



The TIGER Initiative

Transforming Education for an Informatics Agenda:
TIGER Education and Faculty Development Collaborative



Technology Informatics Guiding Education Reform (TIGER)
www.tigersummit.com

Overview

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The TIGER Initiative, an acronym for **T**echnology **I**nformatics **G**uiding **E**ducation **R**eform, was formed in 2004 to bring together nursing stakeholders to develop a shared vision, strategies, and specific actions for improving nursing practice, education, and the delivery of patient care through the use of health information technology (HIT). In 2006, the TIGER Initiative convened a summit of nursing stakeholders to develop, publish, and commit to carrying out the action steps defined within this plan. The Summary Report titled *Evidence and Informatics Transforming Nursing: 3-Year Action Steps toward a 10-Year Vision* is available on the website at www.tigersummit.com.

A COLLABORATIVE APPROACH

Since 2007, hundreds of volunteers have joined the TIGER Initiative to continue the action steps defined at the Summit. The TIGER Initiative is focused on using informatics tools, principles, theories and practices to enable nurses to make

healthcare safer, more effective, efficient, patient-centered, timely and equitable. This goal can only be achieved if such technologies are integrated transparently into nursing practice and education. Recognizing the demands of an increasingly electronic healthcare environment, nursing education must be redesigned to keep up with the rapidly changing technology environment.

Collaborative teams were formed to accelerate the action plan within nine key topic areas. All teams worked on identifying best practices from both education and practice related to their topic, so that this knowledge can be shared with others interested in enhancing the use of information technology capabilities for nurses. Each collaborative team researched their subject with the perspective of “What does every practicing need to know about this topic?” The teams identified resources, references, gaps, and areas that need further development, and provide recommendations for the industry to accelerate the adoption of IT for nursing. The TIGER Initiative builds upon and recognizes the work of organizations, programs, research, and related initiatives in the academic, practice, and government working together towards a common goal.

COLLABORATIVE REPORT

This report provides the detailed findings and recommendations from the TIGER Education and Faculty Development Collaborative Team. For a summary of the work of all nine TIGER Collaborative Teams, please review “*Collaborating to Integrate Evidence and Informatics into Nursing Practice and Education*” available on the website at www.tigersummit.com.

The TIGER Education and Faculty Development Collaborative Team analyzed how nursing education must be redesigned to keep up with the rapidly changing technology environment. This report describes the background, methodology, findings, and recommendations for future work in this area.

Executive Summary

As federal initiatives push the adoption of Electronic Health Records (EHRs) throughout all healthcare institutions by 2014, it is imperative that nursing graduates are fluent in the use of these tools in order to practice safe and effective patient care.

The TIGER Education and Faculty Development Collaborative team engaged stakeholders that influence and deliver nursing education and licensing. This included academic institutions representing all levels of nursing education, credentialing organizations, educationally-focused professional organizations, federal organizations that help fund faculty development, and state boards of nursing.

The TIGER Summit identified numerous objectives related to the education of nurses and the respective development of faculty, which are listed below. Emphasis was placed on the need for more nursing informatics specialists. These issues were raised in a variety of venues, including HRSA meetings and conferences. Based on the TIGER Summit Summary Report, the following specific objectives were set for the TIGER Education and Faculty Development collaborative:

- Use the informatics competencies, theories, research, and practice examples throughout nursing curriculums.
- Create programs and resources to develop faculty with informatics knowledge, skill and ability and measure the baseline and changes in informatics knowledge among nurse educators and nursing students.
- Develop a task force to examine the integration of informatics throughout the curriculum.
- Develop strategies to recruit, retain, and educate current and future nurses in the areas of informatics education, practice, and research.

- Improve and expand existing Nursing/Clinical/Health Informatics education programs.
- Encourage existing Health Services Resources Administration Division of Nursing to continue and expand their support for informatics specialty programs and faculty development.
- Encourage foundations to start programs that provide funding for curriculum development, research, and practice in nursing informatics and IT adoption.
- Collaborate with industry and service partners to support faculty creativity in the adoption of informatics technology and offer informatics tools within the curriculum.

The TIGER Education and Faculty Development team was successful in raising awareness in the academic community for the need to include informatics competencies in all nursing school curriculum. Both U.S. accrediting bodies supported this position and updated their recommendations accordingly. Several grants are now available to advance faculty development programs to integrate the teaching about technology within nursing programs. Several states took the lead to bring together stakeholders and develop a state-wide plan to enhance the access and education related to HIT. The team also completed surveys of State Boards of Nursing and Associate Degree Programs to identify the extent HIT is included within their curriculum and licensing criteria today. Many of these collaborative efforts will continue their work for the next several years, facilitated by new stimulus opportunities and the federal emphasis on enhancing the HIT workforce.

Background

National attention on health IT has accelerated since 2004 when President Bush announced plans to support adoption of electronic health records for all Americans. In January 2005, a small group of nursing leaders and advocates met and resolved to **strengthen the voice of the nursing profession** in the transformation of healthcare for the 21st century. This group organized the Technology Informatics Guiding Education Reform (TIGER) Initiative.

NURSING ENGAGEMENT

Nursing has embraced the opportunity to reform healthcare using technology as an enabler. In 2006, the TIGER Initiative held an interactive summit titled “**Evidence and Informatics Transforming Nursing.**” The summit gathered over 100 leaders from the nation’s nursing administration, practice, education, informatics, technology organizations, government agencies, and other key stakeholders to create **a vision for the future of nursing that bridges the quality chasm with information technology, enabling nurses to use informatics in practice and education to provide safer, higher-quality patient care.** While many of the statements resonate with a wide range of interdisciplinary health professions, the initial focus of the agenda was nurses and the nursing profession.

The TIGER Initiative was formed to raise awareness for the need to develop a U.S. nursing workforce capable of using electronic health records to improve the delivery of healthcare. In 2004, President Bush mandated that all Americans will be using electronic health records by the year 2014. As reported in *Building the Workforce for Health Information Transformation*¹, “A work force capable of innovating, implementing, and using health communications and information technology (HIT) will be critical to healthcare’s success.” President Obama continued this momentum when he took office in 2009, proposing to “Let

us be the generation that reshapes healthcare to compete in the digital age.” Less than 30 days after taking office, President Obama signed the American Recovery and Reinvestment Act, earmarking \$19 billion to develop an electronic health information technology infrastructure that will improve the efficiency and access of healthcare to all Americans. Additional funding has recently been announced with the Department of Labor and Department of Education to increase the healthcare and HIT workforce both are high growth career opportunities.

In addition to the substantial investment in capital, technology and resources, the success of delivering an electronic healthcare platform will require an investment in people—to build an informatics-aware healthcare workforce. This has accelerated the need to ensure that healthcare providers obtain competencies needed to work with electronic records, including basic computer skills, information literacy, and an understanding of informatics and information management capabilities.

A comprehensive approach to education reform is necessary to reach the current workforce of nearly 3 million practicing nurses. Many nurses in practice today did not grow up with technology, and have not mastered basic computer skills, let alone information literacy and how to use HIT effectively and efficiently to enhance nursing practice.

The **TIGER Education and Faculty Development Collaborative** team organized their efforts to engage key stakeholders and accelerate progress within the academic community. This includes academic institutions representing all levels of nursing education, educationally-focused professional organizations, federal organizations that fund nursing education, and state boards of nursing. This report will describe their activities and recommendations.

¹ AHIMA/FORE and AMIA, (2006). *Building the workforce.* Available online at www.ahima.org/emerging_issues/.

Methodology

The TIGER Summit identified numerous objectives related to the education of nurses and the respective development of faculty, which are listed below. Emphasis was placed on the need for more nursing informatics specialists. These issues were raised in a variety of venues, including HRSA meetings and conferences. Based on the TIGER Summit Summary Report, the following specific objectives were set for the TIGER Education and Faculty Development collaborative:

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- Improve and expand existing Nursing/Clinical/Health Informatics education programs.
- Encourage existing Health Services Resources Administration Division of Nursing to continue and expand their support for informatics specialty programs and faculty development.
- Encourage foundations to start programs that provide funding for curriculum development, research, and practice in nursing informatics and IT adoption.
- Collaborate with industry and service partners to support faculty creativity in the adoption of informatics technology and offer informatics tools within the curriculum.

To address these objectives, the TIGER Education Collaborative established several

work groups to address the specific issues relevant to each stakeholder.

Education Work Groups

- Nursing school accrediting bodies
- Health Resources and Services Administration
- State-wide informatics initiatives
- State boards of nursing
- Associate degree nursing programs
- Other nursing specialty organizations
- Academic partnerships with industry

Each workgroup was led by a chairperson and completed their research with the use of interviews, conference calls, web meetings, and electronic survey tools. All TIGER collaborative teams created a wiki, an online website used as a tool to share their findings, that all members could update (<http://tigereducation.pbworks.com>). Their conclusions are published in this report and were shared with colleagues through webinars that were held in late 2008. In addition, several presentations on this topic were given at local and national conferences.

It is recognized that there is additional work that must continue to further develop faculty, enhance the access to technology resources for nursing schools, and develop courses that integrate informatics seamlessly into nursing practice. Much of this work will continue to be shared through the organizations that support the TIGER effort, including but not limited to the National League for Nursing (www.nln.org), the American Association of Colleges of Nursing (www.aacn.org), the Health System Resources Administration (www.hrsa.gov), and the National Organization for Associate Degree Nursing (N-OADN).

Education-Focused Professional Organizations

The TIGER Initiative received significant support from education-focused professional organizations including the National League for Nursing (NLN) and the American Association of Colleges of Nursing (AACN). By late 2008, both had revised their curricular recommendations to include the use of information technologies and electronic health records as a core component of basic nursing education. This report will review the actions taken by these organizations as well as the ongoing development work that will continue to ensure that graduating nurses have the necessary informatics competencies to practice in today's digital environment.

NATIONAL LEAGUE FOR NURSING

The National League for Nursing and two of their advisory committees are providing leadership in moving TIGER's agenda to prepare nurses to practice in a digital environment. In May 2008, the NLN Board of Governors approved the position statement titled, *Preparing the Next Generation of Nurses to Practice in a Technology-Rich Environment: An Informatics Agenda*. The position statement is available online at <http://www.nln.org/aboutnln/PositionStatements/index.htm>. Figure 1 lists the contributors to this task force.

The position statement outlines 23 recommendations for nursing school administrators, faculty and for the organization itself. Examples of the recommendations include:

For Nursing School Administrators

- Provide leadership to insure necessary infrastructure
- Support faculty development
- Work with Nursing leadership in the clinical arenas to insure student access to electronic systems

- Establish criteria to assess the integration of informatics into the curriculum

For Faculty

- Participate in faculty development programs to learn about informatics
- Designate a champion in every school of nursing
- Work with clinical agencies to provide students with hands on experience

For the NLN

- Seek funding for a think tank
- Encourage accreditation and other regulatory bodies to reach consensus on minimal informatics competencies for all nurses
- Use the advisory council to create faculty development programs in informatics

NLN's Task Group on Informatics Agenda (Position Statement)

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Barbara Vickers, Erie Community College

Figure 1 – NLN Task Force Contributors

Education-Focused Professional Organizations

The Education Technology and Information Management Advisory Council (ETIMAC) Task Group on Informatics Competencies

ETIMAC conducted a survey of faculty and nursing program administrators including deans and directors and found that approximately half the schools of nursing focused on computer and information literacy, but there was limited focus on informatics and the use of electronic health records. Many faculty and deans confused informatics with the use of educational technologies such as online courses. This continues to be an area that needs further differentiation: **teaching about** the use of technology to enable practice versus **teaching with** technology, or using tools such as online courses or simulation to educate. To learn more, link to:

https://www.nln.org/getinvolved/AdvisoryCouncils_TaskGroups/etimac.htm



Faculty Development Related to Informatics Competencies

This task force, another outgrowth of ETIMAC, is formulating a comprehensive plan for faculty development related to the integration of informatics into the nursing curriculum. Figure 2 lists the participants on this NLN task force.

Specific tasks to be completed within the 2009 timeframe include:

1. Identify exemplars and examine how innovative schools of nursing have integrated informatics into the curriculum and prepared their graduates to practice in the current practice environment.

2. Develop curriculum guidelines related to incorporating informatics as a core competency in the nursing curriculum across all educational levels.
3. Develop a web resource site that provides information and links to teaching strategies, assignments, exercises, active learning experiences, case studies and software that is available and targeted to specific informatics learning outcomes.
4. Draft a comprehensive plan for a faculty development series that would prepare faculty to incorporate best practices for integration of informatics competencies into the curriculum.
5. Establish and monitor an electronic “eCommunity” on strategies and best practices to integrate informatics competencies into the nursing curriculum.

Although additional work is needed, the NLN’s clear, organized plan will facilitate the realization of these goals. For more information and updates on this task force’s work, link to: https://www.nln.org/getinvolved/AdvisoryCouncils_TaskGroups/informatics.htm

NLN’s Task Group on Faculty Development related to Informatics Competencies

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Figure 2 – NLN Task Force Contributors

Education-Focused Professional Organizations

AMERICAN ASSOCIATION OF COLLEGES OF NURSING (AACN)

AACN led the effort to incorporate informatics as an essential element of Baccalaureate and Doctor of Nursing Practice Education. Their published recommendations, titled “Essentials of Baccalaureate Education for Professional Practice,” can be accessed at

<http://www.aacn.nche.edu/Education/bacessn.htm>.

This document serves as a framework for the preparation of nurses for professional practice in the 21st century. One of the nine essentials is *Information Management and Application of Patient Care Technology*. It is expected that all baccalaureate education programs will incorporate the new essentials into their curriculum. A sample of the recommendations for baccalaureate programs is listed below:

Baccalaureate Essential IV

Information Management and Application of Patient Care Technology

The baccalaureate program prepares the graduate to:

1. Demonstrate skills in using patient care technologies, information systems, and communication devices that support safe nursing practice.
2. Use telecommunication technologies to assist in effective communication in a variety of healthcare settings.
3. Apply safeguards and decision making support tools embedded in patient care technologies and information systems to support a safe practice environment for both patients and healthcare workers.
4. Understand the use of CIS systems to document interventions related to achieving nurse sensitive outcomes.
5. Use standardized terminology in a care environment that reflects nursing’s unique contribution to patient outcomes.

In addition, AACN incorporated informatics requirements into their “Essentials of Doctoral Education for Advanced Nursing Practice.” One of the eight essentials is *Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care*. See the sample recommendations for doctoral programs listed below, and you can access all recommendations online at:

<http://www.aacn.nche.edu/Education/essentials.htm>

Doctor of Nursing Practice Essential IV

Information Systems: *Technology and Patient Care Technology for the Improvement and Transformation of Health Care*

The DNP program prepares the graduate to:

1. Design, select, use, and evaluate programs that evaluate and monitor outcomes of care, care systems, and quality improvement including consumer use of health care information systems.
2. Analyze and communicate critical elements necessary to the selection, use and evaluation of health care information systems and patient care technology.
3. Demonstrate the conceptual ability and technical skills to develop and execute an evaluation plan involving data extraction from practice information systems and databases.
4. Provide leadership in the evaluation and resolution of ethical and legal issues within healthcare systems relating to the use of information, information technology, communication networks, and patient care technology.
5. Evaluate consumer health information sources for accuracy, timeliness, and appropriateness.

Accreditation Bodies



It is notable that both accrediting agencies for schools of nursing have updated their standards for accreditation of program to include technology. The Commission on Collegiate Nursing Education (CCNE) does so by requiring schools to incorporate the “Essentials” into their curriculums. Links to the all of the CCNE standards for accreditation of programs documents can be found on the CCNE website at <http://www.aacn.nche.edu/accreditation>. The National League for Nursing Accrediting Commission (NLNAC) revised their standards and criteria for accreditation of programs in 2008 and the new language specifies that the curriculum and reflects technological advances. A link to the 2008 NLNAC standards and criteria can be found at <http://www.nlnac.org/manuals/SC2008.htm>.



Associate Degree Nursing Programs

The TIGER Education and Faculty Development Collaborative Team formed a workgroup to focus on Associate Degree Nursing (ADN) programs. This work group evaluated the extent that informatics is included within their curricula and the opportunities available to their students in the clinical agencies where they obtain clinical practice experiences. The work group examined a variety of clinical agencies that supported ADN students and solicited information from the National Organization for Associate Degree Nursing (N-OADN) membership by posting a request on their ListServ (see Figure 3).

- Do you have an ADN initiative that addresses the education of students and/or faculty in preparing them with the necessary computer skills, information literacy skills and informatics skills to work in a technology-rich health care environment?
- What learning outcomes do you expect of the ADN grad regarding informatics?"
- Would you be willing to share any learning activities, resources, and other examples with your colleagues?

Figure 3 – Message posted to N-OADN list

The member responses provided insight into a number of issues that need to be addressed for successful integration of informatics, regardless of the program:

1. Many ADN programs lack access to Electronic Health Records (EHRs).

Some of this is due to the fact that not all health care provider organizations, especially those in rural areas, have adopted EHRs. Although this is anticipated to change, it has limited the opportunities

for some programs to access and incorporate the use of EHRs and informatics into their curriculum. These ADN programs describe their knowledge and use of informatics as “awareness building and evolving”. As the NCLEX test incorporates informatics-related questions, students without access may be disadvantaged. Several programs found creative solutions to address this gap. For example, some provide a *stand-alone* computer technology and informatics course (see Figure 4 for a sample syllabus).

Northwestern Michigan College Health Occupations

Sample Syllabus

Course Title: Informatics Essentials
Academic Year: 2007-2008
Credits: 1 semester credit

INSTRUCTOR INFORMATION
Instructor: Laura A. Schmidt
E-MAIL: lschmidt@nmc.edu

COURSE DESCRIPTION
This course will introduce students to informatics in Health Care and, in particular, nursing. Students will enhance their ability to use modern informatics such as Computer and Internet resources, as well as Electronic Medical Records (EMR) software, in the Health Care environment.

COURSE OBJECTIVES

1. Learners will define Nursing Informatics and how it is used within the healthcare setting.
2. Learners will evaluate the credibility and professional quality of web and online database resources.
3. Learners will demonstrate the ability to locate health-related resources on the web and in online databases.
4. Learners will demonstrate the ability to use PowerChart and CareMobile to document patient care including medication administration.

Figure 4 – Sample NI Course Syllabus

Associate Degree Nursing Programs

Another program created a nursing informatics course taught in partnership between the Nursing and the Business and Technology Division.

2. **Not all faculty are comfortable with and familiar with technology in practice settings.**

Many nursing programs reported difficulty with faculty embracing informatics and incorporating the use of EHRs within clinical instruction. This may be more prevalent if the faculty has been out of the practice environment for a long period of time, and may not have had the opportunity to use an EHR while they were in practice.

3. **The learning curve is steep for EHRs and competes with limited clinical practicum on-site time.**

Several programs were concerned that their clinical practice time is limited to 6 weeks and there is not enough time to teach the use of the EHR and all of the other skills that need to be addressed while on-site. It was reported that the learning curve for students to use EHRs is high and can detract from the limited clinical instruction time.



4. **Security and privacy issues may limit the students' access to EHRs at clinical practice sites.**

Restrictive security and privacy issues at clinical practice sites may create additional barriers to student use. Some health care institutions restrict use of computers to only the faculty, and will not provide system access or training to students. This means that the faculty must document everything done by the students, creating an overwhelming workload for the faculty. Not only does this decrease the time the faculty has for other clinical instruction, but the student does not have the opportunity to document nursing care delivered at the practice site.

5. **Many school computer labs have limited or no access to EHR software for student practice.**

The cost of providing EHR software for an academic site may prohibit schools from acquiring this technology. Depending upon the sophistication, this software may run upwards of \$250,000. In addition to acquisition cost, the maintenance cost of knowledgeable resources to support the EHR system may also deter the school from purchasing. See the case studies in the section of this report on "Academic/Industry Partnerships" for additional solutions related to EHR access for students.

Associate Degree Nursing Programs

6. Not all nursing school students have basic computer literacy skills.

While a few schools reported that they require a computer literacy course, most ADN programs do not. Although faculty report improving computer skills in their students each year, even one student without these skills can hold back the class. Some schools are using computer literacy tests, including a skills demonstration vs. self-assessment, as part of their program entry requirements. Others report this requirement prior to enrolling in online courses or courses that require more technical knowledge. More are recognizing that computer literacy is as essential as CPR skills in nursing practice.

7. More schools are reporting an increased use of PDAs and/or smart phones by students and faculty in the clinical setting.

Online portable text books and guides (e.g., drugs, procedures, and lab tests) are replacing reference textbooks. Several ADN programs reported that they have funded the purchase of PDAs and require students to use technology in classroom presentations. Online references are current, inexpensive, and portable. One ADN program reported using Medinotes e-Charting Plus program (<http://www.medinotes.com>) in the skills and human patient simulation labs with laptops at each bedside.



RECOMMENDATIONS

The team's research illustrated that while the clinical teaching environment is still facing many hurdles related to EHR access, faculty development needs, and competing resources for limited onsite time, significant progress has been made to bring technology into the classroom. The TIGER Initiative would like to encourage those that have solved these situations to share their success stories, lessons learned, and best practices with their colleagues to accelerate the adoption of effective use of technology in practice.

State Boards of Nursing (SBON)

Each state has the opportunity to influence the minimum competencies for nursing through their licensure process. State governments established Boards of Nursing to protect the public's health by overseeing and ensuring the safe practice of nursing. State Boards of Nursing achieve this mission by establishing the standards for safe nursing care and issuing licenses to practice nursing. Once a license is issued, the board's job continues by monitoring licensees' compliance to state laws and taking action against the licenses of those nurses who have exhibited unsafe nursing practice.

The TIGER Education and Faculty Development Collaborative established a work group to evaluate the current and future requirements and expectations of state boards of nursing related to integration of technology and informatics, including possible requirements for state-level approval of education programs by state boards of nursing. In November 2007, the work group developed and distributed an online survey to capture current and future requirements for technology or informatics. This survey was sent to the education coordinator, if named, or the administrator at each state board of nursing. State boards that did not respond to the online survey were contacted via telephone to complete the survey via an interview process. The final response rate was approximately 76%, or 38 states reporting. The responses were obtained by either the online survey or personal interviews with a member of the state board.

Several respondents indicated that while the states were not requiring specific informatics or technology strategies, they did require schools of nursing within their states to be current and up-to-date on teaching strategies relevant to the use of technology. Technologies described included electronic charting, medication administration using technology-driven systems, and recognition that some simulation would be used within the educational process. Consequently, while specific issues were not

addressed in the criteria, the expectation of programs being up-to-date and relevant to changing technology as it impacts health care and patient safety was understood in the use of "current practices". Interestingly, two-thirds of the respondents indicated that the TIGER informatics survey would be a good model for opening up the dialogue with state-approved programs to explore the possibility of creating new standards/requirements related to technology and informatics in the future.

Survey Results

State Boards of Nursing were asked if they required nursing programs to include in their curriculums and/or practice the use of technology in the clinical practice setting. Most states did not have specific technology requirements. Several states described technology as informatics, patient simulation, basic computer skills, and distance learning. Further clarity on the definition of "technology" would be beneficial for future surveys.

Requirements vs. Recommendations

State Boards were asked to specify current pre-licensure requirements and/or recommendations for the following:

- Medication administration with barcode scanners
- Computer access to patient data
- Computerized nursing documentation
- Computer-based patient education materials
- Bedside monitoring devices
- Basic computer software use

Only two states reported a *requirement* for basic computer software use. However, two states have *recommendations* for computerized nursing documentation and computer-based patient education materials, and one state has a recommendation for computer access to patient data and a recommendation for basic computer software use. None of the responses had a current continuing education

State Boards of Nursing (SBON)

requirement for technology and computer proficiency skills. At the time of the survey, 90% of the states did not have a plan to address technology or computer proficiency skills curriculum and/or practice requirements.

Information Literacy

The State Boards of Nursing were asked about the inclusion of information literacy competencies within nursing curriculum and/or practice settings. Four states require and one state recommends information literacy competencies, including the use of evidence-based knowledge databases (i.e. drug databases, nursing research data sets, etc.). Most respondents (80%) reported having no plan for changes to current practice or curriculum requirements. A couple of states require the knowledge to find and use information online such as literature, medication use, policies and procedure; two other states recommend this skill.

Privacy and Security

Three states require the knowledge of privacy and security standards related to computer use (HIPAA), and another three states recommend this knowledge.

Role of Health IT in Patient Safety

More State Boards of Nursing are acknowledging the link between information technology and patient safety. Three states require the educational curriculum to draw a link between technology and patient safety; another state has made this a recommendation, and others are considering a recommendation. In addition, five states defined a role for the nurse informatics specialist. Currently, three states require the use of information technology to support clinical workflow processes and administrative care delivery services. At the time of this survey, none of the respondents had requirements for transitioning from paper-based to EHRs nor required the use of personal health records by consumers.

Future Recommendations

Since the State Boards of Nursing survey was completed, both NLNAC and CCNE have added informatics education to their pre-licensure requirements. It is anticipated that NLN and AACN's position may drive more state agencies to include specific language related to the demonstration of technology and informatics competencies in order to obtain nursing licensure (see pages 6 and 8 for examples). However, the TIGER Education Collaborative recommends the following action steps:

1. Increase awareness of the need for integration of technology and informatics with the educational programs at the state level. Several states have taken the lead on raising awareness by holding regional conferences that include all nursing stakeholders (academic, administrative, practice, government) to develop a state-wide strategic plan.
2. Delineate and clarify common understanding of terms and expectations related to technology and informatics competencies. This will help to minimize confusion and establish reciprocity of these competencies across states.
3. Develop state standards/requirements that are in line with the NLNAC and CCNE accreditation and policy documents re: integration of technology and informatics.
4. Adopt minimum competencies (as defined by the TIGER Informatics Competency Collaborative) for demonstrating knowledge and skills in the following areas:
 - Basic computer competencies
 - Information literacy competencies
 - Information management competencies
5. Engage the National Council of State Boards to take a leadership role in raising awareness, developing an action plan, and sharing best practices among the State Boards. Consider repeating the survey in two years to monitor progress, adoption and address changing technology needs and practices.

State Initiatives

By the end of 2008, there were four states that had either initiatives focused on informatics or had the infrastructure in place to begin informatics initiatives. One state, Minnesota, has formed its own TIGER Initiative. In addition, a State Initiatives committee, chaired by Dr. Paulette Seymour-Route (University of Massachusetts) brought together two additional states (North Carolina and California) to examine current and potential work in the area of informatics.

Both Massachusetts and California had state-wide initiatives for faculty related to teaching with technology, in particular using simulations in nursing education. Both states have a readily available statewide infrastructure in place to begin a campaign to incorporate informatics into nursing education.

MINNESOTA TIGER

The Minnesota TIGER is one such state-initiative. Under the leadership of Drs. Connie Delaney and Bonnie Westra, the Minnesota TIGER was created to translate the vision of the national TIGER initiative into action in the upper-Midwest. Several organizations sponsor the yearly summit, including the University of Minnesota, the MINING (Minnesota Nursing Informatics Group), MOLN (Minnesota Organization of Leaders in Nursing), MACN (Minnesota Association of College of Nursing), Minnesota Nurses Association and The Informatics Group. For more information, you can go to:

<http://www.nursing.umn.edu/MNTiger/>.

NORTH CAROLINA

The State Board of Nursing in North Carolina is leading the charge by requiring that all schools of nursing begin to incorporate the five IOM core competencies, including informatics, into their nursing curriculum. Their early efforts and the work of the Quality and Safety Education for Nurses (QSEN) will place North Carolina as a leader in promoting informatics at all levels of nursing education.

MASSACHUSETTS

The Board of Higher Education and the Massachusetts Organization of Nurse Executives convened a conference, *Creativity and Connections: Building the Framework for the Future of Nursing Education and Practice*. The focus was to address two questions: How can higher education institutions graduate more nurses and what competencies will be required of the nurse of the future? An outcome of this conference was the creation of a formal coalition to create a seamless progression through all levels of nursing that is based on consensus competencies that include transitioning nurses into their practice settings. One such competency is the IOM's informatics core competency. Massachusetts has also formed a tight collaboration between the local informatics group New England Nursing Informatics Council (NENIC) and the Massachusetts Organization of Nurse Executives (MONE), and has cross-pollinated their groups with speakers to address healthcare and technology issues.

CALIFORNIA

Like Massachusetts, the *California Institute for Nursing & Healthcare* had a statewide initiative focused on the transformation of nursing education. In 2008, they released their *Nursing Education Redesign for California: White Paper and Strategic Action Plan Recommendations*. In their recommendations, they call for the inclusion of informatics in the nursing curriculum and their support for minimal competencies in the area. This statewide infrastructure is positioned to leverage its network and resources to move the TIGER informatics agenda. To read more about their work, go to: <http://www.cinhc.org/index.html>.

It is anticipated that more states will develop collaborative efforts to address technology adoption, especially with the formation of the Regional Technology Centers to accelerate eHealth initiatives related to Health Information Exchange (HIE).

Health Resources Services Administration

The TIGER Initiative has worked closely with the Division of Nursing within HRSA. During the planning phase of the TIGER Summit, the organizers approached Dr. Denise Geolot, then Deputy Director of the Division of Nursing to obtain HRSA's support. A representative from Division of Nursing attended the TIGER Summit.

There are three major accomplishments associated with HRSA's Division of Nursing.

1. Created the **Division of Nursing Faculty Development: Integrating Technology into Nursing Practice and Education Initiative (ITNEP)**.

This initiative made funds available for projects to provide education in new technologies, under Title VIII, Section 831 of the Public Health Service Act, as amended by the Nurse Reinvestment Act of 2002. According to the grant announcement, the use of information and other technologies in nursing education and practice includes informatics, telehealth, task trainers and patient simulators, computer-based instructions, virtual simulation, interactive simulated case studies, advanced 3D graphics, and e-learning technologies. The monies were to support what HRSA termed "nursing collaboratives for faculty development". The purpose is to use information and other technologies to expand the capacity of schools of nursing to educate students for 21st century health care practice. To date, six collaboratives have been funded: Given the high demand, especially the number of applicants to the HITS program, HRSA received additional funding for two more collaboratives. These collaboratives are one solution to provide faculty with the necessary knowledge and skills to teach about technology and with technology, and to share their learnings with other colleagues.

2. The **National Advisory Council on Nurse Education and Practice (NACNEP)** advises the Secretary of the U.S. Department of

Health and Human Services and the U.S. Congress on policy issues related to the Title VIII programs administered by the HRSA Bureau of Health Professions Division of Nursing, including nurse workforce supply, education and practice improvement. The focus of their 2007 spring meeting was on "Challenges facing the Nursing Workforce in a Changing Environment." In particular, this meeting focused on Information Technology in Nursing Education and Practice. Dr. Skiba gave a presentation on "*The role of informatics in nursing education and practice*", emphasizing the need to prepare all nurses with the necessary knowledge and skills to practice in a technology-rich health care environment.

3. The **Seventh Report to the Secretary of Health and Human Services and the Congress** will soon be released with its focus on teaching about and teaching with technology. The first component targets the preparation of a workforce capable of practicing in a technology rich health care environment. The second component discusses the use of technology to facilitate the educational preparation of nurses. For more information, please visit: <http://bhpr.hrsa.gov/nursing/nacnep.htm>

In addition, HRSA held two conferences and invited Dr. Skiba to present on the preparation of health care professionals. The first conference, targeted to grantees funded by the Office of Health Information Technology and Health Resources Services Administration Grantee Meeting, focused on *Promoting HIT Adoption in the HRSA Community: Success Through Collaboration*. At that conference, Dr. Skiba was on a Workforce Development Panel that included another TIGER member, Alicia Morton from the Office of the National Coordinator (ONC), speaking about issues related to the preparation of health care professionals in health information technology. (See Figure 6)

Health Resources Services Administration

*Promoting HIT Adoption in the HRSA
Community: Success through Collaboration*

Workforce Development

Moderator:

Lou Coccodrilli, M.P.H.

Health Resources and Services Administration

Panel:

CDR. Alicia Bradford (Morton), M.S.

Office of the National Coordinator

Andrew Hamilton, M.S.

Alliance of Chicago Community Health Services,
LLC

Diane J. Skiba, Ph.D., FAAN, FACMI

University of Colorado at Denver

To view slides, go to

<http://www.blsm meetings.net/OHIT/presentation.cfm> (Select Day 2)

Figure 6

In February of 2008, Dr. Skiba was also asked to present at the HRSA All Grantee meeting on the *Emerging role of HIT in the delivery & quality of Health Care & Health Care Training*. This presentation (Figure 7) focused not only on the preparation of both current and future nurses but also the preparation of nursing informatics specialists.

HRSA All Grantee Meeting

For more information, go to:

<http://bhpr.hrsa.gov/2008allprogramsagenda.htm>

For *Emerging role of HIT in the delivery & quality of Health Care & Health Care Training* slides, go to:

<http://tigereducation.pbwiki.com/>



Figure 7

Curriculum Development

Several formats can be used to integrate informatics competencies into the nursing curriculum. The TIGER Education and Faculty Development Collaborative hosted a webinar to share three different curriculum development formats as examples.

Webinar: Incorporating Informatics into the Nursing Curriculum (November 18, 2008)

A Webinar was held in November to highlight three different approaches to incorporating informatics into the nursing curriculum. The webinar, Getting Started: Adding Informatics to the Nursing Curriculum featured three speakers:

Dr. Jane M. Brokel, Assistant Professor, University of Iowa

Dr. Josette Jones, Assistant Professor, Indiana University

Dr. Trish Trangenstein, Professor, Vanderbilt University.

Their slides are available at:

<http://tigereducation.pbwiki.com/>

University of Iowa

Dr. Jane Brokel presented a course that has been developed. Here is a sample of her course objectives

Draft Course Objectives:

1. Describe the role of information technology in improving patient outcomes and supporting safe care environments.
2. Use standardized terminology and CIS systems to document interventions that reflect nursing's contributions to patient outcomes.
3. Apply patient care technologies to address the needs of a diverse patient population.
4. Understand the ethical standards related to patient data security, confidentiality, regulatory requirements, and patient's right to privacy with use of protected information.
5. Apply clinical decision making tools and safeguards embedded in patient care technologies and information systems to create a safe practice environment for both patients and healthcare workers.

Curriculum Development

Indiana University

Dr. Josette Jones presented how informatics competencies were integrated throughout the BS curriculum. Here is a sample of their work.

PROGRAM OUTCOME 1: A critical thinker who demonstrates intellectual curiosity, rational inquiry, problem-solving skills, and creativity in framing problems.

– Sophomore Level Competency 1.1: Participates in selected problem solving exercises that promote critical examination of the professional role.

Suggested informatics competencies:

– Introduced to principles of knowledge bases, decision support systems, clinical information systems, electronic health care records as bases for gathering data

PROGRAM OUTCOME 9: A responsible manager who balances human, fiscal, and material resources to achieve quality health care outcomes.

– JUNIOR Level Competency 9.1: Discusses the relationships among adequate human, fiscal, and material resources and effective, efficient provision of health care.

Suggested informatics competencies:

– Demonstrates the use of information technology and information exchange for human, fiscal, and material resources management for effective, efficient provision of health care



Vanderbilt University

Dr. Trish Trangenstein explained how their Bridge Students were users and integrators of NI tools and below is a sample of competencies.

Systems and Infrastructure

- Uses a course management system
- Uses clinical information systems and EHRs to retrieve information and document care
- Uses available websites in formulating responses to ethical questions.

Information and knowledge management

- Uses available electronic decision support tools
- Access and retrieve articles from digital library
- Uses available databases to determine types of nursing care needed for a selected population

Curriculum Development

One of the greatest challenges to integrating informatics into the curriculum is the limited access to technology resources that many nursing schools experience. The TIGER Education and Faculty Development Collaborative team gathered examples of different academic and industry partnerships that helped to achieve these goals. The team held a webinar to describe three different formats for academic/industry partnerships designed to provide access to EHR systems into the curriculum.

Three Partnerships to Teach Nurses about Electronic Documentation and the EHR

This webinar held in December 2008 focused on three unique partnerships to help faculty prepare students to use electronic documentation and electronic health records. The first partnership was between a department of nursing and a department of computer sciences at a community college.

A Partnership between the Nursing and Computer Sciences Departments of Maricopa Community Colleges District Nursing Program- Mesa Campus

Welcome to Maricopa Community Colleges Health Assessment Nursing Documentation System



(Instructor View)

Patient Records

New Record Find A Record

Assessment Records

View Records



This icon opens a help window that helps with data input ideas.

Karin Sherrill RN, MSN, CNE and Diana Breed RN, MSN of Maricopa Community Colleges District Nursing Program- Mesa Campus explained the development and pilot testing of their Health Assessment Nursing Documentation System. This unique partnership

demonstrated what can be done with limited time (less than one year) and virtually no real budget.

The second presentation described a ten-year partnership between a School of Nursing and one of their clinical agencies, Cardinal Health. Dr. Kay Hodson of Ball State University and Dlynn Melo of Cardinal Health System described a decade long collaboration that has provided a WIN-WIN situation for both partners. The School of Nursing has gained access to Cardinal Health's electronic documentation system for all their students. You can learn more about the cost savings for Cardinal Health and the satisfaction of the students learning in this environment.

Ball State University and Cardinal Health

System: A Decade of Academic-Clinical

Partnership



The last presentation was an example of a partnership between academia and business. Drs. Helen Connor and Judith Warren of the School of Nursing at the University of Kansas presented their Simulated e-hHealth Delivery Systems (SEEDS). The collaboration between the School of Nursing and Cerner Corporation began in 2001. The goal was to redesign the Cerner's current clinical information systems to fit the educational workflow of baccalaureate nursing students. The success of this partnership has expanded and now includes a consortium of over 12 schools of nursing.

Curriculum Development

To watch a video of SEEDS, you can go to:
<http://www2.kumc.edu/healthinformatics/video.html>

An Academic/Business Partnership



To read the webinar or view the slides go to:
<http://tigereducation.pbwiki.com/>

In conclusion, more examples of innovative partnerships that accelerate teaching *about* technology and *with* technology are needed. The TIGER Education and Faculty Development team recommends ongoing development and sharing of these resources through professional organizations such as NLN, AACN, and presentations at conferences and webinars.



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Co-Chairs

The TIGER Education and Faculty Development Collaborative was led by two co-chairs:

Mary Anne Rizzolo, EdD, RN, FAAN
Senior Director, Professional Development
National League for Nursing

Diane J. Skiba, PhD, FAAN, FACMI
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Chair, Task Force Faculty Development Related
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Their efforts were supported by TIGER Program Director, Donna DuLong

Work Group Leaders

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