

**New Jersey Department of Environmental Protection
Radiologic Technology Board of Examiners
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COMPETENCY BASED CLINICAL EDUCATION STANDARD

Approved by the Board:
September 14, 1989

Revised and approved by the Board:
April 28, 1993
September 23, 1999

November 3, 2004 with mandatory implementation by the graduating Class of 2007 and thereafter.

October 29, 2008 to reflect minor revisions to Sections VI, VII and VIII

July 26, 2011 with mandatory implementation by the graduating Class of 2014 and thereafter with optional implementation for the graduating Class of 2012 and Class of 2013

July 29, 2015 to reflect the removal of Section IV.1(c) as a prerequisite for a Simulated CCE.

July 20, 2016 with mandatory implementation of graduates who complete the educational program after December 31, 2018 and thereafter with optional implementation for the graduating Class of 2017 and Class of 2018

October 28, 2021 with mandatory implementation for graduates who complete the program after December 31, 2023 and thereafter with optional implementation for students who complete their program during 2022 and 2023.

I. Introduction:

The Board, with the input from New Jersey radiography educators, has revised its 2016 Competency Based Clinical Education (CBCE) Standard to reflect the ARRT's "2022 Radiography Didactic and Clinical Competency Requirements." Instead of using its own categories and procedures, the Board has developed a CBCE system that uses the ARRT's categories and procedures and has developed a CBCE procedure that, if followed, would comply with both the ARRT's and Board's Clinical Competency Requirements. In order to assist programs to comply with both competency requirements, a sample competency evaluation tracking form has been developed that may be used to track both ARRT and Board competency evaluations. This tracking form was developed using Microsoft Excel and is attached as Appendix A. An electronic version is available upon request. According to the ARRT, this form may be used for tracking the performance of procedures listed on its "2022 Radiography Didactic and Clinical Competency Requirements." Programs may modify this form to meet their individual needs.

The following is a summary of the Board's competency requirements. Using the ARRT 2022 "Radiography Didactic and Clinical Requirements", the Board lists a total of 70 radiographic and fluoroscopic imaging procedures into eleven (11) categories. The Board classifies these procedures into 36 "Mandatory" imaging procedures and 34 "Elective" imaging procedures.

Clinical Competency Requirements:

- Students must demonstrate competence in a minimum of 51 procedures following Board guidelines. A minimum total of 41 procedures must be performed on patients.
- Students must demonstrate competence in all 36 "Mandatory" imaging procedures.
- Students must demonstrate competence in a minimum of 15 "Elective" imaging procedures chosen from the designated list of 34 procedures.
- No more than a total of 10 "Mandatory" and "Elective" imaging procedures can be simulated. Only these procedures that are eligible for simulation in Appendix A can be simulated.
- A procedure can only be counted once (e.g. a portable femur can be counted as either a portable extremity in the "Mobile Radiographic Studies" category or a femur in the "Lower Extremity" category but not both).

Each school must develop and continuously implement a clinical curriculum that complies with at least the minimum requirements set forth in this standard.

II. The Board's Philosophy on Clinical Education:

In accordance with this Standard, a student's clinical competency is a requirement for graduation from a Board accredited radiography program. The program is responsible for ensuring that prior to graduation; students have fulfilled all requirements contained in this Standard. Since 1989, the Board has not mandated nor recommended a minimum number of clinical education hours. However, the number of clinical education hours shall be sufficient for a student to accomplish the program's required number of clinical competency evaluations. This Standard is designed to produce entry level skilled graduates who are clinically competent. The affective domain must be integrated throughout the CBCE process.

CBCE is a progressive approach to the clinical development of a student. Students begin this process by observing a procedure or groups of procedures.

After didactic and laboratory instruction and documented laboratory proficiency¹ in a procedure, the student then proceeds to the participation stage of the CBCE system. In the participation stage, the student may now assume a more active role in his/her clinical responsibilities. Students shall perform these procedures under direct supervision.

The final stage in this CBCE system is the ability of a student to perform radiographic procedures under indirect supervision. Before the student can achieve this level of supervision, he/she must demonstrate competency through Clinical Competency Evaluation (CCE). The Board's CBCE Standard includes the following three (3) types of CCEs: (1) Initial Clinical Competency Evaluations (Initial CCE); (2) Continual Clinical Competency Evaluations (Continual CCEs) and (3) Terminal Clinical Competency Evaluations (Terminal CCEs). All Initial CCEs, Continual CCEs and Terminal CCEs must be performed on patients. Initial CCEs are usually common procedures that are performed on ambulatory, non-traumatic patients. As the student is evaluated on Continual CCEs and Terminal CCEs, the procedures and patient types become progressively more difficult. The Board believes that the strength of New Jersey radiography programs is largely due in part to the ongoing competency requirements (i.e., Continual CCEs and Terminal CCEs) throughout the entire program.

In addition to the above, a Simulated Clinical Competency Evaluation (Simulated CCE) can be performed in any "Mandatory or "Elective" procedure that is not performed on a patient. Simulated CCEs should only be considered for infrequent procedures and can be evaluated either in the hospital or laboratory setting. Passing a Simulated CCE still requires direct supervision of the student until the student later passes a clinical competency evaluation performed on a patient.

1 "documented laboratory proficiency" is a laboratory evaluation that is performed under simulated conditions and did not include all criteria for a Simulated CCE as published in Section VI of this Standard but does include the criteria necessary to determine that a student is proficient to position patients for that procedure.

III. Clinical Competency Requirements:

The Board requires all programs to implement a CBCE process that complies with the following:

1. Prior to graduation, each student must demonstrate competency in all 36 "Mandatory" procedures and at least 15 out of the 34 "Elective" procedures. A minimum of 41 of the 51 "Mandatory" and "Elective" procedures must be performed on patients. The Board strongly encourages all programs to exceed the minimum number of procedures to be performed on patients and the minimum number of "Elective" procedures that must be performed for competency. When possible, all CCEs should be performed on patients. The program should only consider simulation for infrequent procedures.
2. From the list of 70 procedures published by the ARRT, the program must ensure that at least the minimum number of Initial CCEs are completed on patients from the categories listed below:

<u>Category</u>	<u>Minimum Number of Initial CCEs</u>
Chest & Thorax	2
Upper Extremity	7
Lower Extremity	4
Head	1
Spine and Pelvis	4
Abdomen	1
Fluoroscopy Studies	1
Mobile C-Arm Studies	1
Mobile Radiographic Studies	3
Pediatrics (age 6 or younger)	1
Geriatric Patients	2

(If the program elects, the 11 categories may be broken into subcategories. However, the minimum number of Initial CCEs in each original category shall be maintained.)

3. All programs shall implement Continual CCEs. The minimum number of Continual CCEs is determined by the program. All Continual CCEs must be performed on patients.
4. A minimum of 41 different "Mandatory" and "Elective" procedures must be performed on patients as either Initial CCEs or Continual CCEs.
5. Prior to graduation, the program is required to evaluate students for Terminal CCEs. The minimum number of Terminal CCEs is determined by the program.

Terminal CCEs can be performed on “Mandatory” and “Elective” procedures. All Terminal CCEs must be performed on patients.

IV. Prerequisites for Clinical Competency Evaluations (CCEs):

1. Simulated Clinical Competency Evaluations (Simulated CCEs):

Prior to a Simulated CCE, a student shall complete the following:

- a. Documented didactic proficiency;
- b. Documented laboratory proficiency; and

Simulated CCEs can only be performed within the last six months of the anticipated date of program completion.

2. Initial Clinical Competency Evaluations (Initial CCEs):

Prior to an Initial CCE, a student shall complete the following:

- a. Documented didactic proficiency;
- b. Documented laboratory proficiency; and
- c. The program’s minimum number of procedures performed on patients under direct supervision.

3. Continual Clinical Competency Evaluations (Continual CCEs):

Continual CCEs must be performed on a progressive level of patient and procedure difficulty. A Continual CCE can only be performed on a procedure that was previously evaluated for competency as either an Initial CCE or a Simulated CCE. (Example: if a student was determined competent by way of a Simulated CCE, the Continual CCEs must be performed on a patient. If a student was determined competent by way of Initial CCE on an ambulatory non-traumatic hand, the Continual CCEs must be performed on a patient with trauma to the hand or have any other conditions that would increase patient difficulty, such as, Parkinson’s Disease, Rheumatoid Arthritis etc.)

4. Terminal Clinical Competency Evaluations (Terminal CCEs):

Prior to graduation, the student must demonstrate final competency in clinical education. This is accomplished by Terminal CCEs. Before advancing to this level of competency, students must:

- a. Be within 3 months of their anticipated date of program completion and
- b. Have achieved competency in the program's required number of Simulated CCEs, Initial CCEs and Continual CCEs within that category of procedures in which Terminal CCEs are to be attempted.

Terminal CCEs must be performed on a progressive level of patient and procedure difficulty.

V. Requirements for all Clinical Competency Evaluations (CCEs):

1. Students must be assigned to a Board approved clinical education center.
2. All program officials who evaluate students on CCEs must be approved by the Board.
3. All Initial CCEs, Continual CCEs and Terminal CCEs must be performed on patients.
4. A CCE that is not performed on a patient must be counted as Simulated CCE provided that the evaluation included all criteria in Section VI of this Standard. No more than a total of 10 "Mandatory" and "Elective" procedures can be evaluated by way of Simulated CCEs. Only these procedures that are eligible for simulation in Appendix A can be simulated.
5. Program officials shall approve the patients for all non-Simulated CCEs. Patient selection shall include a wide variety of patient types. (e.g. pediatric, trauma, geriatric, ambulatory, etc.)
6. All CCEs shall be based upon progressive level of difficulty.
7. Program officials shall determine the minimum number of times that a procedure must be performed by a student while under direct supervision.
8. Program officials shall develop suggested time frames for completion of all CCEs.
9. Institution protocol will determine the positions or projections and tasks for all CCEs.
10. Program officials shall be responsible for the development and implementation of the clinical competency grading system, affective domain evaluations, evaluation forms, performance objectives, and timely record maintenance of all CCEs.

11. The program shall publish all clinical competency requirements.
12. Continual CCEs and Terminal CCEs shall be performed on a progressive level of patient and procedure difficulty. (See Section IV, numbers 3 for examples)

VI. Criteria for all Clinical Competency Evaluations (CCEs):

All CCEs must include the minimum evaluation criteria:

1. Patient Identification Verification;
2. Examination Order Verification;
3. Patient Assessment;
4. Room Preparation;
5. Patient Management;
6. Equipment Operation;
7. Technique Selection¹;
8. Patient Positioning;
9. Radiation Safety;
10. Imaging Processing; and
11. Image Evaluation.

¹ Technique selection may include the use of CR, DR, AEC and manual techniques. Since not all facilities have CR, DR, or AEC equipment, it is important that students are competent in producing radiographs using manual exposure factors.

If CR or DR equipment is used during a clinical competency evaluation, image evaluation shall be based on the first image seen prior to any manipulation. As part of the competency evaluation, the exposure index selected by the student must be reviewed and be within the facility's established exposure range.

In addition to the above, Simulated CCEs requires the hands-on use of x-ray equipment and supplies and students must demonstrate the same level of cognitive, psychomotor and affective skills required for performing the procedures on patients.

VII. Required Levels of Clinical Supervision:

1. Prior to didactic and laboratory instruction and documented laboratory proficiency in a procedure:

The student is only permitted to observe a New Jersey licensed diagnostic radiologic technologist perform that procedure.

2. After didactic and laboratory instruction and documented laboratory proficiency in a procedure but prior to a Simulated CCE or Initial CCE:

The student continues to observe these procedures and gradually progresses to the point where the student can now participate and assist the New Jersey licensed diagnostic radiologic technologist while under direct supervision. The following parameters constitute direct supervision. The licensed diagnostic radiologic technologist shall:

- a. Evaluate the request for examination in relation to the student's knowledge and competency.
- b. Evaluate the condition of the patient in relation to the student's knowledge and competency.
- c. Be present in the room with the student to observe and supervise the examination.
- d. Evaluate and approve all resultant images and/or data.

3. After an Initial CCE, Continual CCE, or Terminal CCE:

With the exception to the procedures below, after a student has demonstrated competent in a given procedure, the student may perform that procedure under the indirect supervision of a New Jersey licensed diagnostic radiologic technologists. The following parameters constitute indirect supervision. The licensed diagnostic radiologic technologist shall:

- a. Evaluate the request for examination in relation to the student's knowledge and competency.
- b. Evaluate the condition of the patient in relation to the student's knowledge and competency.
- c. Be immediately available in the room or adjacent to the room where the student is performing the procedure. (Based on this parameter, a student cannot be assigned to a radiographic or fluoroscopic room unless a licensed diagnostic radiologic technologist is present either in that room or in an area that is adjacent to the room, such as, an adjacent room, adjacent room separated by a hallway or the hallway outside of the room where the procedure is being performed.)
- d. Evaluate and approve all resultant images and/or data.

All surgical and mobile procedures using either radiographic or fluoroscopic equipment must always be performed under direct supervision, regardless of the level of competency.

Passing a Simulated CCE still requires direct supervision of the student until the student later passes a clinical competency evaluation performed on a patient.

VIII. Requirement for Repeat Radiographs/Images:

Unsatisfactory radiographs/images shall be repeated only under the direct supervision of a New Jersey licensed diagnostic radiologic technologist, regardless of the student's level of competency.

IX. Remediation:

Remediation shall be an essential part of the CBCE Standard. The radiography program shall develop and publish a policy that addresses a student's failure to demonstrate competency within the clinical education curriculum. The following are the minimum remediation requirements for the five (5) types of clinical education failures:

1. Failure to demonstrate didactic or laboratory proficiency.

The program shall: (a) discuss the area(s) of failure with the student; (b) develop and implement a valid remediation plan; (c) reevaluate after remediation has been completed.

2. Failure of an initial clinical competency evaluation (Initial CCE):

The program shall: (a) discuss the area(s) of failure with the student; (b) develop and implement a valid remediation plan; (c) require clinical application of reinforced skills; and (d) reevaluate with either an initial clinical competency or simulated clinical competency in that radiographic procedure. If reevaluation is performed as a simulated clinical competency, the competency cannot be counted as an Initial CCE.

3. Failure of a continual clinical competency evaluation (Continual CCE):

The program shall: (a) remove the student's indirect supervision status in that radiographic procedure; (b) discuss the area(s) of failure with the student; (c) develop and implement a valid remediation plan; (d) require clinical application of reinforced skills; and (e) reevaluate with either a simulated clinical competency or an initial clinical competency in that radiographic procedure. If reevaluation is performed as a simulated clinical competency, the competency cannot be counted as a Continual CCE.

4. Failure of a simulated clinical competency evaluation (Simulated CCE):

The program shall: (a) discuss the area(s) of failure with the student; (b) develop and implement a valid remediation plan; (c) require application of reinforced skills; and (d) reevaluate with either an initial clinical competency or simulated clinical competency in that radiographic procedure.

5. Failure of a terminal clinical competency evaluation (Terminal CCE):

The program shall require remediation and reevaluation for the failed Terminal CCE. Reevaluation may be performed as a simulated clinical competency. A simulated clinical competency cannot be counted as a Terminal CCE. An additional Terminal CCE would be required prior to graduation eligibility.

The content and length of the remediation plan shall be determined by the program. All remediation shall be documented.

X. Clinical Education in Computed Tomography (CT):

In accordance with the 2017 ASRT Radiography Curriculum, programs with sufficient local resources are encouraged to provide students with clinical experience in computed tomography. If a program includes opportunities for competency assessment in CT, at a minimum the ASRT's CT objectives must be the basis for such competency. All student CT activities must be performed under the direct supervision of a New Jersey licensed diagnostic radiologic technologist. Activities involving CT quality control testing must be performed under the direct supervision of a New Jersey licensed diagnostic radiologic technologist or a New Jersey certified medical physicist.

Attached to this Standard are the following appendixes:

Appendix A - Sample Competency Tracking Form

Appendix B - Board's Competency Based Clinical Education Standard Flow Chart