, body piercing jewelry, monitoring devices, handcuffs)
2. equipment safety
 - a. ancillary equipment in proximity
 - b. designated safety zones
 - c. emergency response (e.g., fire fighters, rapid response team, other emergency services)
 - d. FDA labeling criteria
 1. Safe
 2. Conditional
 3. Unsafe
- I. Quality Improvement and Research
 1. continuous quality improvement (CQI)
 2. statistics
 - a. measures of frequency
 - b. measures of central tendency
 - c. measures of variation
 3. clinical study design
 4. clinical trial phases



Procedures

Each section may include questions related to the following topics:

- Anatomy and Physiology: normal, age-related changes, and common surgical changes.
- Patient Assessment (prior to, during, and post-procedure): review medical history, perform a physical examination, evaluate test results, vital signs, signs, and symptoms.
- Procedures: patient and procedure preparation, consent (indications, contraindications, alternatives), performance, image evaluation and post-processing*, and post procedure outcomes assessment.
- Medical Devices: image appearance, indications, purpose, appropriate location, and complications.
- Pathophysiology: alteration in function and structure related to disease/injury, compensation mechanisms, and congenital and developmental abnormalities.

*Post processing includes:

CT and MRI Image Post-Processing

- 3D reconstruction
- maximum intensity projection (MIP)
- multiplanar reconstruction (MPR)
- quantitative measurements (volume, distance, diameter)
- volume rendering

CT Post-Processing

- modifications to field of view (FOV)
- slice spacing
- algorithm
- cardiac analysis (e.g., calcium scoring, coronary artery mapping, TAVR)

1. Abdominal Section

A. General Abdomen

1. anatomy and physiology
2. patient assessment
3. related procedures
 - a. paracentesis
 - b. abscess, fistula, or sinus tract study
 - c. percutaneous drainage with or without placement of catheter
 - d. change of percutaneous tube or drainage catheter
 - e. removal of percutaneous drainage catheter
4. medical devices
 - a. drainage catheters
 - b. peritoneal dialysis catheters
5. pathophysiology
 - a. abdominal aortic aneurysm
 - b. abdominal calcifications
 - c. abscess
 - d. free fluid/ascites
 - e. hemoperitoneum
 - f. normal and abnormal gas patterns
 - g. peritonitis
 - h. pneumatosis intestinalis
 - i. pneumoperitoneum
 - j. portal venous gas

c. upper GI study

d. small bowel study

e. enema with barium, air, or water-soluble contrast

f. postoperative GI study

g. percutaneous, nasogastric/enteric, and orogastric/enteric tube evaluation

h. nasogastric/enteric or orogastric/enteric tube placement

4. medical devices

a. bariatric devices

b. gastroenteric tubes

c. gastrointestinal tract stents

(Procedures continues on the following page.)

B. Gastrointestinal

1. anatomy and physiology
2. patient assessment
3. related procedures
 - a. esophageal study
 - b. swallowing function study



Procedures (continued)

5. pathophysiology – esophagus and stomach
 - a. achalasia
 - b. Barrett esophagus
 - c. bezoar
 - d. Crohn disease
 - e. diverticula (Zenker, Killian-Jameson, epiphrenic)
 - f. dysphagia
 - g. esophagitis
 - h. fistulae
 - i. gastric outlet obstruction
 - j. gastritis
 - k. gastroesophageal reflux disease (GERD)
 - l. gastroparesis
 - m. hiatal hernias
 - n. malignant and benign masses
 - o. presbyesophagus
 - p. primary muscular and neural disorders
 - q. pyloric stenosis
 - r. scleroderma
 - s. surgical variation (e.g., Roux-en-Y, gastric band, fundoplication, gastric sleeve)
 - t. ulcers
 - u. varices
 - v. volvulus
 - w. webs
 6. pathophysiology – small and large intestine
 - a. adhesions
 - b. appendicitis
 - c. colitis
 - d. constipation
 - e. Crohn disease
 - f. diverticulosis/diverticulitis
 - g. duodenitis
 - h. fistulae
 - i. hernias
 - j. Hirschsprung disease
 - k. ileus
 - l. infections
 - m. inflammatory bowel syndrome
 - n. inflammatory diseases
 - o. intussusception
 - p. ischemia
 - q. malabsorption
 - r. malignant and benign tumors (masses)
 - s. malrotation
 - t. Meckel diverticulum
 - u. necrotizing enterocolitis
 - w₁ obstruction
 - x₁ peptic ulcer disease
 - y₁ polyps
 - z₁ superior mesenteric artery (SMA) syndrome
 - aa₁ surgical variation
 - bb₁ toxic megacolon
 - cc₁ volvulus
- C. Hepatobiliary, Pancreas, and Spleen
 1. anatomy and physiology
 2. patient assessment
 3. related procedure
 - a. liver biopsy (non-targeted)
 - b. t-tube cholangiogram
 4. medical devices
 - a. stents
 - b. cholecystostomy tubes
 - c. biliary drainage tubes
 5. pathophysiology
 - a. biliary calculi
 - b. biliary dyskinesia
 - c. cholangitis
 - d. cholecystitis
 - e. cirrhosis
 - f. hepatic steatosis
 - g. hepatitis
 - h. liver failure
 - i. malignant and benign masses
 - j. pancreatic insufficiency
 - k. pancreatic pseudocyst
 - l. pancreatitis
 - m. portal hypertension
 - n. splenomegaly
 - D. Urinary
 1. anatomy and physiology
 2. patient assessment
 3. related procedures
 - a. antegrade urography (e.g., nephrostography)
 - b. loopography (urinary diversion study)
 - c. retrograde urethrography or urethrocystography
 - d. cystography/cystourethrography
 4. medical devices
 - a. urinary catheters
 - b. nephrostomy tubes
 - c. ureteral stents
 - d. artificial urinary sphincter
 5. pathophysiology
 - a. acute and chronic renal failure
 - b. calculi
 - c. glomerulonephritis and nephrotic syndrome

(Procedures continues on the following page.)



Procedures (continued)

- d. infarcts, ischemia, thrombosis
 - e. infectious and inflammatory processes
 - f. malignant and benign masses
 - g. nephrocalcinosis
 - h. polycystic kidney disease
 - i. renal papillary necrosis
 - j. UPJ obstruction (congenital, adult)
 - k. vesicoureteral reflux
- E. Reproductive
- 1. anatomy and physiology
 - 2. patient assessment
 - 3. related procedure: hysterosalpingography
 - 4. medical devices
 - a. penile implants
 - b. pessary
 - c. contraceptive devices
 - 5. pathophysiology
 - a. female
 - 1. ectopic pregnancy
 - 2. endometriosis
 - 3. infertility
 - 4. malignant and benign masses
 - 5. pelvic inflammatory disease
 - 6. polycystic ovary disease
 - 7. pregnancy
 - b. male
 - 1. benign prostatic hypertrophy
 - 2. hydrocele
 - 3. inflammatory processes
 - 4. malignant and benign masses
 - 5. testicular torsion
- ## 2. Thoracic Section
- A. General Thoracic
- 1. anatomy and physiology
 - 2. patient assessment
 - 3. related procedures: chest fluoroscopy
 - 4. pathophysiology
 - a. calcification
 - b. diaphragmatic paresis
 - c. inflammatory and infectious diseases
 - d. malignant and benign masses
 - e. pneumomediastinum
- B. Cardiac
- 1. anatomy and physiology
 - 2. patient assessment
 - 3. medical devices
 - a. IABP/heart assist device
 - b. pacers/AICD
 - c. cardiovascular valves
 - d. Swan-Ganz catheters
 - e. central venous catheters
 - f. stents
- 4. pathophysiology
 - a. cardiac dysrhythmias
 - b. congestive heart failure (CHF)
 - c. coronary artery disease
 - d. endocarditis
 - e. pericardial disease
 - f. valvular heart disease
- C. Pulmonary
- 1. anatomy and physiology
 - 2. patient assessment
 - 3. related procedures
 - a. thoracentesis
 - b. placement of catheter for pneumothorax
 - 4. medical devices
 - a. chest tubes
 - b. tracheal tubes
 - c. vascular coils
 - 5. pathophysiology
 - a. adult respiratory distress syndrome (ARDS)
 - b. asthma
 - c. atelectasis
 - d. bronchopulmonary dysplasia (BPD)
 - e. chronic obstructive pulmonary disease (COPD)
 - f. malignant and benign masses
 - g. neonatal respiratory distress syndrome
 - h. pleural diseases
 - i. pleural effusions
 - j. pneumothorax
 - k. pulmonary edema
 - l. pulmonary emboli
 - m. pulmonary fibrosis
 - n. pulmonary venous and arterial hypertension

(Procedures continues on the following page.)



Procedures (continued)

D. Breast and Axilla

1. anatomy and physiology
2. patient assessment
3. related procedures: injection for sentinel node localization
4. medical devices
 - a. breast implants
 - b. tissue expander
 - c. radiofrequency devices
5. pathophysiology
 - a. benign and malignant masses
 1. cysts
 2. ductal carcinoma in situ
 3. fibroadenoma
 4. inflammatory breast cancer
 5. invasive ductal carcinoma
 6. invasive lobular carcinoma
 7. Paget disease
 8. phyllodes
 - b. inflammatory diseases

3. Musculoskeletal and Endocrine Sections

A. Musculoskeletal

1. anatomy and physiology
2. patient assessment
3. related procedures
 - a. therapeutic bursa aspiration and/or injection
 - b. diagnostic joint aspiration
 - c. therapeutic joint injection
 - d. superficial soft tissue mass biopsy
 - e. arthrogram (radiography, CT, MRI)
 1. shoulder
 2. elbow
 3. wrist
 4. hip
 5. knee
 6. ankle
4. medical devices: orthopedic hardware

5. pathophysiology

- a. arthritis
 1. gout
 2. osteoarthritis
 3. rheumatoid arthritis
 4. ankylosing spondylitis
 5. psoriatic arthritis
 6. septic arthritis
- b. bursitis
- c. trauma
 1. fractures
 2. dislocations
 3. associated soft tissue injuries (e.g., labral tears, meniscus tears, tendon tears, effusions)
- d. tumors
 1. chondrosarcoma
 2. enchondroma
 3. Ewing sarcoma
 4. metastatic disease
 5. multiple myeloma/plasmacytoma
 6. osteochondroma
 7. osteoid osteoma
 8. osteosarcoma
- e. infections
 1. osteomyelitis
 2. soft tissue infection
- f. diseases
 1. fibrous dysplasia
 2. osteogenesis imperfecta
 3. osteomalacia
 4. osteoporosis
 5. Paget disease
 6. renal osteodystrophy

B. Endocrine

1. anatomy and physiology
2. patient assessment
3. related procedure: thyroid biopsy
4. medical devices: insulin pumps
5. pathophysiology
 - a. adrenal disorders
 - b. diabetes mellitus
 - c. hyperparathyroidism
 - d. pituitary disorders
 - e. renovascular hypertension
 - f. thyroid disorders
 1. malignant and benign masses
 2. hypo and hyperthyroidism
 3. inflammatory

(Procedures continues on the following page.)



Procedures (continued)

4. Neurological, Vascular, and Lymphatic Sections

A. Neurological

1. anatomy and physiology
2. patient assessment
3. related procedures
 - a. lumbar puncture
 - b. myelogram
 1. cervical
 2. thoracic
 3. lumbar
4. medical devices
 - a. CSF shunts
 - b. intrathecal catheters
 - c. neuro stimulators
 - d. embolization devices
 - e. orthopedic hardware (e.g., spine hardware)
5. pathophysiology
 - a. amyotrophic lateral sclerosis (ALS)
 - b. cerebrovascular accident (CVA)
 - c. Chiari malformation
 - d. dementia (e.g., Alzheimer disease)
 - e. herniated disc
 - f. hydrocephalus
 - g. increased intracranial pressure
 - h. infection/inflammation
 - i. intracranial hemorrhage
 - j. malignant and benign masses
 - k. multiple sclerosis (MS)
 - l. myasthenia gravis
 - m. normal pressure hydrocephalus (NPH)
 - n. open and closed head injuries
 - o. Parkinson disease
 - p. pseudotumor cerebri
 - q. seizures
 - r. spinal cord injury
 - s. syrinx
 - t. tethered cord

B. Vascular and Lymphatic

1. anatomy and physiology
2. patient assessment
3. signs and symptoms of vessel disease
4. related procedures
 - a. extremity venography
 - b. superficial lymph node biopsy
 - c. insertion of non-tunneled central venous catheter
 - d. central venous catheter or port injection
 - e. peripherally inserted central catheter (PICC) placement
 - f. tunneled venous catheter removal
5. medical devices
 - a. catheters
 - b. stents
 - c. embolization devices
 - d. IVC filters
 - e. umbilical vascular catheters
6. pathophysiology
 - a. anemias
 - b. aneurysm
 - c. arterial venous malformations (AVM)
 - d. arteriosclerosis/atherosclerosis
 - e. blood clotting disorders
 - f. coarctation of aorta
 - g. deep vein thrombosis
 - h. dissection
 - i. hemorrhage
 - j. hypertension
 - k. infectious or inflammatory lymphadenopathy (e.g., cat scratch disease)
 - l. leukemias
 - m. lymphedema
 - n. lymphomas
 - o. shock
 - p. venous insufficiency

APPENDIX D
Clinical Affiliation Agreement (Sample)

AFFILIATION AGREEMENT FOR STUDENT CLINICAL EXPERIENCE

This Affiliation Agreement (“Agreement”) is executed by and between Midwestern State University, a public institution of higher education located in Wichita Falls, Texas, on behalf of its School of Radiologic Sciences, (“University”) and _____ (“Facility”). University and Facility may be referred to herein individually each as a “Party” or collectively as the “Parties.”

Background

- Facility operates a licensed and accredited [type of healthcare] facilities at [address].
- University enrolls students in an accredited school which requires clinical experience as part of the educational process.
- The Parties desire to advance the field of Radiologist Assistants and aid in meeting the increasing demand for trained healthcare professionals and to make available better health care services to patients.
- The Parties agree it is of mutual interest and advantage that the students of the University be given an opportunity to utilize the programs and services at the Facility for clinical experience in their educational process as set forth in this Agreement.

Agreement

Now therefore, in consideration of the foregoing and in further consideration of the mutual benefits, the Parties agree as follows:

Article 1 Term and Termination

- 1.1 **Initial Term.** The original term of this Agreement is for one year beginning [month, day, year] and ending on [month, day, year].
- 1.2 **Renewal.** Upon expiration of the original term of this Agreement, this Agreement shall be automatically renewed on an annual basis, not to exceed four one-year renewals, or unless terminated by either Party.
- 1.3 **Termination.** Either Party may terminate this Agreement at any time with or without cause by providing thirty (30) days written notice to the other Party. Students assigned at Facility when termination notice is given shall be permitted to complete their current semester at University’s option.
- 1.4 **Annual Review.** This Agreement must be reviewed and evaluated annually by University and Facility at least [number of months] months prior to expiration of the current term of this Agreement for the purpose of mutually agreed upon revisions which may be deemed advisable or necessary and which will be set forth in a written amendment to this Agreement executed by both Parties.

Article 2 Facility Responsibilities

Facility shall:

- 2.1 **Facility Use.** Allow the use of its facilities for the University student clinical experience requirement.
- 2.2 **Supervision.** Provide clinical staff supervision of students by currently licensed professionals in the field of expertise identified on page one.
- 2.3 **Confidentiality.** Make available access to patients and medical records for University faculty and students as part of the clinical experience requirement. Facility agrees that students who are participating in the practicum are part of Facility’s workforce, as that term is defined under HIPAA regulations, and subject to confidentiality obligations applicable to Facility’s employees and others under its control.
- 2.4 **Patient Care.** Maintain authority and responsibility for care given to its patients.
- 2.5 **Review.** Periodically review the clinical experience efforts and number of students to participate as mutually agreed by the

Parties prior to the beginning of the clinical experience, and participate if requested by University in program review activities directed toward continuing program improvement.

- 2.6 **Administration.** Maintain authority and responsibility for policies, procedures, and administrative guidelines in the operation of the Facility. The Facility will provide for the orientation of University's participating students as so such policies, procedures and administrative guidelines. The Facility agrees to promptly inform the University of any changes in the Facility's policies, procedures, and/or staff that might adversely affect the field experiences of the student placed under this Agreement.
- 2.7 **Staff Participation.** Encourage its staff to participate in the educational activities of University.
- 2.8 **Removal Notice.** Facility agrees that it will give at least five (5) business days prior written notice to University if it desires to remove a student from the practicum assignment, except in an emergency or when immediate removal is necessary for safety of patients or others. Removal shall not be based on constitutionally impermissible reasons.
- 2.9 **Emergency Care.** Provide emergency medical care for students as needed, at student's expense.
- 2.10 **FERPA Requirements.** To the extent Facility generates or maintains educational records related to the participating students, the Facility agrees to comply with the Family Educational Rights and Privacy Act ("FERPA"), to the same extent as such laws and regulations apply to University and shall limit access to only those employees or agents with a need to know. For the purposes of this Agreement, pursuant to FERPA, University hereby designates Facility as a school official with a legitimate educational interest in the educational records of the participating students to the extent that access to University's records is required by Facility to carry out the clinical experience. Facility agrees that it will not further disclose personally identifiable information about any student that it receives from University pursuant to this Agreement, unless the student consents in writing to such disclosure or unless Facility can otherwise legally disclose the information under FERPA. In consideration for the personally identifiable information, Facility expressly warrants and represents that it will not use the student information provided by University for any purpose other than to comply with the terms of its Agreement with University unless otherwise required by law.
- 2.11 **Insurance Requirements.** Provide proof that it maintains general liability insurance in an amount that is commercially reasonable.

Article 3 University Responsibilities

University Shall:

- 3.1 **Program Responsibility.** Maintain the authority and responsibility for education programs for its students which may be conducted at Facility.
- 3.2 **Faculty Liaison.** Provide a qualified faculty member to serve as a liaison for the student's learning experience at the Facility.
- 3.3 **Insurance.** Maintain professional liability insurance for its students during the term of this Agreement and any extensions thereof.
- 3.4 **Confidentiality.** Inform its students of the requirement to comply with applicable Facility policies and procedures, including confidentiality, and that publication or other disclosure by either University students or faculty of any information or material obtained as a result of this clinical experience is prohibited, unless prior written approval is obtained from University and Facility.

Article 4 General Provisions

- 4.1 **Amendment.** This Agreement may be amended in writing to include any provisions that are agreed to by the Parties.
- 4.2 **Governing Law; Venue.** This Agreement is governed by and construed and enforced in accordance with the laws of the State of Texas. Pursuant to Section 109.005 of the Texas Education Code, the County in which University's Chief Executive Officer is located shall be the sole proper place of venue for any legal action or proceeding arising out of this Agreement or

the enforcement of any provision in this Agreement.

4.3 **Assignment.** Neither this Agreement, nor any rights or obligations of monies due hereunder are assignable or transferable without University’s prior written agreement. Facility will not assign or sub-award any portion of the Agreement without University’s prior written approval, which will not be unreasonably withheld.

4.4 **Severability.** If one or more provisions of this Agreement, or the application of any provision to any party or circumstance, is held invalid, unenforceable, or illegal in any respect, the remainder of this Agreement and the application to other parties or circumstances will remain valid and in full force and effect.

4.5 **Independent Contractor.** Nothing in this Agreement is intended nor shall it be construed to create an employer/employee relationship between contracting Parties or the students engaged in the practicum. The sole interest and responsibility of the Parties is that the services covered by this Agreement shall be performed and rendered in a competent, efficient, and satisfactory manner. This Agreement does not form a joint venture or partnership. University will not be responsible for the Federal Insurance Contribution Act payments, federal or state unemployment taxes, income tax withholding, Workers Compensation Insurance payments, or any other insurance payments, nor will University furnish any medical or retirement benefits or any paid vacation or sick leave. Facility is responsible for conduct of its business operation.

4.6 **Notices.** Any and all notices or other communications required or permitted by this Agreement or by law to be served on or given to either Party to this Agreement shall be in writing and will be deemed served when personally delivered to the Party to whom these are directed, or in lieu of personal service, when deposited in the United States mail, first-class postage prepaid, addressed as follows:

[Facility Name]
Attention:
Title
Address
Address
Email Address

Midwestern State University
Contracts Department
ATTN Tracy Nichols
3410 Taft Blvd
Wichita Falls, TX 76308
Tracy.nichols@msutexas.edu

4.7 **Entire Agreement; Modifications.** The Agreement supersedes all prior agreements, written or oral, between Facility and University and will constitute the entire Agreement and understanding between the Parties with respect to the subject matter hereof. The Agreement and each of its provisions will be binding upon the Parties and may not be waived, modified, amended, or altered except in writing signed by representatives of University and Facility with valid signature authority.

4.8 **E-Signatures.** This Agreement may be executed in two or more counterparts, each of which are deemed to be an original as against any Party whose signature appears thereon, but all of which together shall constitute but one and the same instrument. Signatures to this Agreement transmitted by facsimile, by electronic mail in “portable document format” (“pdf”), or by any other electronic means which preserves the original graphic and pictorial appearance of the Agreement, have the same effect as physical delivery of the paper document bearing the original signature.

Midwestern State University:

Insert Facility Name:

Signature

Signature

Magaret Brown Marsden Ph.D.

Name

Name

Provost/ VP of Academic Affairs

Title

Title

Date

Date

APPENDIX E

Radiologist Preceptor Agreement (Sample)



Department of Radiologic Sciences
Robert D. & Carol Gunn College of Health Sciences and Human
Services 3410 Taft Boulevard Wichita Falls, Texas 76308-2099
Office: (940) 397-4337 or (940) 397-4575
Toll Free: 1-866-575-4305 FAX (940) 397-4845
Internet: <http://www.mwsu.edu/academics/hs2/radsci>

RADIOLOGIST PRECEPTOR WRITTEN AGREEMENT RADIOLOGIST ASSISTANT PROGRAM

I agree to serve as the Radiologist Preceptor without remuneration for _____ as he/she completes the MSU Radiologist Assistant Master's Degree.

I have reviewed the online MSU RA Program information and understand that the clinical component of the program runs five (5) semesters (Summer-Fall-Spring-Summer-Fall). Students must take the RA courses in the order indicated on the RA curriculum. Students are required to attend seminar classes on the MSU campus twice each semester and must have reliable access to computers to complete online course requirements throughout each semester. Students must meet all program requirements including demonstrated competence in the specified number of General Diagnostic Clinical Competencies and the specified number of Elective Clinical Competencies to successfully complete the program. Upon completion of the program students will receive a Master of Science in Radiological Science degree for the MSU RA Program.

I understand and accept that my responsibilities as Radiologist Preceptor include, but are not limited to:

- Teaching and guiding the RA student as he/she develops overall RA clinical skills.
- Supervising and overseeing RA student interactions with patients.
- Teaching, evaluating, and documenting successful completion of the RA Clinical Competencies (Required and Elective) as identified by the MSU RA curriculum.
- Verifying that the RA student has at least twenty four (24) clinical contact hours per week to develop RA clinical skills each semester.
- Maintaining communication with the MSU faculty about the progress of the RA student in the RA program.

I understand that the student **MUST** have a Radiologist Preceptor to participate in the MSU Radiologist Assistant Program. I understand the student will function under the affiliation and privileges extended to the radiologist or radiology group by the facilities served.

If, for any reason, I cannot continue to serve as this student's preceptor, I will immediately notify the MSU RA program. I understand that the student must identify another radiologist willing to serve as Radiologist Preceptor to remain in the MSU RA Program.

Signed,

Radiologist Preceptor Name / Date

Printed Radiologist Name

Authorizing Signature for Group Practice / Date

Revised 09/13



MIDWESTERN

STATE UNIVERSITY

Department of Radiologic Sciences
Robert D. & Carol Gunn College of Health Sciences and Human Services
3410 Taft Boulevard Wichita Falls, Texas 76308-2099
Office: (940) 397-4337 or (940) 397-4575
Toll Free: 1-866-575-4305 FAX (940) 397-4845
Internet: <http://www.mwsu.edu/academics/hs2/radsci>

Radiologist Assistant Program **Preceptor and Clinical Information**

Student Name: _____

Clinical Site Information

Facility name: _____

Address: _____

Preceptor Information

Name: _____

Address: _____

Phone #: _____

Email: _____

Please indicate below how they would prefer to be contacted:

Email **and/or** mail address: _____

APPENDIX F

Radiologist Assistant Program Handbook Acknowledgement Form

My signature below indicates that I have received the Radiologist Assistant Program Handbook. I agree to abide by the policies and procedures outlined and understand that I am responsible for adhering to them.

Radiologist Preceptor's Signature

Radiologist Preceptor's Name (printed)

Student's Signature

Student's Name (printed)

Date



***MIDWESTERN STATE UNIVERSITY
THE SHIMADZU SCHOOL OF RADIOLOGIC SCIENCES***

3410 Taft Blvd
Wichita Falls, TX 76308
(866) 575.4305
(940) 397.4845 fax
radiology@msutexas.edu
www.msutexas.edu

Find the MSRS Program on social media:
@MidwesternMSRS
www.facebook.com/MidwesternMSRS