American Journal of Pharmaceutical Education **2008; 72 (2) Article 33.**

SPECIAL ARTICLE

The NAPLEX: Evolution, Purpose, Scope, and Educational Implications

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Submitted May 15, 2007; accepted October 15, 2007; published April 15, 2008.

Since 2004, passing the North American Pharmacist Licensure Examination (NAPLEX) has been a requirement for earning initial pharmacy licensure in all 50 United States. The creation and evolution from 1952-2005 of the particular pharmacy competency testing areas and quantities of questions are described for the former paper-and-pencil National Association of Boards of Pharmacy Licensure Examination (NABPLEX) and the current candidate-specific computer adaptive NAPLEX pharmacy licensure examinations. A 40% increase in the weighting of NAPLEX Blueprint Area 2 in May 2005, compared to that in the preceding 1997-2005 Blueprint, has implications for candidates' NAPLEX performance and associated curricular content and instruction. New pharmacy graduates' scores on the NAPLEX are neither intended nor validated to serve as a criterion for assessing or judging the quality or effectiveness of pharmacy curricula and instruction. The newest cycle of NAPLEX Blueprint revision, a continual process to ensure representation of nationwide contemporary practice, began in early 2008. It may take up to 2 years, including surveying several thousand national pharmacists, to complete.

Keywords: competency, North American Pharmacist Licensure Examination (NAPLEX), licensure examination, doctor of pharmacy curriculum

HISTORY OF NABP PHARMACY LICENSURE EXAMINATIONS

State licensing of pharmacists is defined by state legislatures and based upon the measurement of competence that ultimately secures the protection of the public health. The assessment of an individual's competence to prepare and dispense medications was a primary reason for organizing state boards of pharmacy in the early 19th century. During those early days of regulation, the primary means for defining and measuring the competence to practice was the system of apprenticeship derived from the Medieval Guild system. It was not until some 150 years later that the profession of pharmacy recognized national, uniform standardized examinations as the basis for competence decisions.

The National Association of Boards of Pharmacy (NABP) introduced the concept of a standardized national pharmacy examination in 1952, the 49th year of the Association. In 1958 formal development work began on what would eventually become the NABPLEX. Then NABP assistant secretary, the late Dr. Fred T. Mahaffey, hired just 2 years earlier to lead this effort, organized a process for constructing and administering the profession's national licensure examination. Under Mahaffey's direction and stewardship, committees were formed within NABP to research the issues and collaborate with educators from the colleges and schools of pharmacy and pharmacist practitioners to formulate the design and scope of a uniform and standardized examination that could be used by state boards of pharmacy in place of then existent individual, not validated state examinations.

In 1968 NABP convened the Blue Ribbon Committee, comprised of pharmacy board members and educators to develop a national assessment examination. The Blue Ribbon Committee produced the prototype Blue Ribbon Examination, which was recognized by 32 states when it was introduced in 1971. In 1975 the Blue Ribbon Examination was renamed the NABPLEX and its psychometric standardization process was contracted to an external testing and psychometric service. The NABPLEX was nationally introduced in 1976 when it was used as a licensing criterion by a majority of US state boards of pharmacy. In 1979, the NABPLEX was included in the NABP Constitution and Bylaws as a requirement for interstate licensure reciprocity and active NAPB membership.

By 1986 all US state boards of pharmacy except California used the NABPLEX. In March 1997, the

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NABPLEX was renamed the North American Pharmacist Licensure Examination, NAPLEX,[1-9] which California recognized in 2004. The NAPLEX acronym was created when the NABP validated the examination for practice in both Canada and the United States. In 1997 the NABP introduced its computer-adaptive test; thus, the additional acronym CAT NAPLEX is also used. The electronic CAT NAPLEX administered at contracted testing centers replaced the paper and pencil format utilized since 1976 as the Blue Ribbon and NABPLEX.[1-7]

The NABPLEX required by the states from 1976 to April 1986 consisted of separate examinations in the 5 subjects of chemistry, mathematics, pharmacy, pharmacology, pharmacy, and practice of pharmacy. To more accurately simulate pharmacy practice, in June 1986 the NABPLEX transformed to a single integrated examination with a total scaled score instead of the previous 5 percentage scores. Score scaling on the integrated NABPLEX permitted earning scores greater than 100, but a scaled score of 75 was adopted and remains the minimum passing standard for the NAPLEX.[1-10] Some of the main descriptive parameters of the NABPLEX and NAPLEX from 1976-2005 are summarized in Table 1.

The collaboration between the faculties of the colleges of pharmacy and NABP is a long and distinguished history that began with the formation of the NABP-American Association of Colleges of Pharmacy (AACP) District Meetings in the late 1920s. The District Meetings were organized to pair college faculty members with board of pharmacy members and actually prepare questions for the individual state examinations. The District Meetings coalesced the expertise of faculty members and practitioners into a collaboration that continues today through the competence assessment and policy committees of NABP. Since 1968 pharmacy faculty members have served on the Blue Ribbon, and NABPLEX and

Table 1. Descriptive History of the NABPLEX and NAPLEX from 1976-2005[1-7,9,12,13,27,28]

		Main Format Parameters		
Dates	**Acronym**	**Tertiary Level Competencies, No.**	**Test Items, No.[a]**	**Percent Score Weighting**
1976 to April 1986	NABPLEX[c]	Chemistry: 7 Mathematics: 6 Pharmacology: 10 Practice of Pharmacy: 25 Pharmacy: 14	Chemistry: 75 Mathematics: 35 Pharmacology: 100 Practice of Pharmacy: 150 Pharmacy: 100	NA[b]
June 1986 to January 1997	NABPLEX[c,d]	90	350	Primary Areas[e] 1: 25% 2: 10% 3: 15% 4: 25% 5: 25%
March 1997 to April 2005	NAPLEX or CAT NAPLEX[f]	38	150	Primary Areas 1: 50% 2: 25% 3: 25%
Since May 2005	NAPLEX or CAT NAPLEX	35	150	Primary Areas[g] 1: 54% 2: 35% 3: 11%

Abbreviations: NA = not applicable

[a]The quantities of items listed for each secondary and tertiary Blueprint Competency Area or level are approximate, and vary slightly according to the CAT NAPLEX algorithm

[b]Participating state boards of pharmacy required candidates to earn a minimum 75% arithmetic average score, and not less than 60% on any of the five separate exams

[c]The NABPLEX was paper and pencil format using a Scantron type answer form

[d]Also known as the Integrated NABPLEX, for which a single score was reported

[e]The pharmacy subjects of the five primary Areas 1.00.00 through 5.00.00 were, respectively, interpreting prescriptions and medication orders, assessing prescriptions and medication orders and drugs in them, compounding and calculations, monitoring drug therapy, and counseling patients and health professionals

[f]The Computer Adaptive Test of NAPLEX, or CAT NAPLEX, began in March 1997

[g]References 12 and 13

NAPLEX Review Committees. The NABP also works closely with the AACP to review competence issues, gather input on the NAPLEX and other competency assessment programs, and deliver joint presentations on these subjects at national pharmacy meetings and the NABP-AACP District Meetings.

NABPLEX AND NAPLEX RAISON D'ÊTRE AND ESSENCE

The fundamental purpose of the NAPLEX is expressed in the following excerpt: "Pharmacists ... licenses can be revoked or suspended ... if the board [of pharmacy] determines that allowing the pharmacist to continue practicing would pose a threat to public health and safety."[11]

The NAPLEX consists of 185 total questions divided into 2 categories: those associated directly with patient profiles and scenarios, and standalone questions. The examination is organized to simulate actual pharmacy practice and determine whether pharmacy graduates can demonstrate minimal knowledge and application of skills to begin safe and accurate unsupervised pharmacy practice. Of the 185 questions that comprise the NAPLEX, 150 that have been psychometrically validated are used to determine a candidate's score while the remaining 35 questions are being field tested to gather statistical and professionally critical information about the performance of the question for consideration and use as a scored item in the future. Scaled NAPLEX scores of 75 and greater have been validated to reliably correspond to the competence of newly licensed pharmacists to correctly dispense medication and provide correct basic drug and healthcare information. However, even the highest NAPLEX passing scores cannot foretell the quality of actions, behaviors, communications, decisions, and ethics by subsequently licensed pharmacists.

In 1985, Fred T. Mahaffey, NABP Executive Director from 1962 through 1987 and the "father of the NABPLEX," asserted the following purpose of the NABPLEX: "Licensure examinations were never intended to measure education, or pinpoint specific weaknesses in teaching, curriculum or the program in the college of pharmacy. From the beginning the NABPLEX was developed with a single purpose, to insure a minimum standard of knowledge, skills and abilities necessary to practice pharmacy."[5] Nevertheless, the percentage of a college or school's graduates that passes the NABPLEX and NAPLEX has been, is, and will likely continue to be a convenient and reliable criterion by which some judge and compare the quality or success of doctor of pharmacy (PharmD) degree programs.

COMPUTER-ADAPTIVE NAPLEX

In 1996 the NAPLEX introduced the computer adaptive testing (CAT) model to the profession of pharmacy. The CAT NAPLEX is designed according to a set of specific knowledge areas and practice functions and skills, which are the Competency Statements, or Competencies, published in the Blueprint.[12,13] The Blueprint lists the percentage weightings for the 3 primary NAPLEX Competency Areas.[12,13] The numbering format and theoretical percentage weightings of the secondary and tertiary Competencies are summarized in Table 2.[12,13] The percentage weightings listed in Table 2 for secondary and tertiary Competencies are approximate because they vary slightly according to the CAT NAPLEX algorithm, which adjusts to the performance ability of individual NAPLEX candidates.[2,3]

Two psychometric parameters are used to qualify and determine inclusion of each item in the NAPLEX test bank or pool. First is the item *difficulty*, which is the percentage of examinees or candidates who answered the item correctly. Second is the item *discrimination*, which is point biserial correlation value, or PBIS. The PBIS correlates a group of candidates' raw scores (quantity of correct answers out of quantity attempted) with their correct and incorrect selections of each of the 5 answer choices to each NAPLEX item. The PBIS ranges from -1 to $+1$, and it should be positive for each keyed correct answer, and negative for the 4 distracter answers or foils to each item. The acceptable ranges for item difficulty and PBIS values are the confidential and proprietary property of the NABP.

Items on the CAT NAPLEX are selected by a complex computer algorithm from a large bank or pool of psychometrically validated test items that must satisfy the examination Blueprint and adjust to the ability level of each candidate.[2,3] Therefore, each candidate is presented with a unique examination based upon her or his individual capability in accordance with the NAPLEX Blueprint specifications.

As mentioned earlier, each CAT NAPLEX presents candidates with 150 test items that determine the reported score and 35 items that are being pretested to obtain psychometric statistical data to determine possible future inclusion in the bank or pool of validated scored items.[1-3,10] A single scaled score was introduced in 1986 when the integrated NABPLEX replaced the original 5-part NABPLEX for which individual percentage scores were reported (Table 1).[4-6] The scaling of NAPLEX scores is determined by the NABP Advisory Committee on Examinations, ACE, and consultant psychometricians by a confidential process. With the 1997 introduction of

Table 2. Theoretical Percentage Weightings of Primary, Secondary, and Tertiary Competency Levels According to the NAPLEX Blueprint of May 1, 2005[12,13]

Competencies[a]	Percentage Weighting, %	Tertiary Level Competencies[b]
Primary Level 1	54.0	
Secondary Levels		
1.1.0	13.5	1.1.1, 1.1.2, 1.1.3, 1.1.4
1.2.0	23.6	1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.2.5, 1.2.6, 1.2.7
1.3.0	16.9	1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.5
Primary Level 2	35.0	
Secondary Levels		
2.1.0	10.8	2.1.1, 2.1.2, 2.1.3, 2.1.4
2.2.0	16.2	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.6
2.3.0	8.1	2.3.1, 2.3.2, 2.3.3
Primary Level 3	11	
Secondary Levels		
3.1.0	3.7	3.1.1, 3.1.2
3.2.0	7.3	3.2.1, 3.2.2, 3.2.3, 3.2.4

[a]Percent in secondary level = (quantity of tertiary Competencies in secondary level/total quantity of tertiary Competencies in the primary level) × percent weighting of the primary level

[b]Percent of each = (1/total quantity of tertiary Competencies in the primary level) × percent weighting of the primary level

the CAT NAPLEX, a scale of 0 to 150 was introduced in which 75 represents the lowest acceptable ability level for entry into unsupervised pharmacy practice.[10] It is important to understand that CAT NAPLEX scaled scores are neither percentiles nor percentages of correctly answered items.[13]

NAPLEX BLUEPRINT

The current Blueprint resulted from an online survey of all 43 secondary and tertiary level Competencies enumerated in Table 2. That survey was submitted to 4,000 newly licensed and 4,000 practicing pharmacists during late June through July 31, 2003. Respondents ranked each Competency using a 5-point Likert scale that assessed both the frequency (eg, from many times daily to once monthly) and criticality (ie, health and safety importance) of the knowledge or skill in pharmacy practice.[10,14-19] The frequency and criticality ratings were combined by a Rasch rating scale analysis which was used to transform the ratings to a common scale of measurement.[2]

The NAPLEX Blueprint and Competency Statements were developed and affirmed in accordance with accepted testing and psychometric standards. They identify the application of knowledge and skills central to entry-level pharmacy practice. All test items in the NAPLEX databank are based on the Competency Statements, which are reviewed and revised periodically in response to changes in pharmacy practice and education. The percentage weighting of Competency areas in the Blueprint and the approximate quantities of test items therein during March 1997 to April 2005 and since May 2005 are compared in Table 3.

Hypertext links to online versions of the NAPLEX Blueprint and Competency Statements are provided in references 12 and 13. The pharmacy knowledge areas in the 35 tertiary NAPLEX Competencies are a subset of the broader scope of pharmacy curricula. Successful NAPLEX candidates must master specific critical facts that directly impact patient safety, and apply sound reasoning in interpreting patient profiles and information concerning medication therapy. Those facts and reasoning emphasize but are not limited to specific drugs, dietary supplements, diseases, symptoms, and diagnoses.

CHANGES TO THE BLUEPRINT

The first NAPLEX Blueprint was in effect from March 1997 through April 2005, during which time the following important events in pharmacy education and practice occurred:

(1) Final transition by several pharmacy schools from BS to PharmD degree curricula.
(2) Graduation of the first PharmD class from several new pharmacy schools.
(3) Unprecedented national acceleration of the following:

a) Opening and planning of new pharmacy schools;
b) Curricular emphasis on experiential education;
c) Per capita prescription drug volume; and
d) Opening and planning of chain store pharmacies

Table 3. Percentage Weighting Comparison of NAPLEX Blueprints From March 1997 Through April 2005 and Since May 1, 2005

Parameter	March 1997 through April 2005[a]	Since May 1, 2005[12,13]	Percent Change[b] (Quantity of Items) Since May 1, 2005
Area 1			
Percentage Weight (Quantity of Test Items)	50% (75)	54% (81)	8 (6)
Secondary Level Competencies[c]	3	3	0 (0)
Tertiary Level Competencies (Quantity of Test Items per Competency)[c]	16 (4.7)	16 (5.1)	0 (0.4)
Area 2			
Percentage Weight (Quantity of Test Items)	25% (37.5)	35% (52.5)	40 (15)
Secondary Level Competencies[c]	3	3	0 (0)
Tertiary Level Competencies (Quantity of Test Items per Competency)[c]	12 (3.1)	13 (4.0)	8.3 (0.9)
Area 3			
Percentage Weight (Quantity of Test Items)	25% (37.5)	11% (16.5)	−56 (−21)
Secondary Level Competencies[c]	3	2	−33.3
Tertiary Level Competencies (Quantity of Test Items per Competency)[c]	10 (3.8)	6 (2.8)	−40 (−1)

[a]Values for the March 1997 – April 2005 Blueprint were obtained from the NAPLEX Competency Statements, which were previously publicly accessible from the National Association of Boards of Pharmacy

[b]([Since May 1, 2005 value – March 1997 through April 2005 value]/March 1997 through April 2005 value) × 100

[c]The quantities of items listed for each secondary and tertiary Blueprint Competency Area or level are approximate, and vary slightly according to the CAT NAPLEX algorithm. Quantity = (Primary Area or level percentage weighting/100) × 150 items

The most significant change to the Blueprint went into effect May 1, 2005, with a 40% weighting increase for Area 2, which includes calculations, compounding, and pharmaceutics of drug products. It is a misconception that the current NAPLEX Blueprint de-emphasized some basic pharmaceutical sciences by incorporating elements of the new Accreditation Council for Pharmacy Education (ACPE) Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree, or Standards 2007.[20] The ACPE Standards are one of the reference sources for determining the NAPLEX Blueprint. However, the 2003 national survey by NABP, which was the main basis for the NAPLEX Blueprint, preceded posting of Standards 2007. Therefore, concern expressed by some pharmacy faculty members that Standards 2007 may decrease the curricular content of some basic pharmaceutical sciences, particularly medicinal chemistry and pharmacology, is not applicable to the NAPLEX Blueprint. For example, medicinal chemistry and pharmacology are covered in several NAPLEX tertiary Competencies in secondary Competency 1.2.0 in Area 1. Furthermore, Area 1 incurred an 8% weighting increase, from 50% to 54%, with the May 2005 Blueprint (Table 3), reflecting the importance of these.

Kenneth Skau, an experienced pharmaceutical scientist/educator's comment, captures that concern:

> One of the negative outcomes of the increase in experiential training has been a reduction in basic science education. Many colleges and schools of pharmacy terminated their pharmacognosy programs [courses] in the latter part of the 20th century only to find that the explosive use of herbal medicine and dietary supplements after implementation of the 1994 DSHEA [Dietary Supplements Health Education Act] left our pharmacy students with little background and understanding of natural product chemistry.
>
> Faculty members at several established colleges have informed me that the chemistry and pharmaceutics educational offerings are being curtailed.[21]

The changes in percentage weighting of Area 2 tertiary competencies effective May 1, 2005 *versus* 1997-2005 are presented in Table 4, and, again, the Competencies may be accessed directly via references 12 and 13. Additional discussion of these weighting changes is also provided hereafter for 12 out of 13 Area 2 tertiary Competencies pertaining to calculations, pharmaceutics of drug products, and compounding. It is important to consider that pharmacy education exceeds, and should exceed, the scope of knowledge and skills presented to pharmacy licensure candidates on the NAPLEX. Nevertheless, the current NAPLEX Blueprint increases the importance of the application of knowledge and skills in Area 2 that are currently identified and validated in pharmacy practice.

Table 4. Relative Increase in Percentage Weightings and Increased Quantities of Test Items for NAPLEX Area 2 Tertiary Level Competencies Since May 1, 2005 Compared to March 1997–April 2005

NAPLEX Area 2 Tertiary Competency Numbers	Relative Increases in Percentages and Quantities of Test Items Since May 1, 2005[a]
2.1.1, 2.1.2, 2.1.3, 2.1.4	30.1% and 4
2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.6	55.8% and 9
2.3.1, 2.3.2, 2.3.3	28.6% and 3
All 12[b] or 13[c]	40% and 15

[a]The quantities of items listed for each secondary and tertiary Blueprint Competency Area or level are approximate, and vary slightly according to the CAT NAPLEX algorithm
[b]March 1997 – April 2005
[c]Since May 1, 2005

Ratios of percentages of required curricular credits to percentage weightings of particular NAPLEX competencies (Table 2) range from small to large. In general, the fewest credits correspond to particular tertiary Competencies in primary Competency or Area 2. For example, coauthor Newton estimated the following ratios of required non-experiential PharmD curriculum credits at Shenandoah University to NAPLEX percentage weightings:

- Competency 1.1.0 - 50% of credits to 13.5% NAPLEX weighting;
- Competency 1.2.0 - 37% of credits to 13.5% NAPLEX weighting;
- Competencies 2.1.1, 2.1.2, 2.1.3, and 2.1.4 - 5.5% of credits to 10.8% NAPLEX weighting;
- Competency 2.2.3 - 1% of credits to 2.7% NAPLEX weighting; and
- Competency 3.2.0 - 29% of credits to 7.3% NAPLEX weighting

Calculations are named in tertiary Competencies 2.1.1, 2.1.2, 2.1.3, and 2.1.4, which are directly accessible via references 12 and 13. The approximately 11% weighting of those 4 Competencies toward the NAPLEX score illustrates the criticality for NAPLEX candidates to master calculation knowledge and skills. However, the tertiary Competencies are not limited to a particular primary and secondary area, but may assess multiple related types of information. For instance, Competency 1.2.6 includes calculation of dosage regimens in addition to related principles of pharmacokinetics. The May 2005 Blueprint represents a relative 30% increase in the weighting of secondary competency 2.1.0, ie, from 8.3% to 10.8% (Table 4), to which most calculations test items are assigned.

The increased weighting of NAPLEX Competency 2.1.0 (Table 4) relates data collected during the Blueprint survey that pharmaceutical calculations be included for required credit early in PharmD curricula, and be consistently reinforced thereafter. The analysis of pharmacy practice conducted by NABP for the development and validation of the NAPLEX Blueprint demonstrates that calculation knowledge and skills underlie a number of the required activities and competencies of entry-level pharmacy practice. Deficiencies in pharmacists' calculation knowledge and skills or in curricular "pharm calc" content is a major source of pharmacists' errors that can cause patient harm and death,[22,23] and bring negative publicity to pharmacy locally and nationally.

Secondary Competency 2.2.0 consists of 6 tertiary level Competencies representing product identification and other physical and chemical aspects of pharmaceutical products, comprising 16.2% of the NAPLEX score. Again, it is emphasized that each primary, secondary, and tertiary Competency Statement of the NAPLEX comprises multiple professional competencies. Therefore, secondary Competency 2.2.0 represents a lot of specific information that successful NAPLEX candidates must know about a lot of specific drug products.

Secondary Competency 2.3.0 contains 3 tertiary Competencies pertaining to compounding, which comprise 8.1% of the NAPLEX score. The relative 28.6% increased weighting of these Competencies since May 2005 (Table 4) reflects the increase in compounding activities in pharmacy practice, but compounding instruction is highly variable in required and elective instruction between pharmacy schools.[24]

Finally, the reduction from 25% to 11% in the weighting of current Area 3 Competencies resulted from redundancy between several tertiary Competencies in the NAPLEX Blueprint used from March 1997 through April 2005. This weighting change does not suggest lesser importance of these Area 3 Competencies in pharmacy practice.

NAPLEX SCORES AS A CRITERION FOR JUDGING CURRICULAR OR INSTRUCTIONAL EFFECTIVENESS

To reiterate Fred T. Mahaffey's 1985 assertion quoted earlier[5] and information repeatedly presented by NABP, the answer to this staged question must be "no." The current NAPLEX Registration Bulletin contains the following relevant statement: "The NAPLEX is the means by which boards of pharmacy assess the entry-level competence of candidates for licensure. Any other use of individual NAPLEX scores is inappropriate and is not condoned by NABP."[13]

Nevertheless, the NAPLEX is one of the primary outcome measures that can be utilized in formulating decisions regarding curriculum development and change. The current 35 tertiary NAPLEX Competencies[12,13] pertain to a purposely focused subset of pharmacy education, which validly assess the competence required for entry-level practice. The NAPLEX is not and cannot be validated to solely assess the vast and variable quantity of instruction provided in pharmacy education programs that prepare pharmacists for lifelong careers of learning.

PHARMACIST SELF-ASSESSMENT MECHANISM

Guideline 1.4 of the Standards 2007[20] includes preparing students for lifelong education. To help stimulate and guide pharmacists' career-long professional development after initial licensure, NABP introduced the PSAM in 2005.[25] The PSAM is a 100-question assessment for pharmacists to evaluate their professional practice skills and knowledge, and the PSAM Blueprint Competencies[26] are similar to those of the NAPLEX. The primary Areas of PSAM are Pharmaceutical Care, and Preparation and Dispensing of Medications and Devices, which contain 5 secondary and 25 tertiary-level Competencies. The PSAM score is reported only to individual participants.[25,26]

CONCLUSION

The current NAPLEX Blueprint reflects significant changes in pharmacy practice between the early 1990s and 2003. The change in percentage weightings of the 3 primary Competency Areas implies that some subjects in pharmacy curricula may need to be reviewed within the context of students' preparedness for entry-level practice and lifelong learning. Pharmacy faculties would be prudent to review their required and elective courses in relation to the Standards 2007,[20] the NAPLEX Blueprint and Competency Statements, and the AACP Center for the Advance of Pharmaceutical Education (CAPE) documents. For example, given the increased weighting of Area 2 items (Table 4), every college's/school's curriculum should include sufficient instruction in pharmaceutical calculations, compounding, and characteristics of commercial drug products. In addition, the curriculum should sufficiently cover the rapidly emerging discipline of genomics and related patient-specific drug selection and dosing regimens, which can be embraced by several Competencies in the current NAPLEX Blueprint.

Successfully completing the NAPLEX is a significant challenge and often the final hurdle that pharmacy graduates face in their quest to attain the career-beginning objective of professional licensure. Although the NAPLEX may be the "final exam" of the pharmacy graduate's ability to apply the knowledge and skills required to begin unsupervised practice, it should not be considered the "final exam" of the college's or school's curricula and instruction.

ACKNOWLEDGEMENTS

North American Pharmacist Licensure Examination and NAPLEX, Pharmacist Self-Assessment Mechanism, and PSAM are registered trademarks of the National Association of Boards of Pharmacy.

The information in this paper describing the CAT NAPLEX and NAPLEX Blueprint and Competency Statements was authorized for publication in this *Journal* by the National Association of Boards of Pharmacy.

The first author, David W. Newton, has been a member of the NABPLEX and NAPLEX Review Committees since 1983.

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