Accreditation Standards for Nuclear Medicine Technologist Education

DRAFT 1 FOR PUBLIC COMMENT

Joint Review Committee on Educational Programs
In Nuclear Medicine Technology
© ???

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Standard A: Administration

A1 Sponsorship
A1.1 The institution sponsoring a nuclear medicine technology program must be one of the following:
   a) A post-secondary academic institution accredited by a regional or national accrediting agency that is
      recognized by the U.S. Department of Education (USDE) or the Council for Higher Education
      Accreditation (CHEA), and authorized under applicable state law or other acceptable authority to
      provide a post-secondary educational program, which awards a minimum of a certificate upon
      completion of the program.
   
   b) A hospital or medical center which is accredited by a health care accrediting agency or equivalent
      that is recognized by the U.S. Department of Health and Human Services, and authorized under
      applicable state law or other acceptable authority to provide healthcare, which awards a minimum
      of a certificate upon completion of the program.
   
   c) A branch of the United States Armed Forces, which awards a minimum of a certificate upon
      completion of the program.

A1.2 When multiple institutions collaboratively sponsor a program it shall be called a consortium. All
   institutions in the consortium must meet one of the criteria in Standard A1.1. The responsibilities of
   each member institution must be clearly documented in a formal contract or memorandum of
   understanding, which delineates responsibility for all aspects of the program including instruction,
   student services, resources, reporting, governance and lines of authority.

A2 Sponsor Responsibilities
A2.1 The sponsor must be capable of providing required prerequisite and co-requisite courses or have a
   process for evaluating and accepting transfer credit for these courses from other regionally or nationally
   accredited educational institutions.

A2.2 The sponsor must be capable of providing the professional didactic and laboratory instruction.

A2.3 The sponsor is responsible for:
   a) hiring faculty and staff;
   b) supporting the program faculty in curriculum planning, selection of course content, and program
      assessment;
   c) supporting the program in maintaining compliance with JRCNMT Standards and policies;
   d) receiving and processing applications for admission;
   e) conferring the academic degree or credential which documents satisfactory completion of the
      educational program;
   f) ensuring that all faculty and student policies are consistent with federal and state statutes, rules
      and regulations; and
   g) creating and following a teach out plan for currently matriculated students in accordance with the
      institution’s regional or national accreditor and federal law, in the event of program closure and/or
      loss of accreditation.

A2.4 The sponsor must provide the opportunity and financial support for ongoing professional development
   of the primary faculty of the program to ensure they are able to fulfill their instructional and
   administrative obligations.
A3 Program Responsibilities

A3.1 The program must have a philosophy and mission that supports and directs its educational plan and delivery of curriculum.

A3.2 The program shall be responsible for:
   a) Maintaining and documenting effective supervision, coordination, and continuing communication with all clinical affiliates to ensure students receive equivalent and adequate clinical experiences to meet competencies defined by the program.
   b) Maintaining and documenting effective coordination and continuing communication with academic affiliates to ensure students receive accurate and timely advisement:
      • prior to entering the nuclear medicine technology program, and/or
      • upon transfer of professional coursework from the program to the academic affiliate for degree completion.

A3.3 The program must ensure there is a current, duly executed affiliation agreement between the sponsor and each clinical affiliate. An agreement must identify the roles and responsibilities of all parties; specifically address student supervision and student liability; and provide adequate notice of termination of the agreement to minimize the impact on the clinical education of enrolled and matriculated students.

A3.4 The program must ensure there is a current, duly executed affiliation agreement between the sponsor and each academic affiliate. The agreement must identify the roles and responsibilities of all parties. It must delineate the credits the academic affiliate will award for completion of the nuclear medicine technology program, the degree to be awarded, and the process whereby the transfer of credits is accomplished.

A3.5 When a clinical affiliate is utilized by more than one nuclear medicine technology program, each program and the clinical site must negotiate and sign an affiliate sharing agreement then adhere to the terms of the agreement to ensure the maximum student capacity at the affiliate is not exceeded.

Standard B: Resources

Sponsor Resources

B1.1 The sponsor must provide sufficient resources to ensure achievement of the program’s goals and expected outcomes. Resources must include, but are not limited to:
   a) faculty;
   b) clerical and support staff;
   c) finances;
   d) offices;
   e) classroom and laboratory facilities;
   f) library facilities;
   g) clinical affiliates;
   h) equipment and supplies;
   i) computer resources; and
   j) instructional reference materials.
Program Personnel

B2.1 Program Director

a) Duties
The Program Director (PD) must hold a full-time appointment at the sponsoring institution and demonstrate effectiveness in program administration and assessment, curriculum design, instruction, student evaluation, and academic advisement. The PD must also demonstrate effectiveness in the supervision and coordination of the clinical coordinator(s) and other faculty teaching in the program. There must be evidence that sufficient time is devoted to the program by the PD to demonstrate that all educational and administrative responsibilities are met.

b) Qualifications
The PD must be a nuclear medicine technologist knowledgeable of current nuclear medicine technology and educational methodology. The PD must:

- hold a master’s degree* from a regionally or nationally accredited academic institution,
- hold current registration in nuclear medicine technology from a national certification board,
- have a minimum of four years post-certification nuclear medicine technology experience, and
- have at least one year experience teaching in the didactic and/or clinical setting for a nuclear medicine technology program.

B2.2 Clinical Coordinator

a) Duties
The Clinical Coordinator (CC) must be responsible for all aspects of the clinical education portion of the program, including organization, ongoing review and revision, planning for and development of clinical affiliates, and the general effectiveness of the clinical education experience. The PD may assume the responsibilities of the CC. There must be evidence that sufficient time is devoted to the program by the CC so that his or her educational and administrative responsibilities are met.

b) Qualifications
The CC must be a nuclear medicine technologist knowledgeable of current nuclear medicine technology. The CC must:

- hold a bachelor’s degree* from a regionally or nationally accredited academic institution,
- hold current registration in nuclear medicine technology from a national certification board, and
- have a minimum of two years post-certification nuclear medicine technology experience.

B2.3 Instructional Faculty

a) Duties
Instructional faculty must demonstrate effectiveness in teaching courses, supervising laboratory experiences, evaluating student achievement, and developing curriculum. Faculty must also participate in program policy and procedure formulation and the evaluation of program effectiveness.

b) Qualifications
Instructional faculty must be qualified by education, certification and/or experience to teach assigned courses at a level appropriate for nuclear medicine technology students.

*Persons who held this position on January 1, 2011 who do not meet this qualification have until January 1, 2018 to comply with the degree qualification, as long as they remain at the same accredited institution.
B2.4 Administrative Support Staff

There must be sufficient administrative and clerical support staff to enable the program to meet its published goals and objectives.

Clinical Affiliate Personnel

B3.1 Affiliate Education Supervisor

a) Duties

Each Affiliate Education Supervisor (AES) must demonstrate effectiveness in the supervision, clinical education and evaluation of students assigned to his or her facility.

b) Qualifications

An AES must hold current registration in nuclear medicine technology from a national certification board or possess suitable equivalent qualifications relevant to the particular clinical area, and must have at least two years of post-certification clinical experience. The AES in a radiopharmacy must possess a current pharmacy license from the state in which (s)he practices and have two years of radiopharmacy experience. If the radiopharmacy is located within a clinical nuclear medicine department, the AES may be a registered nuclear medicine technologist.

Clinical Affiliate Resources

B4.1 The clinical component of the program shall provide an environment for supervised, competency-based clinical education and offer a sufficient and well-balanced variety of nuclear medicine procedures. Nuclear medicine equipment that is accurately calibrated, in working order, and meeting applicable national and state standards must be available.

In the event that a single clinical affiliate is unable to provide all clinical education competencies, rotations through additional recognized clinical affiliates is required.

B4.2 Student capacity of a program is based on the ability of clinical affiliate resources to meet program objectives for all students.

a) Facilities providing narrowly-focused competencies, such as radiopharmacy and PET/CT, will be assigned an arranged capacity, which does not contribute to the program’s total student capacity. The capacity will be based upon staffing and the volume of procedures performed. A 1:1 student to staff ratio must be maintained.

b) Capacity at imaging affiliates providing a broad variety of competencies is determined based on staffing, number of imaging instruments, and the volume and variety of procedures performed. The lowest number computed for each of the criterion below determines an affiliate’s capacity.

- 1 full-time student per full-time, certified nuclear medicine technologist
- 1 student per each imaging instrument
- 1 student per each 1300 procedures performed annually

B5 A program cannot use its accredited status to utilize affiliates that have not been recognized by the JRCNMT through the affiliate application process.
Standard C: Curriculum

C1 The program must create and follow a master educational plan for program delivery. The plan should contain sufficient detail to support program continuity when there are changes in faculty. The plan should include the following:

a) mission and educational outcomes of the program and a description of how they integrate with the mission and educational outcomes of the institution
b) curriculum sequence with rationale for course organization
c) course syllabi that include, at a minimum:
   • course title and number
   • course description
   • credit hours (or clock hours if program does not utilize credit hours)
   • instructor(s)
   • texts and other reading assignments
   • outline/agenda of topics
   • learning and/or performance objectives
   • methods of student evaluation and their weighting in course grade computation
   • grading scale
d) clinical education schedule template and guidelines for making clinical assignments, which demonstrate that all students will have the opportunity to meet required competencies
e) explanation of how the didactic curriculum correlates with the clinical curriculum
f) tools used to evaluate clinical competencies

C2 The program must provide a student handbook, clinical course syllabi, and student evaluation documents to each AES. Orientation to the documents and expectations of clinical affiliates should be provided by the program.

C3 General education and basic science coursework must be of adequate depth and scope, and appropriately sequenced, to provide a foundation for the educational outcomes of the professional program. Credit-bearing, college-level coursework is required in:

a) chemistry
b) human anatomy and physiology (two courses)
c) mathematics
d) physics
e) general education to include oral and written communication, humanities and social science
The professional nuclear medicine technology curriculum shall include as a minimum the following didactic content areas:

a) patient care  
b) cross-sectional anatomy  
c) nuclear medicine statistics  
d) nuclear medicine and radiation physics  
e) radiation biology  
f) radiation safety and protection  
g) nuclear medicine instrumentation  
h) quality control and quality assurance  
i) medical vocabulary  
j) diagnostic nuclear medicine procedures  
k) therapeutic nuclear medicine procedures  
l) positron emission tomography (PET)  
m) computed tomography (CT)  
n) hybrid imaging  
o) radiopharmacy and pharmacology  
p) medical ethics and law  
q) healthcare administration  
r) health sciences research methods  
s) medical informatics

The program shall include opportunities for students to develop personal and professional attributes and values relevant to clinical practice. These attributes include:

a) problem solving, critical-thinking and decision-making skills  
b) participation as a member of an interprofessional healthcare team  
c) appreciation and respect for cultural diversity  
d) acceptance of the responsibilities of being a healthcare professional

Supervised, competency-based clinical education shall include the following:

a) patient care and patient recordkeeping in accordance with the Health Insurance Portability and Accountability Act (HIPAA);  
b) radiation safety techniques that minimize radiation exposure;  
c) participation in a quality control program;  
d) preparation, calculation, identification, administration (where permitted), and disposal of radiopharmaceuticals and the performance of radionuclide quality control procedures;  
e) performance of an appropriate number and variety of diagnostic nuclear medicine procedures, including general imaging, nuclear cardiology and PET/CT, to achieve desired clinical competencies;  
f) observation and assistance with an appropriate number and variety of therapeutic nuclear medicine procedures to achieve desired clinical competencies; and  
g) interaction with interpreting physicians to develop an understanding of the clinical correlation of nuclear medicine procedures with other diagnostic procedures.

This will be a reference to JRCNMT technical competency list, which will be an appendix of the Standards. The list is still a work in progress that will be added for public comment with the next draft of the Standards.

Standard D: Assessment

Assessment of Student Learning Outcomes

A program must identify learning outcomes that clearly state the knowledge, skills and attitudes students are expected to obtain at the course and program level. Assessment measures must be established by the program for each learning outcome.
D2.2 Clinical and didactic evaluation of students shall be based on the objectives and competencies identified in course syllabi.

D2.3 Programs must implement a student evaluation process in didactic and clinical courses that utilizes **formative and summative evaluations** to provide students and program officials with timely indication of student progress and academic standing while remediation is still possible. In addition to measuring student progress, the evaluation system also serves as a reliable indicator of the effectiveness of course design and instruction.

**Assessment of Program Effectiveness**

D3.1 The assessment process must, at a minimum, document the regular collection and analysis of the following quantitative and qualitative data. Justifiable benchmarks for each quantitative assessment parameter should be established by the program, with the exception of the national certification exam benchmark, which is identified by the JRCNMT in Standard D3.2.

a) student attrition  
b) faculty attrition  
c) student evaluations of individual didactic courses, clinical experiences, and faculty  
d) AES evaluation of student performance  
e) graduate evaluation of program effectiveness  
f) employer evaluation of graduate preparedness to enter the workforce  
g) graduate performance on the national certification examinations  
h) Advisory Committee feedback (refer to D3.3)  
i) affiliate visit notes from the PD and/or CC; a minimum of two visits per year to each clinical affiliate in use is expected.

D3.2 Programs will maintain at least an 80% pass rate over consecutive five year periods for first-time examinees on the national certification examination.

D3.3 Each program must have an Advisory Committee that is asked to provide feedback at least semi-annually for on-going improvement of program policies, procedures and curriculum. Advisory Committee feedback must be documented in the form of minutes or by another method of recording input. The Advisory Committee must include each AES along with any other members required by institutional policy.

D3.4 The results of ongoing evaluation must be appropriately reflected in the curriculum and other dimensions of the program. In particular, the program must systematically document the application of assessment results in the process of program improvement.

**Standard E: Operational Policies**

**Fair Practices**

E1.1 Published information, including academic catalogs, web pages, brochures and advertising must accurately reflect the program offered.

E1.2 The program must create and adhere to personnel and student policies that are congruent with institutional policies and consistent with federal and state statutes, rules, and regulations.
E1.3 The admission process, including advanced placement, must be conducted in accordance with clearly defined and published practices of the sponsoring institution and program.

E1.4 The following must be accurately stated, published, and available to students:

   a) policies on transfer of credit and credit for professional certification and prior work experience
   b) institutional academic calendar
   c) estimates of tuition, fees, and other costs related to the program
   d) policies and procedures for refund of tuition and fees
   e) required academic and technical performance standards for admission
   f) all graduation requirements, including academic credits necessary for program completion
   g) policies and procedures for student withdrawal, leave of absence, probation, suspension, and dismissal
   h) student appeal and grievance procedures to permit neutral evaluation and ensure due process

E1.5 Faculty grievances must be handled in accordance with clearly defined and published practices of the sponsor that are readily available to faculty.

E1.6 Clinical assignments outside the normally scheduled clinical experience (e.g., evenings, weekends, and holidays) shall be justified by documenting their purpose. The document must be signed by the student, the AES and a representative of the program. Specific objectives and evaluations must be developed to address the uniqueness of these learning experiences.

E1.7 Policies and processes by which students may work in the nuclear medicine department while enrolled in the program must be published and made known to all concerned. Students may not assume the responsibility or take the place of qualified staff. Class credit cannot be awarded for clinical hours in which the student is an employee of the facility.

E1.8 Programs offering courses by distance education must have processes through which they can establish that a student who registers in such a course is the same student who participates in, completes and receives academic credit for the course. Student identity may be verified by methods including, but not limited to, secure log-in methodologies or proctored exams. These processes must protect student identity and students must be informed of associated costs.

E1.9 The program is responsible for accurately stating, routinely publishing, and making available to the public program outcomes reflecting student achievement and program performance.

Record-Keeping
E2.1 Individual grades and credits for courses shall be recorded on a transcript and permanently maintained by the sponsoring institution.

E2.2 Student records shall be maintained for admission, evaluation, counseling/advisement, and disciplinary actions. Records should be maintained in compliance with federal, state and institutional regulations and should remain on file for a minimum of seven years (one accreditation cycle). Programs must determine if the sponsoring institution or its accreditor have policies requiring maintenance for more than seven years.

Health and Radiation Safety
E3.1 All students shall be informed of and have access to the student health care services provided by the sponsoring institution.
E3.2 The health and safety of patients, students, and faculty must not be jeopardized in any way by activities of
students.

E3.3 The program must maintain compliance with federal and state radiation protection regulations. Radiation
exposure records shall be reviewed with each student at regular intervals (not less than quarterly). Documentation of these reviews, including a dated acknowledgement by the student, must be maintained.

E3.4 The program must ensure that all students, regardless of location, have equitable and timely access to
faculty and academic support services for assistance regarding academic matters and personal issues.
## Glossary

Terms throughout the Standards that are in **bold italics** are defined below. Where terms are not defined, their definitions are at the discretion of the JRCNMT.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td><strong>Academic Affiliate</strong></td>
<td>A regionally-accredited, post-secondary educational institution recognized by the JRCNMT to provide, through a contractual agreement with the program sponsor, academic credits for nuclear medicine coursework that will lead to a degree.</td>
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<td><strong>Affiliation Agreement</strong></td>
<td>A formal written document between a program sponsor and another institution that agrees to provide educational experiences or academic credits to students.</td>
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<td><strong>Affiliate Sharing Agreement</strong></td>
<td>A formal document, signed by the program directors and AES, describing how the approved student capacity at the affiliate will be distributed amongst the programs sharing the facility for clinical education.</td>
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<td><strong>Arranged Capacity</strong></td>
<td>Student capacity at a clinical affiliate that does not contribute to the program’s total clinical capacity due to the limited nature of education provided by the affiliate. Examples include, but are not limited to, radiopharmacies and affiliates that only offer PET/CT.</td>
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<td><strong>Assessment</strong></td>
<td>The systematic collection, review and application of information to improve student learning, educational quality and program effectiveness.</td>
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<td><strong>Competencies</strong></td>
<td>The measurable set of knowledge; clinical and interpersonal skills; professionalism; and critical thinking skills expected of program graduates.</td>
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<td><strong>Competency-Based</strong></td>
<td>Learner-centered education in which the focus is on the development and demonstration of proficiency in performing specific tasks.</td>
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<td><strong>Consortium</strong></td>
<td>A legally binding, contractual partnership between two or more institutions, for the purpose of offering a nuclear medicine technology educational program.</td>
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<td><strong>Credential</strong></td>
<td>Confirmation of program completion using a certificate or diploma, rather than an academic degree.</td>
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<td><strong>Effectiveness</strong></td>
<td>Meeting expectations or producing the identified outcomes.</td>
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<td><strong>Full-Time</strong></td>
<td>The JRCNMT will defer to the published definition of ‘full-time’ utilized by the Program Director’s employer.</td>
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<td><strong>Medical Informatics</strong></td>
<td>Structure, function and implementation of PACS, teleradiology, electronic medical records, and other digital systems used in the healthcare setting to manage, store and transmit information.</td>
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<td><strong>Post-secondary Education</strong></td>
<td>Education offered by institutions after the completion of high school.</td>
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<td><strong>Primary Faculty</strong></td>
<td>Employees of the program sponsor filling the position of Program Director and Clinical Coordinator.</td>
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<td><strong>Quality Assurance</strong></td>
<td>A structured program designed to maintain and improve all aspects of patient care. A quality control program is part of the broader quality assurance program.</td>
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<td><strong>Quality Control</strong></td>
<td>A program of technical procedures routinely performed to ensure that equipment meets established performance standards and radiopharmaceuticals demonstrate accepted properties.</td>
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<td><strong>Suitable Equivalent Qualifications</strong></td>
<td>Current registration, certification or state license related to the area of practice, such as computed tomography, nursing, or radiation physicist.</td>
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<td><strong>Summative Evaluation</strong></td>
<td>Assessment of student knowledge and/or skills at the end of a clinical rotation or course.</td>
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| **Supervised**  
| (pertaining to clinical education) | Direct supervision of students is required at clinical affiliates until competence is demonstrated, after which time supervision may be indirect. Direct supervision requires the clinical instructor to be physically present with the student. Indirect supervision requires the clinical instructor to be within the facility and immediately available to provide direct supervision. |
| **Teach Out Plan** | A plan created by the sponsoring institution and program describing how current students in the program will complete their education or be assisted in transferring to another accredited program upon closure or loss of accreditation. |