

Integral to the examination and certification process is the establishment of applicant qualifications. The Nuclear Medicine Technology Certification Board (NMTCB) has been as involved in this activity as it has been in assuring the development and administration of a reliable and valid examination. There has always been concern within the testing community regarding the establishment of fair and equitable eligibility requirements. The consensus within the testing community has generally been that alternate pathways for certification should be available to those individuals who enter a profession without formal education. New and emerging professions usually have recognized on-the-job-training (OJT) as a route to certification until educational standards have been established, or the alternate pathway is no longer a viable method in which an individual may acquire the skills and knowledge for competent practice of the profession.

In 1977, the NMTCB established eligibility requirements that included both graduation from a Council on Allied Health Education and Accreditation (CAHEA) approved school and OJT. The OJT requirements included some prerequisite training and/or education, such as either a Baccalaureate (BS) or Associate (AS) degree in one of the physical or biological sciences; certification in radiologic technology (RT); certification in medical technology (MT); registered nurse (RN); or a high school diploma or equivalent in addition to a prescribed amount of full-time clinical nuclear medicine technology experience obtained under the supervision of a physician licensed for the use of radionuclides. Regardless of the pathway by which an individual qualifies for the examination, all candidates take the same examination, and all successful candidates are granted the same credential—CNMT.

The NMTCB examination is a competency-based, criterion-referenced examination that is designed to test job-related knowledge and skills essential to effective entry-level practice and to distinguish between those candidates who are prepared to practice and those who are not. In a competency-based approach, validation studies identify those tasks at career entry that are most crucial to clinical practice, as well as those that have increasing importance in clinical practice. Therefore, the examinee's performance is determined in relationship to job-related knowledge. Pass/fail criterion is made, not in the context of group performance or how an individual fits into a test group, but rather on the basis of individual performance on the examination. The NMTCB has always utilized a competency-based approach in examination development, starting with the first examination in 1978. This criterion allows the NMTCB to assess the relevant application of knowledge

and skills throughout the entire scope of career-entry nuclear medicine technology practice, including *in vivo* and *in vitro* procedures. Furthermore, it allows the NMTCB to grant and issue certificates in nuclear medicine technology to voluntary candidates who have been deemed qualified by the Board.

To insure that the NMTCB examination performs as intended, the Board uses several psychometrically accepted analyses to evaluate each examination. These analyses include examination performance data, reliability measures, item difficulty, item discrimination, and item-test correlations. Statistical evaluations indicate that all NMTCB examinations have met these goals. Moreover, care is exercised in setting the pass/fail level. Pass/fail determinations are based upon the assumption that an individual's proficiency can be viewed along a continuum from competence to incompetence. The cutting score is chosen to minimize the number of competent examinees labeled as incompetent and vice versa. The identification of the cutting score requires as much data as possible. In order to obtain these data, the NMTCB uses a criterion-referenced approach termed Nedelsky's Method.

Furthermore, secondary analyses of the examination are also obtained. These analyses are based upon selected demographic characteristics that include educational experience, career experience, and prior experience on the NMTCB examination. Common statistical analyses show relative performance of examinees by eligibility route, the relationship between experience and performance, the relationship between educational background and performance, and the performance of examinees by category. In addition, performance comparisons of examinees repeating the examination and those taking it for the first time are also obtained.

Eligibility requirements have been continually monitored by the Board of Directors. Based on data obtained from the statistical analyses of the examination, the Board has been able to maintain and upgrade standards of OJT eligibility requirements. In 1979, the prescribed amount of full-time clinical experience was increased to four years for persons with an AS/BS degree, or RT, MT, or RN certification. In addition, the supervision criteria were changed for all OJT categories to "under the supervision of a physician board certified in nuclear medicine (ABNM), nuclear radiology (ABR), and/or isotopic pathology (ABP)."

Since 1979, the Board has been concerned about the performance of examinees with eligibility requisites of a high school diploma plus six years of full-time clinical experience. The mean scores of this classification of examinees have been consistently lower than the passing score each year, and con-

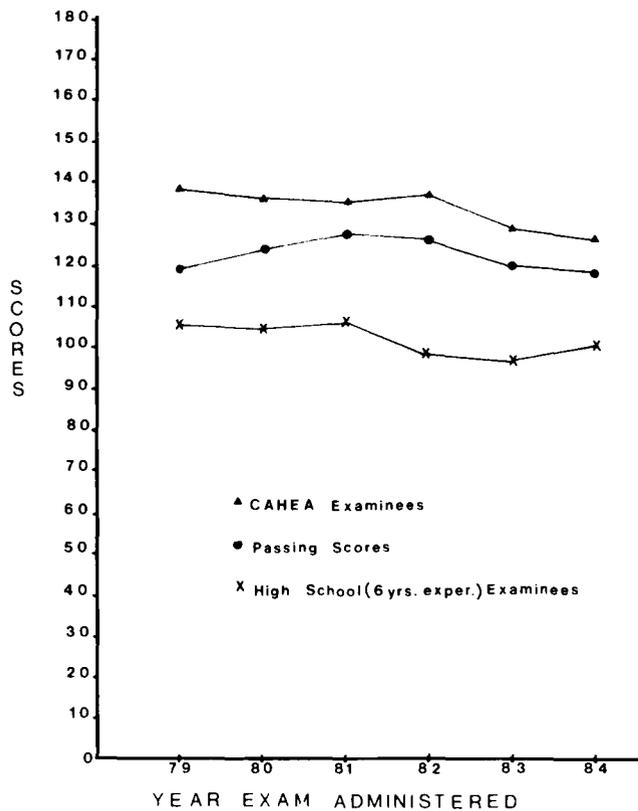


FIG. 1. Mean scores for examinees.

sistently lower than other OJT-trained examinees (Fig. 1). Furthermore, a change in the supervising criteria did not appear to improve performance of these individuals.

Prior to taking any action concerning the eligibility requirement of a high school diploma plus six years of full-time clinical experience, the NMTCB wished to obtain comments from the nuclear medicine community and from its sponsoring organizations. To this end, the Board has solicited comments on this issue during the past 21 months. However, only a limited number of individuals from the nuclear medicine community provided comments. These comments addressed the general category of OJT and viewed "OJT as a viable and necessary mechanism for examination eligibility" without providing any objective data. The comments from the sponsoring organizations were divided in that some believed that the OJT eligibility route should be "retained," and others believed that it should be "abolished." Sponsoring organizations that requested deletion of OJT did request that "persons presently involved in OJT or who will begin OJT in the next several years not be denied this entry route." The NMTCB sincerely appreciates all comments received.

Statistical data obtained from the NMTCB examination analyses support the elimination of the "high school plus six" eligibility requirement. These data include the stable trend of mean scores of these examinees (Fig. 2). The mean scores of this group have been well below the passing score since 1979. In addition, the mean scores of this group are significantly lower than the passing and mean scores of CAHEA

	1979	1980	1981	1982	1983	1984
CAHEA	137 ± 20 N = 503	136 ± 23 N = 593	135 ± 23 N = 646	136 ± 23 N = 705	129 ± 23 N = 723	126 ± 22 N = 711
ON-THE-JOB TRAINING:						
AS/BS	125 ± 24 N = 94	120 ± 20 N = 61	123 ± 26 N = 33	118 ± 33 N = 33	112 ± 20 N = 26	107 ± 25 N = 25
RT/MT	118 ± 21 N = 130	109 ± 20 N = 107	113 ± 21 N = 125	113 ± 20 N = 153	110 ± 20 N = 138	106 ± 18 N = 146
High school	105 ± 24 N = 46	104 ± 20 N = 45	106 ± 29 N = 43	98 ± 25 N = 60	96 ± 19 N = 46	100 ± 20 N = 64
PASSING GRADE	119	123	127	126	119	118

FIG. 2. Relative performance of OJT and CAHEA examinees.

graduates. Lastly, the mean scores of this group are lower than those of other examinee groups.

The NMTCB believes that these data indicate that this eligibility route is no longer a viable alternative for an individual to obtain the knowledge and skills necessary for practice. To this end, the Board of Directors passed the following resolution at its March 1985 meeting:

“Effective January 1, 1987, the eligibility requirement of high school diploma or equivalent plus six years of fulltime clinical Nuclear Medicine Technology experience under the supervision of a board certified physician will no longer be recognized by the NMTCB. Persons wishing to qualify for the examination under this eligibility route must begin their on-the-job training on or before December 31, 1986. Persons who have previously qualified for the examination through this route will not be affected by this change in eligibility requirements.

The Board will continue to recognize the OJT eligibility requirements of an AS/BS degree in one of the physical or biological sciences; certification in

radiologic technology (RT); certification in medical technology (MT); or registered nurse (RN), plus four years of full-time clinical experience in nuclear medicine technology obtained under the supervision of a physician board certified in nuclear medicine, nuclear radiology, and/or isotopic pathology.”

In summary, the examination results during the past six years indicate that the OJT eligibility requirement of “high school plus six years” is no longer a viable alternative for entry into nuclear medicine technology practice. Because many individuals are currently, or may be planning in the near future, to pursue this route, the Board will not implement this policy until January 1, 1987, thereby giving applicants every opportunity to begin their training prior to the December 31, 1986 deadline. There was no action taken to limit the number of times an individual may take the examination.

The Board will continue to evaluate OJT training eligibility requirements, collect data, and take action as required. As always, your input into the NMTCB certification program is very much appreciated.