Kentucky Board of Nursing

Programs of Nursing Update

August 2007

Questions? Contact: Patty Spurr, Education Consultant @ 502-429-3333; Patricia.Spurr@ky.gov

Nurse Licensure Compact Affects Nurse Faculty and Students

As you are aware, Kentucky joined the compact effective June 1, 2007. The most immediate impact on programs of nursing is two-fold.

1. Faculty License: Faculty members that live in another compact state (i.e., Tennessee) will no longer be required to hold a Kentucky license. Please be sure that the person has an active license in the other state. Also, check to see the expiration date on the license. Other states renew differently. Renewal may be on a two-year cycle and the month of renewal may be based on birth month.
2. Student Education: Students that plan to live in Kentucky and then work in another compact state need to understand the process for petitioning to complete the internship in another state. Tennessee and Virginia have agreed that they will recognize the provisional license ONLY AFTER the student has been successful on NCLEX. An instruction sheet and form follows for use in accomplishing this task.

Program Administrators Orientation

For the past several years, we have been conducting nurse administrator orientations here at the Board office. The sessions are open to anyone from a program who wishes to attend to learn more about Nursing Education and Regulation in Kentucky. All sessions are held at the Board Office. The dates for the new academic year include:

- **October 19, 2007**
- **February 8, 2008**
- **March 28, 2008**

The program lasts from 9 a.m. until 2 p.m. To cover the costs we will need to charge $20 for the session. This $20 will include: light breakfast, snacks, lunch, and materials. Fee will need to be received in order to secure your place at the session. Registration is limited to 20 individuals per session. Reserve your spot early.

Submission of Materials for Education Committee Review

Lila and I frequently get called and asked about submitting materials to the Education Committee. Attached is the guideline that has been developed to assist you in submitting materials.

Status of Education Regulation Revision

Thanks to everyone who took the time to read the proposed revisions to the educational regulations and provide feedback. The revised regulations went to the Board at their June 2007

meeting and were accepted. The revisions have been filed in Frankfort at the LRC. We expect them to come before that committee in September. Should they be accepted, projected implementation date would be around January 2008.

Once the regulations have been adopted, the goal is to hold a series of regional educational sessions across the state to review the regulations in detail. If you would be willing to host such a session, please let me know.

Non-Testers on NCLEX

At a recent education committee, questions were raised about the number of graduates that complete their nursing education but never take the NCLEX exam. National Council completed a study on this population in 2004 and we thought you would be interested in the findings.

National Council of State Boards of Nursing: 2004
Investigate Reasons for Non-Licensure of Nursing School Graduates

The Examination Committee investigated the reasons why nursing school graduates from the 2000 calendar year have not taken the NCLEX-RN or NCLEX-PN examination. This study was designed to investigate the reasons why candidates who complete their nursing education, submit a registration for the NCLEX® examination yet never take an NCLEX-RN® or NCLEX-PN® examination. The was anticipated that the results of the study would provide information that might impact the nursing shortage

A literature review in the subject areas of medicine, nursing, and education using several key words such as licensure, nursing education, job satisfaction, attrition, retention, and testing was conducted. This search generated approximately 150 citations. Most of the citations identified were not relevant to the research question. No studies were found that discussed reasons for non-licensure of nursing school graduates. Furthermore, no studies addressed graduates of LPN/VN programs. Anecdotal information from several boards of nursing indicates that some of the reasons for graduates registering but not testing are fear of failure and lack of a monetary incentive since the graduates in some jurisdictions can work under a temporary permit for extended periods of time.

A survey was developed based on review of appropriate literature and expert opinion. The survey was sent to all of the candidates (RN and PN) who registered to take the NCLEX examination in the year 2000 and as of January 2003 had yet to take the exam. The initial survey was sent to 2,022 non-licensed candidates who applied for, but never took either of the NCLEX RN or PN examinations. Unfortunately, the response rate for the survey was less than 10% of the sample and the returned surveys were not representative of the sample. The Examination Committee decided to continue additional data collection in FY04, based on a refined survey tool.

Data collection using a revised survey entitled, *A Survey of Reason for Not Taking the National Nurse Licensure Examination (NCLEX®)*, began in December 2003. In addition to the paper version of the survey, an internet-based e-Listen survey was created to allow for electronic submission of responses.

The paper version of the 2004 survey was sent to 2,898 candidates with domestic (U.S.) addresses. A postage paid envelope, as well as instructions on how to proceed with electronic submission if preferred was included in the mailing. Additionally, 1,852 candidates with international addresses were also asked to participate in the survey process. A letter was sent detailing the process for using the internet-based survey. As an incentive to increase the response rate, participants were offered the opportunity to be entered into a drawing to win one of two free online continuing education (CE) courses from the NCSBN Learning Extension.

As of April 15, 2004 the following final response rates were tabulated: 578 total responses from 3,759 total addresses (2,096 domestic and 1,663 foreign) for a response rate of approximately 15%. Of the 578 total responses, 405 were from domestic addresses (32 online, 373 by mail) for a domestic response rate of 19% and 173 responses were from international addresses (172 online, 1 by mail) for an international response rate of 10%.

In an effort to determine how representative the responders were of the entire population, a comparison was performed of Responders by RN/PN Examination Registration, US/Internationally Educated with Non-Responders by RN/PN

Examination Registration, US/Internationally Educated. Based on the results, it was determined that the respondents to the survey were representative of the population as a whole.

With the representation of the population determined, the data was then sorted to create a sub-population with the characteristics appropriate to this study. On the first sort of the data, all respondents currently licensed in the U.S. to practice nursing were deleted. The original sample was chosen from those candidates who registered in 2001 but had not yet taken the exam and successfully passed by December 2003 (first mailing). The next sort was to remove those candidates who reportedly had not completed requirements for graduation and were therefore unable to take the licensure exam. These candidates apparently paid their fees and then did not complete all required course work for graduation or may have not passed a predictor examination required by their educational program. The completion of these sorts created a total sub-population of 357 candidates, decreased by 214 from the original number of survey responses.

In order to determine why this group did not complete the process for licensure, the responders' answers to the survey question #4 were tabulated. Question #4 on the survey asked "Which of the following choices best describes your reason(s) for delaying or not taking the NCLEX® examination?" The respondents were asked to select all that apply and therefore had multiple responses. A significant number of candidates wrote comments in the last portion of the questions that listed 'Other, please specify'. Upon review of the written comments, it was determined that the comments were reiterations of the reasons listed in the question. Therefore, when possible, the responses were re-categorized into the appropriate category. The remaining twenty-four respondent comments referred to financial burdens as a result of taking and failing qualifying exams (such as TOEFL) or the NCLEX itself as a reason for not taking NCLEX. These responses/comments on financial burden are listed the table below. This table provides the respondents' answers as to the reason for delaying/not taking the NCLEX examination.

Reason(s) for delaying or not taking the NCLEX® examination

	RN (n=271)		PN (n=86)	
	US Educated (n=28)	Internationally Educated (n=243)	US Educated (n=49)	Internationally Educated (n=37)
Question #4 Reasons for delaying (Select all that apply)				
1. Board of Nursing did not make me eligible	4 % (n=2)	7 % (n= 29)	6 % (n= 5)	8 % (n= 6)
2. CGFNS	0 % (n=0)	9 % (n= 38)	0 % (n= 0)	14 % (n= 10)
3. Can work using permit or endorsement	0 % (n=0)	.5 % (n= 2)	0 % (n= 0)	0 % (n= 0)
4. Can't apply for licensure – legal reasons	2 % (n= 1)	2 % (n= 9)	3 % (n= 3)	0 % (n= 0)
5. Can't pass TOEFL, TOEIC or TSE	0 % (n= 0)	4 % (n= 16)	0 % (n= 0)	6 % (n= 4)
6. Physical/Mental disability	6 % (n= 3)	1 % (n= 4)	2 % (n= 2)	0 % (n= 0)
7. Increasing family responsibilities	10 % (n= 5)	3 % (n= 11)	3 % (n= 3)	7 % (n= 5)
8. Continue Education	2 % (n= 1)	2 % (n= 8)	5 % (n= 5)	4 % (n= 3)
9. Difficulty obtaining work visa	2 % (n= 1)	9 % (n= 41)	0% (n= 0)	1% (n=1)
10. Not confident in ability to pass exam	25% (n=	11 %(n=50)	27 %(n=	6 % (n= 4)
11. Employed outside of nursing	13)	4 % (n= 17)	25)	1 % (n= 1)
12. Financially independent/do not need to work	6 % (n= 3)	.5 % (n= 2)	3 % (n= 3)	3 % (n= 2)
13. General Test Anxiety	4 % (n= 2)	6 % (n= 28)	0 % (n= 0)	4 % (n= 3)
14. Non-US transcript/program eval. incomplete	15 % (n= 8)	5 % (n= 23)	15 %(n=	10 % (n= 7)
15. Not enough time to prepare	0 % (n= 0)	18 %(n=80)	14)	15 % (n= 11)
16. Registration or ATT expired	6 % (n= 3)	11 %(n=49)	1 % (n= 1)	14 % (n= 10)
17. Relocated and can't take the test/work	15 % (n= 8)	3 % (n= 12)	9 % (n= 8)	3 % (n= 2)
18. No longer interested in nursing as career	4 % (n= 2)	0 % (n = 0)	14 %(n=	1% (n= 1)
* Financial reasons/can't afford all of the fees	0 % (n=0)	4 % (n= 17)	13)	1 % (n= 1)
	0 % (n= 0)		1 % (n= 1)	
			2% (n=2)	
			7 % (n= 6)	
	52 (total responses)	436 (total responses)	91 (total responses)	71 (total responses)

The following information is summarized and listed in degree of applicability from Table 1.

US-educated RNs (n=28), list the following reasons for delaying/not taking NCLEX:

- Not confident in my ability to pass exam – 25% (n=13)
- General test-taking anxiety – 15% (n=8)

- Registration/ATT expired – 15% (n=8)
- Increased family responsibilities – 10% (n=5)

The internationally-educated RNs (n=243) list the following reasons, and 17 respondents note the unasked category of 'Financial Reasons':

- Not enough time to prepare – 18% (n=80)
- Not confident in my ability to pass exam – 11% (n=50)
- Registration/ATT expired – 11% (n=49)

The PN respondents, US-educated (n=49) to the delaying/not taking question, listed the following reasons including 6 respondents in the 'financial reasons' category:

- Not confident in my ability to pass exam – 27% (n=25)
- General test-taking anxiety – 15% (n=14)
- Registration/ATT expired – 14% (n=10)

Finally, the PN internationally educated respondents (n= 37) noted the following reasons:

- Not enough time to prepare – 15% (n=11)
- CGFNS – 14% (=10)
- Registration/ATT expired – 14% (n=10)
- Non-US transcript/program evaluation incomplete – 10% (n=7)

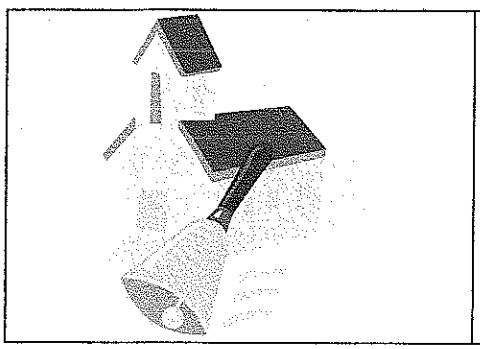
In general, the results of this study suggest some common themes as to why a presumably motivated candidate population, identified as such due to the completion of formal education, initiation of the licensure application process (including NCLEX registration and payment of all applicable fees), fails to follow through on the nurse licensure process. There seems to be little differentiation between reasons for non-licensure for RNs and PNs, however, there seem to be somewhat different reasons for U.S and internationally-educated candidates.

In general, U.S.-educated candidates selected reasons for not taking the NCLEX examination that were related to their self-perceived ability to pass the NCLEX examination. Internationally-educated candidates, while to some degree concerned about their ability to pass the NCLEX, seem to select reasons that are more structural rather than personal in nature.

Responses such as 'not having enough time to prepare,' 'CGFNS,' 'expirations of ATT's' and 'financial considerations' suggest that because the process for an internationally-educated candidate takes longer, is more expensive, and in general requires more attempts than a domestically-educated candidate, that those candidates who are not initially successfully, may give up more readily than a domestically-educated candidate. Based on the reasons selected by the internationally-prepared candidates it could be that this group needs more information about and familiarity with the process and requirements for licensure.

Since the time of this study many Boards of Nursing have made changes to the NCLEX registration and licensure application processes that may help both internationally and domestically-educated candidates enter the profession in less time. Examples of these changes include reduction of wait time between NCLEX administrations, on-line initial licensure applications and acceptance of additional English proficiency examinations. Other initiatives such international availability of the NCLEX examinations, unified cut scores for English proficiency examinations and multiple methods for educational credentials review may make the total licensure process even more efficient for all candidates.

The conclusions of this study are limited to a small section of candidates who show interest but do not enter the nursing profession. The findings and the relatively low number of prospective nurses impacted, suggest that there are few, if any, specific recommendations that can be made to Boards of Nursing that will encourage candidates to take the licensure examination and thus reduce the nursing shortage.



Welcome to the
2007-2008 Academic Year

Graduation will be here before you know it!

KENTUCKY BOARD OF NURSING
312 WHITTINGTON PARKWAY, SUITE 300
LOUISVILLE, KY 40222

Phone:
502-429-3300
800-305-2042

Website:
http://www.kbn.ky.gov

PETITIONING TO COMPLETE THE CLINICAL INTERNSHIP IN ANOTHER COMPACT STATE

THESE INSTRUCTIONS APPLY ONLY TO KENTUCKY- IF YOU NEED INFORMATION FOR ANOTHER STATE, YOU WILL NEED TO CONTACT THAT STATE DIRECTLY

CLINICAL INTERNSHIP

Any person applying to Kentucky for licensure by examination must complete a Clinical Internship. The clinical internship is defined as "a supervised nursing practice experience which involves any component of direct patient care." The internship shall last a minimum of 120 hours.

For those graduates that will reside in Kentucky but wish to practice in another compact state, the process for licensure is slightly different. Other compact states only recognize nurses that have successfully passed NCLEX. So in order for you to complete the Internship in another compact state, you will need to petition Kentucky for permission to take NCLEX prior to beginning the clinical internship. Only after successful completion of NCLEX will you be issued a provisional license so you can begin the Clinical Internship. The applicant cannot start work as an RNA/LPNA until NCLEX is passed.

NURSE LICENSURE COMPACT OR MULTI-STATE LICENSE

Kentucky implemented the Nurse Licensure Compact (NLC) on June 1, 2007. The NLC is a mutual recognition model for nurse licensure that permits a registered nurse or licensed practical nurse to hold one license in his/her home state (primary state of residency) and to practice in other compact states (referred to as remote states). An RN/LPN may hold only one compact license and that license must be issued by their primary state of residence.

As of 6/1/07, the following states belong to the NLC: Arizona, Arkansas, Colorado (July 1, 2007), Delaware, Idaho, Iowa, Kentucky, Maine, Maryland, Mississippi, Nebraska, New Hampshire, New Mexico, North Carolina, North Dakota, Tennessee, Texas, Utah, Virginia, and Wisconsin.

APPLICATION PROCESS

1. Download the application for licensure from the Kentucky Board of Nursing (KBN) website: www.kbn.ky.gov
2. Contact a healthcare agency in the other compact state and determine if they would be willing to oversee your practice during the period of time required to complete the clinical internship.
3. The agency must write a letter to the Kentucky Board of Nursing stating that they are willing to oversee the internship. This letter must be on letterhead of the agency and signed by a person with the authority to make this agreement. The agency must acknowledge that you will not engage in independent nursing practice until the time that the internship is completed, that verification has been submitted to the Kentucky Board of Nursing, and that an unrestricted nursing license has been issued.
4. Submit the following to the Kentucky Board of Nursing, 312 Whittington Parkway, Louisville, KY 40222, Attention: Credentials
   - Completed Application for Licensure (*Use only blue or black ink to complete the application and the form must include a street address; P. O. boxes are not accepted).*
   - Completed criminal background check (see below for details regarding the Criminal Background Request Form)
   - Signed petition to complete the internship in another compact state
   - Letter from the agency that is agreeing to oversee the internship.
   - Attach the $110 application fee to the application with a paperclip. Personal checks and money orders are accepted. Please note that **FEES ARE NON-REFUNDABLE AND ARE SUBJECT TO CHANGE.**
5. **This application is valid for one (1) year.** If a candidate is unsuccessful on NCLEX, they must repeat this entire process including obtaining a second employment letter in order to be eligible to licensure.

6. Evidence of completion of an approved program of nursing must be received by KBN before the Application for Licensure is processed. Kentucky programs of nursing will send a certified list of graduates, generally within 2 to 4 weeks of graduation, to KBN. Out-of-state graduates are required to have their program of nursing send KBN either a Certified List of Out-of-State Program of Nursing Graduates form or an official transcript showing the degree earned and date of graduation.
7. Once your application is processed and we have obtained proof of successful completion of your nursing program, KBN will notify Pearson-Vue of your eligibility to take NCLEX.
8. Providing that you have registered with Pearson-Vue to take the NCLEX, you will receive an ATT (Authorization to Test) via e-mail or US Mail. You can now contact Pearson-Vue and set a test date.
9. ***Remember- YOU CANNOT PRACTICE NURSING UNTIL YOU HAVE SUCCESSFULLY COMPLETED NCLEX AND THE KENTUCKY BOARD OF NURSING HAS ISSUED YOU A PROVISIONAL LICENSE.***
10. Once your test results are received at the Board, you will be issued a provisional license valid for six months.
11. The status of your application and provisional license can be validated on the Kentucky Board of Nursing website (www.kbn.ky.gov). In addition, you will receive a paper copy of the provisional license via the mail. Once the provisional license is validated, you can begin to practice under the supervision of a licensed nurse. During the time that you hold a provisional license, you shall have the right to use the title "registered nurse applicant" and the abbreviation "RNA" or the title of "licensed practical nurse applicant" and the abbreviation "LPNA." An RNA or LPNA shall only work under direct supervision and shall not engage in independent nursing practice.
12. Prior to this expiration date, you will need to submit to KBN a verification of completion of the internship. This verification must be received before an unrestricted license can be issued. A form that can be used for this verification will be sent to your address of record along with your provisional license information.

CRIMINAL BACKGROUND

- Kentucky law requires applicants for licensure by examination to submit a criminal background check (CourtNet) from the Administrative Office of the Courts (AOC) with **the** application for licensure. Failure to report any criminal convictions EVER received is deemed to be falsification of the application and subjects the applicant to disciplinary action by KBN. In addition to the CourtNet, applicants must also complete Section 5 (Disciplinary History) and Section 6 (Criminal History) of the application for licensure.
- The form for use in requesting the background check can be downloaded from our webpage.
- A certified copy of the court record for each misdemeanor or felony conviction in any jurisdiction and a letter of explanation that addresses each conviction *EXCEPT* for traffic related misdemeanors (other than DUIs) OR misdemeanors older than 5 years must be submitted with the application. For those persons with criminal convictions, application for licensure should be submitted to KBN at least 3 months prior to the anticipated date of employment in Kentucky or 2 months prior to graduation.
- If you have questions about prior convictions an informational brochure is available on the KBN Webpage: www.kbn.ky.gov
- The application will not be processed and you will not be made eligible to test until the criminal history report from the AOC is received. If you have been married, include copies of the report with your married and maiden names.

IMPORTANT WEB ADDRESSES

RN/LPN License Application for Kentucky: http://kbn.ky.gov

Registration for NCLEX: www.pearsonvue.com

Kentucky Criminal Background Request Form:
http://www.kbn.ky.gov/NR/rdonlyres/4C938E41-EDDF-4C03-930E-3EFB93478104/0/courtnet.pdf

KENTUCKY BOARD OF NURSING

PETITION FOR THE COMPLETION OF THE CLINICAL INTERNSHIP IN A COMPACT STATE OTHER THAN KENTUCKY

Name: _____
(Print name as it appears on the Application for Licensure)

Social Security No. _____ Date of Birth: _____

Mailing Address: _____ City: _____

State: _____ Zip: _____ Day Phone: (____) _____

Graduate of Program of Nursing: _____ ☐ BSN ☐ ADN ☐ Practical Nursing

Graduation Date: _____/20_____

State to which the request is being made: _____

By my signature below, I verify that the named healthcare agency has agreed to oversee the completion of my clinical internship period which consists of a minimum of 120 hours as required for licensure by 201 KAR 20:070 or 201 KAR 20:110. I further acknowledge that I cannot begin to practice until the time that I have successfully completed NCLEX and a provisional license from the state of Kentucky has been issued.

Name of Facility: _____

Contact Person: _____ Title: _____

Address: _____

City/State: _____ Zip: _____

Phone Number: (_____) _____

☐ ***A letter from the agency is attached detailing their agreement to the completion of the internship. This letter is on agency letterhead and is signed by a person with the authority to grant this request.***

Applicant's Signature: _____ Date: _____

Mail or Fax Completed Form to:

Kentucky Board of Nursing, 312 Whittington Parkway, Suite 300, Louisville, KY 40222
Attn: Credentials
Fax: (502) 696-3953 (Frankfort exchange)

REVIEWED BY: *DATE:*

June 2007

KENTUCKY BOARD OF NURSING
GUIDELINE FOR
SUBMISSION OF MATERIALS TO EDUCATION COMMITTEE

Purpose: To inform programs of the guidelines for submitting materials to ensure that the Education Committee has adequate time to read and analyze the materials before the meeting.

Process	Rationale
Prospective and existing nursing programs must submit applications for new programs and program changes to the Education Committee for review and recommendation before a review by the Board.	To provide the Board with the advice and expertise of committee members on educational matters
Materials submitted to the committee must adhere to the following guidelines: • Single sided, letter-size, white paper and black print • Word processed or typewritten • Pages consecutively numbered • Prefer materials sent electronically or one (1) unbound copy, clipped (no binders, folders, or spiral binding) • Include full contact information, including address, phone, fax, and e-mail	To provide for uniformity, ease in reproducing for the Committee and Board, and efficiency in storage of documents
Electronic materials should be sent to the Education Consultant at Patricia.spurr@ky.gov or the Education Administrative Assistant at lilaa.hicks@ky.gov Printed materials should be mailed to the Kentucky Board of Nursing 312 Whittington Parkway, Louisville, KY 40222 , Attn: Education Consultant	To ensure that the materials are routed to the correct individuals for processing.
Material must be received four (4) weeks prior to the date of the Committee meeting. (schedule of dates follows this table)	To provide adequate time for compiling, mailing, and Committee review of documents.
Materials received for review will be placed on the agenda for the next scheduled meeting of the Committee. If the matter to be addressed cannot wait until the scheduled meeting time, provide rationale for the need for a called or special meeting of the Committee when the materials are submitted.	To ensure that materials are available for Board members and appropriate staff and decisions are rendered on applications in a timely manner.
Courtesy review by the Education Consultant may be requested and shall only be provided as time permits. Entities requesting a courtesy review of the application must submit the following items six (6) weeks before the meeting: • A draft that is clearly marked "draft—courtesy review only" • A written request for the review • Contact information to include person's name, e-mail, fax, phone numbers, and hours of availability	To assist programs to address issues related to rules in an adequate manner and prepare programs for questions they might receive at the Committee meeting
The Chair of the Committee may accept late materials if the program demonstrates that the delay in submission was due to factors outside the control of the entity offering the program.	Allows for flexibility in the event of an emergency

Schedule for Submission

2007-2008			
Date Due for Courtesy Review	**Submitted No Later Than for Committee**	**Scheduled Committee Meeting**	**Scheduled Board Meeting**
Aug. 20. 2007	Aug. 24, 2007	Sept. 20, 2007	Oct. 25-26, 2007
Sept. 28, 2007	Oct. 12, 2007	Nov. 8, 2007	Feb. 14-15, 2008
Dec. 6, 2007	Dec, 20, 2007	Jan. 17, 2008	Feb. 14-15, 2008
Jan. 31, 2008	Feb. 14, 2008	March 13, 2008	April 24-25, 2008
April 3, 2008	April 17, 2008	May 15, 2008	June 12-13, 2008
Aug. 7, 2008	Aug. 21, 2008	Sept. 18, 2008	Oct. 24-25, 2008
Sept. 24, 2008	Oct. 9, 2008	Nov. 6, 2008	February 2009

Developing Evidence-Based Nursing Education for Regulation (EBNER)

Nancy Spector, PhD, RN, Director of Education
Suling Li, PhD, RN, Associate Director of Research
National Council of State Boards of Nursing (NCSBN®)

Background

- In the U.S. most boards of nursing regulate nursing programs as part of their missions to protect the public.
- Due to the nursing and faculty shortage, lawmakers are asking boards of nursing for evidence to support their education rules and regulations.
- The Institute of Medicine has reported increasing medical errors and has called for reform in health care education, specifically citing a lack of evidence-based teaching methods and curricula.

Therefore, NCSBN's Board of Directors charged their Practice, Regulation and Education (PR&E) Committee with providing boards of nursing with evidence to support their rules and regulations.

Procedure

- NCSBN surveyed employers of new nurses in two separate studies in 2002 and 2004.
- NCSBN surveyed new nurses about how they were educated in two separate studies in 2003 and 2004.
- PR&E conducted rigorous systematic review of nursing education outcomes from 2005 to 2006, and this is ongoing.
- NCSBN conducted a large study identifying evidence-based elements of nursing education from 2004 to 2006. New nurses and nursing programs were surveyed; new nurses were paired with the program from which they graduated.
- An Invitational Forum was held in Chicago on January 25, 2006, with national representation in nursing and health care for input on evidence-based nursing education.

Results

EVIDENCE-BASED ELEMENTS	SOURCES	LEVEL OF EVIDENCE
Adjunctive Teaching Methods		
Promote faculty-student interaction with online learning	Babenko-Mould, Y., Andrusyszyn, M. & Goldenberg, D., 2004; Buckley, 2003; MacIntosh, MacKay, Mallet-Boucher, & Wiggins, 2002	All Level II
Facilitate learning simulation	Issenberg, McGaghie, Petrusa, Gordon & Scalese, 2005	Level I
Combine online strategies with traditional strategies	Greenhalgh, 2001 Joubert ,Vijoen & Bester, 2002	Level I Level II
Assimilation to the Role of Nursing		
Provide experiences for relationship building with professionals	Li & Kenward, 2006; Smith & Crawford, 2003; White, 2003	All Level II
Provide experiences for students to gain comfort in nursing role	Benner, 2004; White, 2003	All Level II
Provide experiences for students to work effectively in a team	Li & Kenward, 2006; Smith & Crawford, 2003	All Level II
Provide transition programs	Kenward & Zhong, 2006; Li & Kenward, 2006	All Level II
Deliberate Practice with Actual Patients		
Provide experiences for relationship building with patients	White, 2003	Level II
Provide clinical experiences with actual patients	Angel, Duffy, Belyea, 2000; Babenko-Mould, 2004; Benner, 2004; Joubert et al., 2002; Murphy, 1995; Smith & Crawford, 2003; White, 2003	All Level II
Provide experiences for gaining confidence	Babenko-Mould, et al., 2004; White, 2003; Yates, Moyle & Wallin, 1997	All Level II
Provide opportunities for reflection	Benner, 2004; Bjørk & Kirkevold, 1999; Platzer, Blake & Ashford, 2000	All Level II
Provide feedback	Benner, 2004; Bjørk & Kirkevold, 1999	All Level II
Faculty-Student Relationships		
Faculty teach clinical and didactic courses	Li & Kenward, 2006	Level II
Faculty are available to demonstrate and assist with skills in clinical activities	Li & Kenward, 2006	Level II
Faculty assist with classroom projects	Kyrkjebø & Hanestad, 2003; Li & Kenward, 2006	All Level II
Faculty are available to answer questions during clinical and didactic activities	Li & Kenward; MacIntosh et al., 2002	All Level II
Faculty provide current information	Li & Kenward, 2006	Level II
Teaching Methodologies		
Integrate critical thinking into the curriculum	Girot, 1995; Li & Kenward, 2006	All Level II
Use critical thinking strategies	Li & Kenward, 2006; Simmons, Lanuza, Fonteyn, Hicks, & Holm; Li & Kenward, 2006; Smith and Crawford, 2003; White, 2003	All Level II
Integrate evidence-based practice into the curriculum	Li & Kenward, 2006	Level II
Integrate information technology into the curriculum	Li & Kenward, 2006	Level II
Integrate pathophysiology into the curriculum	Li & Kenward, 2006	Level II
Teach population courses separately	Li & Kenward, 2006	Level II
Require students to demonstrate skills before performing them on patients	Li & Kenward, 2006	Level II

Conclusions

- The EBNER results include those characteristics of the curriculum, faculty and teaching methodologies that have been associated with significantly better learning outcomes.
- Consider the strength of evidence supporting each element:
  - Level I research includes properly conducted randomized controlled trials, systematic reviews or meta-analyses.
  - Level II research includes quasi-experimental, correlational, descriptive, survey, evaluation and qualitative designs.
  - Level III research includes expert opinions or consensus statements.
- Boards of nursing can use this evidence to support their rules and regulations; nursing programs can also use it for supporting their curricular decisions.
- NCSBN will continue to update this report so that the most current evidence supporting nursing education will be available to the boards of nursing.

NCSBN
National Council of State Boards of Nursing

Transitioning Newly Licensed Registered Nurses into Practice

Suling Li, PhD, RN; Nancy Spector, PhD, RN; Kevin Kenward, PhD; Maryann Alexander, PhD, RN

National Council of State Boards of Nursing (NCSBN®)

Introduction

Successfully transitioning newly licensed nurses into entry-level practice is a long-standing issue in the U.S. The goals of this report are to describe the transition experience of newly licensed registered nurses (RNs); identify factors that influence transitions into practice; and examine the impact of the transition experience on clinical competence and safe practice issues of newly licensed RNs.

Methodology

The primary outcomes of interest were clinical competence and safe practice issues including practice error and risks for practice breakdown. The secondary outcomes included overall performance, perceived stress level and job turnover rate. Perspectives of both newly licensed RNs and their corresponding preceptors on these outcomes were obtained. Surveys were sent to new RNs who were randomly selected from all candidates (representing 33 jurisdictions) demonstrating success on NCLEX® from July 1 through September 30, 2005, and their corresponding preceptors. A return rate of 28% was obtained. The sample was stratified by type of educational preparation and jurisdictions.

Table 1. Sample Profile – Demographics

	New RNs	Preceptors
Sample size	560	231
Bachelor of science degree in nursing (BSNs)	32.8%	31.5%
Associate degree in nursing (ADNs)	60.7%	49.7%
Age (years)	32.4	42.2
Female	94.4%	92.2%
White	81.2%	88%

Table 2. Internship Experience of by Work Setting

	Hospital	Non-hospital
BSNs	87%	38%
ADNs	74%	33%

Figure 1. Duration of Transition

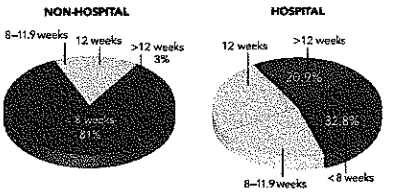


Figure 2. First Patient Care Assignment

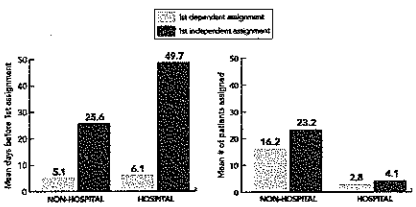


Figure 3. Clinical Competence based on Co-assessment: Overall

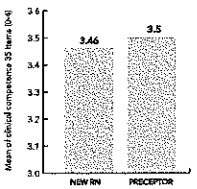


Figure 4. Clinical Competence by Self Assessment: Subconcepts

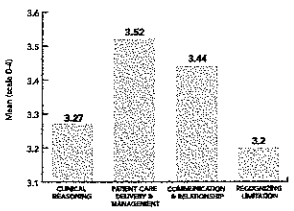


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Figure 5. Overall Clinical Competence Based on Self Assessment During 1st Year of Practice

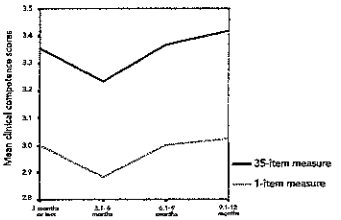


Figure 6. Practice Errors New Nurses Reported Making Since Obtaining Their RN License

	Only once %	More than once %	Total %
Medication errors	30.4	12.8	43.2
Client falls	22.8	12.1	34.9
Contribute to treatment delays	14.1	25.2	39.3
Charted on wrong client record	30.8	14.3	55.2
Missed physician/provider order	26.7	11.8	38.5
Misinterpreted physician/ provider order	18.8	5.0	23.8
Error in performance of skills	18.0	10.2	28.2
Avoidable client death	.4	.7	1.1
Client elopement	9.6	3.7	13.3

Figure 7. Practice Errors Index*

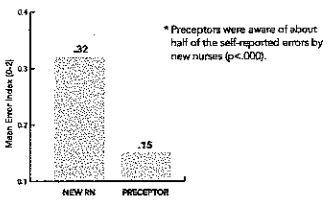
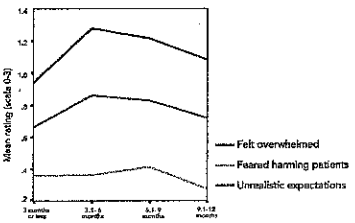


Figure 8. Perceived Stress during 1st Year of Practice



Summary of Findings

Since there were no significant differences in the ratings of clinical competence and practice errors provided by the newly licensed RN's self assessment and by the corresponding preceptor, the following findings were generated based on the newly licensed RN's self assessment.

- Transition experiences of the newly licensed RNs varied across practice settings; the newly licensed RNs in hospital settings were more likely to receive internship experience and longer transition compared to those in non-hospital settings.
- Based on self assessment, the newly licensed RNs were more competent in the areas of patient care delivery and management, compared to the areas of clinical reasoning and judgment skills, as well as recognizing limits and seeking help.
- During the first three months of practice, the newly licensed RNs who had a primary preceptor tended to practice at higher competency levels.
- Without the assistance of preceptors, the newly licensed RNs practiced at less competent levels during their initial phase of independent practice based on self assessment.
- The newly licensed RNs with preparation for specialty practice in transition programs tended to report making fewer errors.
- The newly licensed RNs who were less competent and/or more stressed were more likely to report making more practice errors.
- The newly licensed RNs who had an internship experience were less likely to leave their current position within the next six months.

A National Survey of Elements of Nursing Education

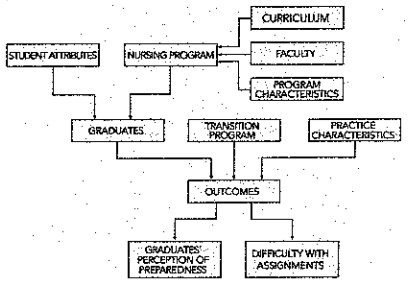
Suling Li, PhD, RN; Nancy Spector, PhD, RN; Kevin Kenward, PhD

National Council of State Boards of Nursing (NCSBN®)

Introduction

NCSBN is responsible for assisting its members, which are the boards of nursing in the U.S. and territories, in their mission of public protection through safe nursing practice. Research services aims to conduct and present studies that address both the present and future needs of NCSBN and its members. Since most boards of nursing approve nursing programs, boards are interested in knowing the evidence-based nursing education elements that are essential to the adequate preparation of new nurses for safe entry-level practice. In an attempt to provide evidence-based information, this study was designed to explore educational elements including clinical, didactic, faculty and others, and new nurse preparation for practice.

Figure 1. Theoretical Model of the Study



Methodology

The study employed a two-tiered survey process for collecting and combining data on elements of education, adequacy of educational preparation for practice, and other professional and practice issues. Within the first tier, educational programs were surveyed with a return rate of 51%; and within the second tier, graduates of the respondent programs were surveyed with a return rate of 45.4%. Using unique identification codes, data received from the programs and from the graduates were merged. After excluding cases with invalid addresses and programs with fewer than five respondent graduates, 410 surveys from the educational programs and 7,497 from the matching graduates remained in the analysis.

Table 1. Sample Size by Types of Education Programs

Nursing Education Programs	Programs (N=410)	Nursing Graduates (N=7,497)
LPN Certificate	27.9	21.5
LPN Associate	2.2	2.0
RN Diploma	3.9	4.3
RN Associate	41.9	49.1
RN Baccalaureate	19.1	22.6
Other	4.9	0.5

Table 2. Practice Areas of Nursing Graduates*

Specialty Areas	RN %	LPN/VN %
Critical care	34.5	3.1
Medical-surgical unit	39.4	17.3
Pediatrics or nursery	7.8	4.0
OB	7.5	1.5
Psychiatry	2.3	3.7
Operating room	3.8	0.6
Long-term care	8.7	66.0
Physician/dentist office	1.6	7.2
Home health	1.2	5.1
Other	9.5	8.0

** The nurse graduates had the option to choose up to two specialty areas.*

Table 3. Adequacy of Preparation by Nursing Education

Areas Adequately Prepared by Clinical Education	RN (%)	LPN/VNs (%)
Administer medications	81.5	82.3
Provide direct care to 2 clients	76.4	77.7
Work effectively within team	66.0	74.2
Perform psychomotor skills	64.0	71.3
Teach clients	63.9	61.5
Document legally defensible account	56.1	63.6
Make data-based decisions	55.9	49.7
Areas Adequately Prepared by Classroom Education		
Understand pathophysiology	68.8	64.0
Teach clients	62.7	62.9
Use IT to enhance patient care	62.1	64.6
Recognize medication side effects	59.0	64.6
Meet clients' emotional needs	57.2	63.8
Analyze multiple types of data	54.3	53.2
Understand clients' cultural needs	52.4	59.2
Utilize research findings	50.3	52.6

Table 4. Inadequacy of Preparation by Classroom and/or Clinical Education

Areas Not Adequately Prepared	RN (%)	LPN/VNs (%)
Provide direct care to 6+ clients	53.8	35.3
Administer meds to large groups	52.1	27.5
Delegate tasks to others	22.3	28.2
Supervise care provided by others	24.5	26.5
Know when and how to call a physician	21.7	20.4

Table 5. The Relationship Between Perceived Adequacy of Education Preparation and Difficulty With Client Care Assignments

Variables	Odds Ratio	95% C.I. Upper	95% C.I. Lower
Work effectively within the health care team	2.2	1.69	2.80
Understand the pathophysiology underlying a client's conditions	1.5	1.11	1.96
Delegate tasks to others	1.4	1.14	1.70
Analyze multiple types of data when making decisions	1.3	1.02	1.71
Administer medications to groups of patients	1.3	1.09	1.55

Table 6. Student-Faculty Ratios

Clinical Sites	RN Programs Mean	RN Programs SD	LPN/VN Programs Mean	LPN/VN Programs SD
Hospital				
Medical and surgical unit	8.9	1.4	9.4	1.8
Critical care unit	6.8	3.4	8.1	3.9
Pediatric unit	8.2	2.0	8.9	2.4
Psychiatric unit	8.6	1.7	8.3	2.2
Women's health/OB	8.4	1.8	8.5	2.7
Outpatient				
Well clinic	7.8	3.8	7.7	4.3
Psychiatric center	8.0	2.6	7.6	3.5
Physician or dental office	6.3	3.9	7.3	4.6
Surgi-center	6.9	3.4	7.8	5.0
LTC/nursing home	9.0	1.7	9.5	1.8
Community/public health	8.6	3.4	7.6	4.2

Table 7. Didactic Content Not Taught

Content Not Taught	RN Programs %	LPN/VN Programs %
Care management/supervision	3.3	17.8
Use of information technology	8.4	12.4
Evidence-based practice	11.7	45.7
Critical care	9.1	53.9

Table 8. The Relationships Between Curriculum Elements and Adequacy of Educational Preparation

Curriculum Elements	ß Weight
Had a higher percentage of faculty that taught both didactic content and clinical experiences	0.34
Taught use of information technology	0.42
Taught evidence-based practice	0.44
Integrated pathophysiology throughout the curriculum	0.33
Integrated critical thinking throughout the curriculum	0.34
Taught care of medical-surgical clients as independent courses	0.20
Taught care of clients with psychiatric disorders as independent courses	0.24
Taught women's health as independent courses	0.41

Table 9. The Relationship Between Characteristics of Faculty and Adequacy of Educational Preparation

Faculty Availability	ß Weight
Demonstrate clinical skills	1.15
Assist with classroom projects	0.84
Provide current information in classrooms	1.15
Assist with clinical skills	0.67
Require students to demonstrate skills	0.51
Answer questions during clinical	0.73
Answer questions about content	0.33

Discussion

This research gathered valuable information on what elements of nursing education lead to the best possible preparation of new nurses. It suggested the importance of teaching use of information technology and evidence-based practice, integrating pathophysiology and critical thinking throughout the curriculum, teaching specialty knowledge as independent courses, using faculty who teach didactic courses to also teach clinical practicuum, increasing faculty availability to students, and promoting quality faculty-students interactions. The findings of this study are significant in broadening our understanding of the relationships between educational elements and preparation of new nurses for practice.

Identifying Post Entry-level Nursing Competencies

Anne Wendt, PhD, RN, CAE

Director, NCLEX® Examinations Department
National Council of State Boards of Nursing (NCSBN®)

Background

A job analysis is a very comprehensive job description. The main purpose for conducting a job analysis is to define the practice of a profession. A practice analysis should address those competencies that are needed by the professional to practice safely and effectively in order to protect the public.

Purpose

To determine if there is a core set of RN practice activities that can be used to assess core RN competencies regardless of the practice setting, specialty area and years of experience.

Methodology

- Preliminary interviews with nurse leaders
- Subject matter experts (SMEs) panels
- Questionnaire development
- Survey process

Interviews with nurse leaders

Interviews were conducted to obtain information about trends in nursing and health care, note themes in nursing and health care, share information and contribute to the development of activity statements.

SME Panels

- 27 RNs from 27 professional and specialty practice organizations were represented
  - All in current practice
  - All major nursing specialties represented
  - All geographic areas represented
  - All practice settings represented
- Created a list of nursing activities performed
- Provided frequency and importance ratings for each activity statement
- Validated instrument used to rate importance of activity performance

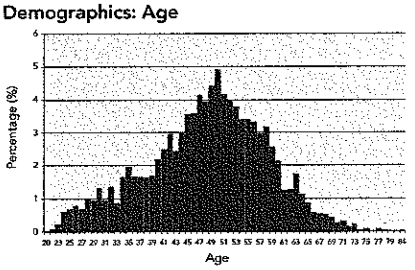
Questionnaire Development

- Activity statements were incorporated into a practice analysis survey that had been reviewed and approved by the SME panels and NCSBN's Continued Competence Task Force.
- The resulting 129 activity statements were incorporated into a survey format.
- 23 common activity statements were included in both survey forms; 106 activity statements were selected for placement on both survey forms.
- The resulting surveys contained 76 activity statements.
- Except for the 53 activity statements unique to the two forms, the questionnaires were identical.

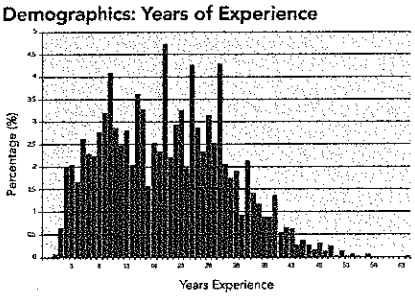
Survey Process

- A sample of 20,000 RNs was selected and split into two subsets of 10,000 RNs.
- The sample was stratified by jurisdiction then randomly drawn from the population of active licenses within the same jurisdiction.

Demographics: Age



Demographics: Years of Experience



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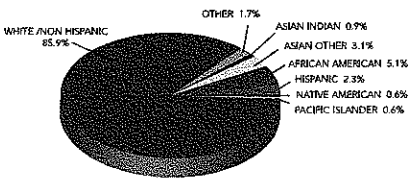
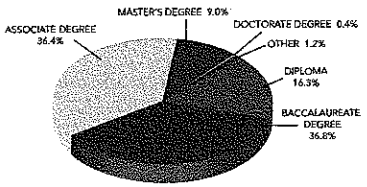
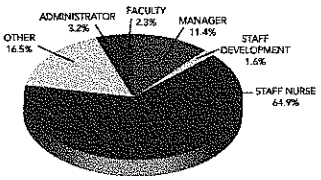
Demographics: Ethic Background



Nursing Education



Work Environment: Primary Role



Experience: Certifications Held

	FREQUENCY	PERCENT (%)
Ambulatory care nursing	105	2.6
Cardiac rehabilitation nursing	32	0.8
Critical care nursing	310	7.7
Emergency nursing	128	3.2
General nursing practice nursing	114	2.8
Gerontological nursing	115	2.9
Home health nursing	113	2.8
Hospice/palliative care nursing	57	1.4
Medical-surgical nursing	316	7.9
Nurse manager	102	2.5
Nursing administration	58	1.4
Nursing administration, advanced	10	0.2
Nursing continuing education/staff development	37	0.9
Obstetrical nursing	155	3.9
Pediatric nursing	118	2.9
Perinatal nursing	41	1.0
Psychiatric and mental health nursing	101	2.5
Rehabilitation nursing	51	1.3
School nurse/college health	107	2.7
Other	978	24.4

Primary Specialty Practice Area

SPECIALTY AREA	N	PERCENT (%)
Ambulatory care	233	6.1
Case management	177	4.6
Critical care	398	10.4
Education	123	3.2
Emergency dept	169	4.4
Geriatrics	144	3.8
Hospice care/palliative care	75	2.0
Maternal newborn	216	5.6
Medical surgical	403	10.5
Nursing home, skilled or intermediate care	103	2.7
Occupational health	37	1.0
Operating room	277	7.2
Pediatrics	106	2.8
Pediatric/Neonatal intensive care	80	2.1
Psychiatry/mental health	135	3.5
Regulation	16	0.4
Rehabilitation	71	1.9
Research	29	0.8
Residential care, developmental disability care	29	0.8
School/college health	140	3.7
Telehealth	23	0.6
Transitional care unit	4	0.1
Other	842	22.0

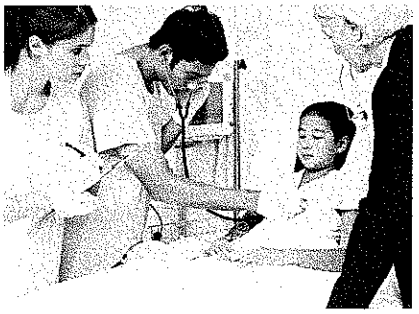
Summary/Conclusions

A nonexperimental, descriptive study was conducted to explore the importance and frequency of activities performed by post-entry level RNs as well as those activities that are part of core RN practice regardless of the setting, specialty area or years of experience.

- More than 4,700 RNs responded.
- Findings indicate that RN work is essentially the same regardless of facility, specialty, years experience and geographic region.
- Results of this study can be used to develop core RN competencies.

The Role of Clinical Experiences in Nursing Education: A Regulatory Perspective

Nancy Spector, PhD, RN
Director of Education,
National Council of State Boards of Nursing (NCSBN®)



Background

The mission of the boards of nursing in the U.S. is to protect the public and to ensure that new graduates are prepared to practice safely and competently. Therefore, the boards of nursing asked NCSBN to write a position paper providing them with guidance for assessing the role of clinical experiences in nursing education. The position paper is available at **www.ncsbn.org.**

Procedure

- **Identified premises**
  - The mission of boards of nursing is protection of the public.
  - Regulation criteria should reflect minimum requirements and be the least burdensome criteria consistent with protecting the public.
  - The nursing program curriculum is faculty driven, reflects the institution's mission and is based on national standards.
  - Nursing is a practice discipline.
  - Program outcomes are consistent with the knowledge, skills and abilities required for safe and effective provision of nursing care.
  - Nursing programs prepare lifelong learners who practice in complex and dynamic environments.
  - Nursing faculty members facilitate the students' development of clinical judgment and critical thinking abilities necessary for safe and effective practice.
  - Prelicensure nursing education programs prepare nursing students for entry into practice as generalists.
  - Nursing regulation recognizes the value of evidence-based innovation in meeting nursing education program outcomes.

- **Defined the following terms after reviewing the literature:**
  - Across the lifespan
  - Competence
  - Clinical judgment
  - Critical thinking
  - Deliberate practice
  - Distance education
  - Hands-on clinical instruction
  - Qualified nursing program faculty
  - Program outcomes
  - Simulation
  - Situated cognition

- **Conducted rigorous systematic review of nursing education outcomes**
  - Studies were leveled:
    - **Level I –** A properly conducted randomized controlled trial, systematic review or meta-analysis.
    - **Level II –** Other studies, including quasi-experimental, correlational, descriptive, survey, evaluation and qualitative.
    - **Level III –** Expert opinions or consensus statements.
  - 25 research articles met stated criteria
    - 22 were Level II
    - Three were Level I
  - Published summary includes:
    - Source
    - Sample
    - Comparison studied
    - Study procedures
    - Key results
    - Strengths and weaknesses
    - Implications for boards of nursing

- **Conducted surveys of boards of nursing and nursing education organizations.**
  - 60 boards of nursing surveyed.
  - Seven nursing education organizations surveyed.

- **Reviewed relevant nursing organization statements and national reports.**
  - Identified a relevant position statement from the American Organization of Nurse Executives (AONE).
  - Reviewed relevant Institute of Medicine (IOM) reports.

- **Participated in simulation exercises and met with renowned simulation experts.**
  - Attended simulation sessions at Northwestern University's Patient Simulation Center.
  - Met with Northwestern University experts.

Recommendations

Based on all the evidence collected, NCSBN took the position that:

- Prelicensure nursing educational experiences should be across the lifespan.
- Prelicensure nursing education programs shall include clinical experiences with actual patients; they might also include innovative teaching strategies that complement clinical experiences for entry into practice competency.
- Prelicensure clinical education should be supervised by qualified faculty who provide feedback and facilitate reflection.
- Faculty members retain the responsibility to demonstrate that programs have clinical experiences with actual patients that are sufficient to meet program outcomes.
- Additional research needs to be conducted on prelicensure nursing education and the development of clinical competency.

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The Effect of High-Fidelity Simulation on Students' Learning: Interim Analysis of a Randomized Trial

Suling Li, PhD, RN
National Council of State Boards of Nursing (NCSBN®)
Frank Hicks, PhD, RN; Marcia Bosek, DNSc, RN
Rush University College of Nursing

Introduction

The acquisition of clinical knowledge and skills by nursing students is challenging due to the lack of clinical sites, the increasing faculty shortage and the escalating complexity of the health care system. To provide safe, deliberative practice opportunities for the purpose of boosting the acquisition of clinical skills, application of various forms of simulation technology in nursing education is growing. Simulation, especially high-fidelity simulation, as a structured and flexible educational strategy, may offer more opportunities for nursing students to learn how to manage clients with a wide variety of health care needs than actual clinical experience can. The long-term goal of this project is to explore the role of simulation in basic nursing education in relation to real clinical experiences. The specific objective is to examine the effectiveness and applicability of high-fidelity simulation alone and in combination with clinical experiences on knowledge acquisition/retention, self-confidence and clinical performance of nursing students.

Design

Using a randomized controlled design with repeated measures pre- and post-simulation/clinical training experiences, a group of senior baccalaureate nursing students enrolled in a critical care course were randomly assigned, upon successful completion of the didactic portion of the course (3 credit hours), to one of the three conditions:

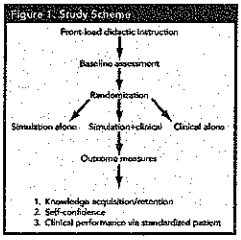
1. **Clinical without simulation**
   (30 hours of clinical)
2. **Simulation and clinical**
   (15 hours of simulation and 15 hours of clinical)
3. **Simulation without actual clinical experiences**
   (30 hours of simulation)

Measurements on knowledge acquisition/retention and self-confidence were taken before and after clinical/simulation experiences, while assessment of clinical performance was taken after clinical/simulation experiences (see Figure 1).

Sample

Of the 46 students enrolled in a critical care course, 25 participated in the study. The students had completed courses in foundations of nursing, gerontological nursing, medical-surgical nursing and psychiatric-mental health nursing that totaled 270 hours of clinical experiences.

Figure 1. Study Scheme



Measure

Knowledge acquisition/retention: Knowledge acquisition/retention was assessed with written examinations before (after didactic instruction, which is frontloaded) and after clinical/simulation experiences. The examinations after didactic instruction and after clinical/simulation experiences were equivalent in content. The exams were graded on a scale of 0 – 100%, with higher scores indicating higher levels of knowledge. The examinations underwent extensive psychometric evaluation and past reliabilities ranged from .6 - .7.

Self-confidence: A Likert-type self-confidence scale consisted of 12 items was created to measure this variable. The items reflect the student's confidence in assessing, intervening and evaluating conditions of critically ill patients. The response option of each item ranged from 1 (strongly disagree) to 4 (strongly agree) with higher scores indicating greater self-confidence. The Crobach's alphas on the current data were .93 for pretest and .96 for posttest.

Clinical Performance: This variable was measured by the faculty's rating of students' clinical performance on providing care to three critically ill patients. The patients were portrayed by patient actors, referred to as standardized patients (SP). The performance of each student was also videotaped for further analysis of professional behaviors, assessment, accuracy of intervention and total time from encounter to implementation of intervention.

Results

Table 1. Demographics of Participants*

	Clinical (n=8)	Combo (n=9)	Simulation (n=8)
Age (yrs)	27.1	27.8	24.2
Female	75.0%	77.8%	75.0%
White	75.0%	55.6%	50.0%
Previous Degree	66.7%	37.5%	42.9%

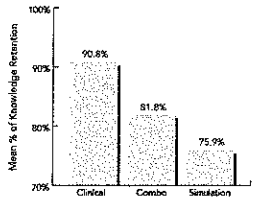
* No significant differences were found among groups in age, gender, race or having previous degrees.

Table 2. Written Exam Scores Before and After Simulation/Clinical Experiences

	Clinical* (n=8)		Combo* (n=9)		Simulation* (n=8)	
Exam scores	Mean	SD	Mean	SD	Mean	SD
Pre	94.0	3.2	94.7	4.8	96.3	2.3
Post	85.0	7.1	77.2	12.0	73.1	10.7

* All Ps<0.02; All groups experienced knowledge loss after a two week period despite the clinical/simulation experiences. No significant multivariate differences were found between groups.

Figure 2. Knowledge Retention with the Clinical/Simulation Experiences*



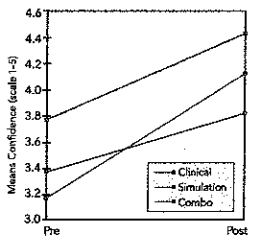
* At the end of simulation/clinical experiences the students retained, on average, 82.5% of the knowledge gained in the didactic portion of the course. There seems to be a trend that students in the clinical group experienced more knowledge retention than those in the combo or the simulation groups, although the differences were not statistically significant.

Table 3. Self-Confidence Before and After Simulation/Clinical Experiences*

	Clinical* (n=8)		Combo* (n=9)		Simulation* (n=8)	
Self-confidence	Mean	SD	Mean	SD	Mean	SD
Pre	3.4	.3	3.2	.5	3.8	.7
Post	3.8	.4	4.0	.6	4.4	.5

*All Ps<0.05; All groups increased their confidence level in taking care critically ill patients after clinical/simulation experiences. No significant multivariate differences were found between groups.

Figure 3. Self-Confidence Before and After Clinical/Simulation Experiences*



*All students had a significant increase in their confidence level in taking care of critically ill patients after the clinical/simulation experiences. No significant group differences in changes of confidence were noticed.

Table 4. Clinical Performance on Three Patient Care Scenarios Played by Standardized Patients (SP)

	Clinical (n=8)		Combo (n=9)		Simulation (n=8)	
Overall Performance on each SP Scenario*	Mean	SD	Mean	SD	Mean	SD
Chest Pain	7.8	1.2	7.3	.9	7.3	1.6
Shortness of Breath**	7.9	1.4	6.3	1.1	6.9	1.6
Change of LOC	8.1	1.6	7.9	1.7	7.3	2.0

* Based a scale of 1-10 with higher score indicating better performance.

** There was a univariate difference between groups in performance on shortness of breath scenario; the clinical group performed significantly better than the combination group.

Table 5. The Relationships Between Changes in Confidence and Clinical Performance on Standardized Patients*

Correlation (r)	Chest Pain	Shortness of Breath	Change in LOC
Change in confidence	.54*	.28	.48*

* The students who had an increase in their confidence level were more likely to perform better on two (chest pain and change in LOC) of the three clinical performance evaluation scenarios using SPs.

Conclusion

Due to the small sample size, incomplete data analysis and data collection, no conclusions can be drawn at this time. Videotaped and other data are still being analyzed. Another round of data collection is planned to enroll more of same-level students in the study.

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