



The TIGER Initiative

Informatics Competencies for Every Practicing Nurse:
Recommendations from the TIGER Collaborative



Technology Informatics Guiding Education Reform (TIGER)

www.thetigerinitiative.org

Overview

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 (IT). 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.thetigerinitiative.org.

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 Informatics Competencies 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.thetigerinitiative.org.

The TIGER Informatics Competencies Collaborative (TICC) Team was formed to develop informatics recommendations for all practicing nurses and graduating nursing students. TICC completed an extensive review of the literature as well as surveying nursing informatics education, research, and practice groups to obtain examples and identify gaps. This report describes the background, methodology, findings, and recommendations for future work in this area.

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Executive Summary

Nurses are expected to provide safe, competent, and compassionate care in an increasingly technical and digital environment. A major theme in this new healthcare environment is the use of information systems and technologies to improve the quality and safety of patient care. Nurses are directly engaged with information systems and technologies as the foundation for evidence-based practice, clinical-decision support tools, and the electronic health record (EHR). Unfortunately, not all nurses are fully prepared to use these tools to support patient care. The TIGER Informatics Competencies Collaborative sought to evaluate the current preparedness of the nursing workforce and propose a set of minimum informatics competencies that all nurses need to practice in today's digital era.

A new specialty, called *Nursing Informatics*, has emerged over the past 20 years to help nurses fully use information technology to improve the delivery of care. The most recent 2008 American Nurses Association Nursing Informatics Scope and Standards defines nursing informatics as *the integration of nursing science, computer and information science, and cognitive science to manage communication and expand the data, information, knowledge, and wisdom of nursing practice*. Nurses certified in Nursing Informatics are:

- skilled in the analysis, design, and implementation of information systems that support
- nursing in a variety of healthcare settings
- function as translators between nurse clinicians and information technology personnel
- insure that information systems capture critical nursing information

These specialized nurses add value to an organization by:

- increasing the accuracy and completeness of nursing documentation
- improving the nurse's workflow
- eliminating redundant documentation
- automating the collection and reuse of nursing data
- facilitating the analysis of clinical data, including Joint Commission indicators, Core Measures, federal or state mandated data and facility specific data

While Nursing Informatics is a highly specialized field, there are foundational informatics competencies that all practicing nurses and graduating nursing students should possess to meet the standards of providing safe, quality, and competent care. The Technology Informatics Guiding Education Reform (TIGER) Informatics Competency Collaborative was formed to develop *the* informatics recommendations for all practicing nurses and graduating nursing students.

Following an extensive review of the literature and survey of nursing informatics education, research, and practice groups, the TIGER Nursing Informatics Competencies Model consists of three parts, detailed in this document:

- Basic Computer Competencies
- Information Literacy
- Information Management

The TIGER Informatics Competencies Collaborative (TICC) team identified a list of competencies for each of these categories, as well as the resources available to support the educational needs of nurses in achieving these competencies. TICC recognized that it may take some time to meet these competencies for all nursing staff, and has prioritized the minimum set of competencies to focus on in the first year, with the goal of achieving full competency by 2013. These recommendations are outlined within this report.

The work of the TICC was foundational to several other TIGER Collaborative teams. Four other TIGER Collaborative teams focused on how to implement the TICC competency recommendations: within formal academic settings (the TIGER Education and Faculty Development Collaborative), within health care provider settings for nurses currently in practice (TIGER Staff Development Collaborative), for nursing leaders (TIGER Leadership Development Collaborative), and how to access HIT resources (TIGER Virtual Demonstration Collaborative). We recommend that you reference the Collaborative reports from these related TIGER Collaborative teams for recommendations on how to implement these strategies within your environment. These reports can be located on the TIGER website at www.thetigerinitiative.org.

Background

Nurses have always been at the forefront of patient care and focused on patient safety. The impetus for evaluating how prepared nurses are to use Electronic Health Records (EHRs) to improve patient care started in 2004. During President Bush's State of the Union Address that year, he mandated that all Americans will be using electronic health records by the year 2014. As reported in *Building the Workforce for Health Information Transformation* (AHIMA, 2006), "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. 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. The average age of a practicing nurse in the U.S. is 47 years. These individuals are "digital immigrants," as they grew up without digital technology, had to adopt it later, and some may not have had the opportunity to be educated on its use or be comfortable with technology. This is opposed to "digital natives": younger individuals that have grown up with digital technology such as

computers, the Internet, mobile phones, and MP3 (Prensky, 2001). There are a number of digital immigrants in the nursing workforce who have not mastered basic computer competencies, let alone information literacy and how to use HIT effectively and efficiently to enhance nursing practice.

The TIGER Summit, "Evidence and Informatics Transforming Nursing," held in November of 2006, revealed an aggressive agenda that consisted of a 10-year vision and 3-year action plan for nurses to carry forward into the digital age. TIGER's primary objective is to **develop a U.S. nursing workforce capable of using electronic health records to improve the delivery of healthcare.** For the **TIGER Vision** to be realized, the profession must master a minimum set of informatics competencies that allow nurses to use EHRs to deliver safer, more efficient, effective, timely and patient-centered care. This education will determine how well evidence and informatics is integrated into day-to-day practice. Since the TIGER Summit, five TIGER collaborative teams were formed to identify how to integrate informatics education into nurses competencies and nursing school developed recommendations focused on how to prepare nurses to practice in this digital era (see Figure 1). The **TIGER Informatics Competencies Collaborative (TICC)** team helped develop a minimum set of informatics competencies that all nurses need to have to practice today.

Figure 1 - TIGER Collaborative Teams involved in Workforce Recommendations:

1. Informatics Competencies
2. Education and Faculty Development
3. Staff Development
4. Leadership Development

Methodology

The TIGER Informatics Competencies Collaborative was charged with the following goals:

Define the minimum set of informatics competencies that all nurses need to succeed in practice or education in today's digital era.

Fortunately, there was a significant amount of nursing research completed on informatics competencies, well ahead of most other healthcare professions. The TIGER Informatics Competency Collaborative (TICC) started by completing an extensive review of the literature for informatics competencies for practicing nurses and nursing students. TICC also collected informatics competencies for nurses from over 50 healthcare delivery organizations. The results of these efforts are available on the TICC Wiki at <http://tigercompetencies.pbwiki.com>. This resulted in over 1000 individual competency statements.

Much of the work involved synthesizing this extensive list of competencies into a list of competencies that was realistic for the nearly 3 million practicing nurses. This body of competencies was evaluated and condensed to create the three parts of the TIGER Nursing Informatics Competencies Model:

1. Basic Computer Competencies
2. Information Literacy
3. Information Management

Once the competency categories were established, each was aligned with an existing set of competencies maintained by standard development organizations or defacto standards. For example, excellent alignment was found with the existing standards of the European Computer Driving Licence Foundation for basic computer competencies; the Health Level 7's EHR functional model clinical care components for information management competencies; and the American Library Association's information literacy standards. All of these sets of

competencies are standards maintained by existing industry organizations or standards development organizations. Leveraging existing competencies that are maintained by standards development organizations allow the TIGER Informatics Competency Collaborative (TICC) to recommend standards that are relevant to nurses and ones that will be sustainable as these bodies evolve the standards as necessary. Of equal or perhaps greater importance, these standard-setting bodies all have put tremendous thought, energy and expertise into their recommended competencies. When those competencies aligned with the informatics competency needs for nurses, we adopted theirs, thus adding strength, rigor, and validity to the TICC recommendations. Figure 2 illustrates the relationship between the competency category and the standard development organization.

As like all of the TIGER Collaborative teams, TICC completed their research with the use of conference calls and web meetings, electronic survey tools, and conducted interviews. Their conclusions are published in this report and were shared with colleagues through webinars that were held in 2008. In addition, numerous presentations on this topic were given at local, national and international conferences.



Methodology

TIGER Nursing Informatics Competencies Model

Component of the Model	Standard	Source (Standard-Setting Body)
Basic Computer Competencies	European Computer Driving License	European Computer Driving License Foundation www.ecdl.org
Information Literacy	Information Literacy Competency Standards	American Library Association www.ala.org
Information Management	Electronic Health Record Functional Model – Clinical Care Components	Health Level Seven (HL7) www.hl7.org
	International Computer Driving License – Health	European Computer Driving License Foundation www.ecdl.org

Figure 2

Basic Computer Competencies

A “digital native” has grown up with digital technology such as computers, the Internet, mobile phones, and MP3. A “digital immigrant” grew up without digital technology and adopted it later (Presnky, 2001). There are a substantial number of digital immigrants in the nursing workforce who have not mastered basic computer competencies. Many digital natives have gaps in their basic computer competency skill set.

Europeans realized this shortcoming in the workforce across many industries and acted on it. The European Computer Driving Licence (ECDL) Foundation set basic computer competencies in the late 1990s and again in this decade. About seven million Europeans have now taken the ECDL exam and become certified in basic computer competencies. The ECDL syllabus is effectively a global standard in basic computer competencies (see list of modules below). ECDL has developed extensive training materials, including a certification exam.

ECDL Modules

1. Concepts of Information and Communication Technology (ICT)
2. Using the Computer and Managing Files
3. Word Processing
4. Spreadsheets
5. Using Databases
6. Presentation
7. Web Browsing and Communication

RECOMMENDATIONS

The TIGER Informatics Competency Collaborative (TICC) has adopted the ECDL competencies and is recommending them for all practicing nurses and graduating nursing students.

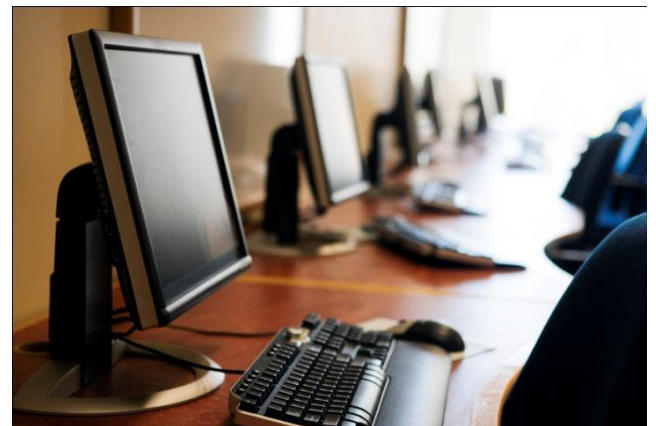
ECDL certification requires 30+ hours of study and costs more than some institutions may be able to afford. Therefore, we have ranked the relative importance of ECDL syllabus items and recommend the following as a first step to basic computer proficiency for all practicing nurses and graduating nursing students. These are feasible and affordable and will provide basic computer competencies for nurses and allow them to go on to obtain other TICC competencies (see Figure 2).

Module 1: Concepts of Information and Communication Technology (ICT)

Module 2: Using the Computer and Managing Files

Module 3, Section 3.1: Word Processing: “Using the application”

Module 7: Web Browsing and Communication



A detailed description of these three modules including the related competency statements can be found in Appendix A.

Basic Computer Competencies

Figure 2 - Basic Computer Competencies Timeline

Recommendation	Timeline for Adoption
All practicing nurses and graduating nursing students gain or demonstrate proficiency in ECDL modules 1, 2 and 7, as well as ECDL Category 3.1	By January 2011
All practicing nurses and graduating nursing students become ECDL certified or hold a substantially equivalent certification	By January 2013

RESOURCES

European Computer Driving Licence (ECDL) Foundation

<http://ecdل.com>

The ECDL syllabus is maintained and periodically updated by the not-for-profit ECDL Foundation. The ECDL Foundation makes arrangements with entities in various countries to localize the ECDL syllabus. Outside of Europe, ECDL is known as International Computer Driving Licence. ICDL is available in the United States through CSPlacement.

CSPlacement

www.csplacement.com

CSPlacement is the official distributor of ECDL within the United States. They offer *CSP Basic*, an e-learning course and a certification exam that is substantially equivalent to the TICC recommendation of a first and significant step towards basic computer competency for 2011. In addition, they also offer *CSP*, an e-learning course and a certification exam that is substantially equivalent to the entire ECDL syllabus that will meet the TICC recommendations for 2013.

Healthcare Information and Management System Society (HIMSS)

www.himss.org

HIMSS has a certificate called Health Informatics Training System (HITS). The HITS program of e-learning, testing, and certification contains content that is substantially equivalent to the TICC recommendation of a first and significant step towards basic computer competency, as well as other content.



Information Literacy Competencies

The Association of Colleges and Research Libraries (2000) defines Information literacy as “a set of abilities allowing individuals to recognize when information is needed and to locate, evaluate and use that information appropriately”. Information literacy builds on computer literacy. Information literacy is the ability to:

- identify information needed for a specific purpose
- locate pertinent information
- evaluate the information
- apply it correctly

Information literacy is critical to incorporating evidence-based practice into nursing practice. The nurse or healthcare provider must be able to determine what information is needed. This involves critical thinking and assessment skills. Finding the information is based on the resources available, which can include colleagues, policies, and literature in various formats. Evaluating or appraising the information also involves critical thinking and the ability to determine the validity of the source. The actual implementation of the information results in putting the information into practice or applying the information. The evaluation process

is necessary to determine whether the information and its application resulted in improvements. Thus, information literacy competencies are fundamental to nursing and evidence-based practice. The components of information literacy are defined in Figure 3.

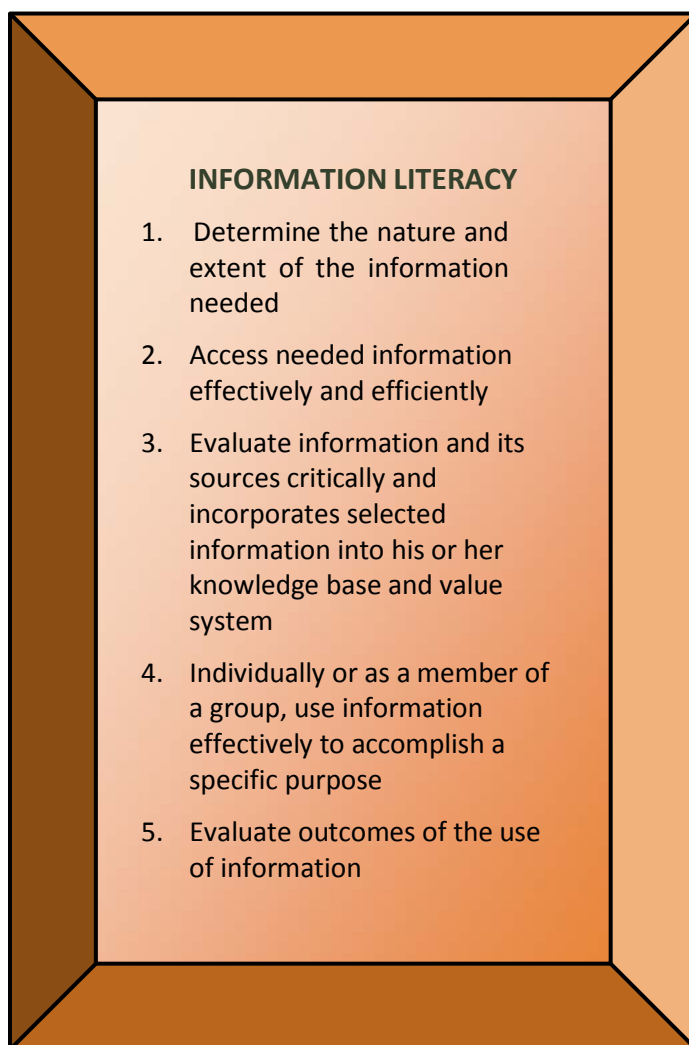


Figure 3 - Information Literacy Components

Information Literacy Competencies

Figure 4 - Information Literacy Competencies Timeline

Recommendation	Timeline for Adoption
All practicing nurses and graduating nursing students will have the ability to demonstrate Information Literacy steps 1 through 3	By January 2011
All practicing nurses and graduating nursing students will have the ability to demonstrate all 5 Information Literacy steps	By January 2013

As some institutions may find these competencies difficult to implement in their entirety immediately, as a first and significant step towards information literacy in nurses, the TICC recommends focusing on the first three competencies for the first year. Once these are achieved by nurses in a particular organization, the other two can be added so that by January 2013, all nurses have all five competencies and incoming nurses demonstrate or are helped to obtain all five.

RESOURCES

American Library Association

The ALA's report "Information Literacy Competency Standards for Higher Education" identifies the competencies recommended above as standards. The report also lists performance indicators and outcomes for each standard. A faculty member or instructor can effectively use this report to create a more detailed syllabus and or lesson plan(s) to implement the TICC information literacy competencies.

<http://www.ala.org/ala/mgrps/divs/acrl/standards/informationliteracycompetency.cfm>

The Information Literacy in Technology

<http://www.ilitassessment.com>

The iLIT test assesses a student's ability to access, evaluate, incorporate, and use information. It is a commercially available test and may be of use in demonstrating proficiency in information literacy.



Examples of competency statements related to each of the Information Literacy steps can be found in Appendix B of this report.

Information Management Competencies

Information management is the underlying principle upon which TICC Clinical Information Management Competencies are built.

Information management is a process consisting of 1) collecting data, 2) processing the data, and 3) presenting and communicating the processed data as information or knowledge.

An underlying concept for information management is the data-information-knowledge continuum. Data are discrete, atomic-level symbols, for example, the number 120.

Information is data that is grouped or organized or processed in such a way that the data has meaning, for example a blood pressure of 120/80. Knowledge is information transformed or combined to be truly useful in making judgments and decisions. An example of knowledge is that a blood pressure of 120/80 is dangerously hypertensive in a neonate.

Information is managed by nurses in a variety of ways, but more and more the preferred or required method is through information systems. We define an information system as being composed of human and computer elements that work interdependently to process data into information. The most relevant, important, and fundamental information management competencies for nurses are those that relate to the electronic health record system (EHRs).

Using an EHRs will be the way nurses manage clinical information for the foreseeable future. However, nursing responsibilities are not changing in the shift to increased use of EHRs. For example, nurses are still required to exercise *due care* in protecting patient privacy. But the manner in which these responsibilities to patients and communities are upheld may be different. Therefore, all practicing nurses and graduating nursing students are therefore strongly encouraged to learn, demonstrate, and use information management competencies to carry out their fundamental clinical responsibilities in an increasingly safe,

effective, and efficient manner.

The most rigorous as well as practical work on enumerating the relevant parts of the EHRs for clinicians was done by Health Level 7 (HL7) EHR Technical Committee and was published in February 2007. This approved American National Standard (ANSI) publication is titled *The HL7 EHR System Functional Model, Release 1*, otherwise known as ANSI/HL7 EHR, R1-2007.

The direct care component of the HL7 EHR System Functional Model serves as a basis of information management competencies for practicing nurses and graduating nursing students (see Appendix C). Although these clinical information management competencies are numerous, they merely make explicit competencies for proficient use of EHRs clinical nursing responsibilities that practicing nurses and graduating nursing students are responsible for today in a paper information management environment or a mixed paper and electronic environment.

However, the direct care component of the HL7 EHR System Functional Model is not quite sufficient by itself to cover the information management responsibilities of nurses in the digital era. What is needed is to translate these items into a set of competencies that address both the purpose and intended use of the HIT system (EHR in this case) and the “due care “ that nurses need to take in managing information via these systems. For example, electronic information is accessed and used in different ways than on paper, and it is important for the user (nurse) to understand these differences as well as the subsequent workflow and policies and procedures.

Fortunately, the European Computer Driving Licence Foundation has come up with a set of items that address these concerns, called *ECDL-Health*. The following chart (figure 5) illustrates how the ECDL-Health item can be linked to a competency statement.

Information Management Competencies

ECDL-Health Syllabus Item	TICC-related Competency Statement
The Nurse will:	
Concepts	
Health Information Systems	Verbalize the importance of Health Information Systems to clinical practice
HIS Types	Have knowledge of various types of Health Information Systems and their clinical and administrative uses
Due Care	
Confidentiality	Assure Confidentiality of protected patient health information when using Health Information Systems under his or her control.
Access Control	Assure Access Control in the use of Health Information Systems under his or her control
Security	Assure the Security of Health Information Systems under his or her control
User Skills	
Navigation Decision Support Output Reports	Have the User Skills as outlined in direct care component of the HL7 EHRS model, which includes all of the ECDL-Health User Skills of Navigation, Decision Support, Output Reports and more.
Policy and Procedure	
Principles	Understand the Principles upon which organizational and professional Health Information System use by healthcare professionals and consumers are based.

Figure 5 - ECDL-Health Topics linked to TICC Competency Statements

This list of competencies came from the Direct Care components of the HL7 EHR System Functional Model. In some cases functional statements were not changed as they can also serve as competencies. For example, the HL7 EHR System Functional Model statement of “Access Healthcare Guidance” was unchanged, except for the preamble that applies to all Clinical Information Management Competencies, as “Using an EHRS, the nurse can: Access Healthcare Guidance.” An example of a change to the HL7 EHR System Functional Model statements is ‘Communication with Medical Devices’ where “Communication with Medical Devices” was changed to “Facilitate Communication with Medical Devices” to make it a Clinical Information Management Competency.

Information Management Competencies

RECOMMENDATIONS

As with the other categories of informatics competencies, the TICC developed a timeline to adopt and integrate these competencies into nursing practice and education settings. Figure 5 illustrates these recommendations for adoption.

Figure 5 - Information Management Competencies Timeline

Recommendation	Timeline for Adoption
Schools of nursing and healthcare delivery organizations will implement the information competencies listed in Appendix.	By January 2012
Schools of nursing and healthcare delivery organizations will implement the transformed ECDL-Health syllabus items listed above.	By January 2012

RESOURCES

HL7 EHR System Functional Model

<http://www.hl7.org/EHR/>

This ANSI standard can be used by nursing instructors in schools of nursing and healthcare delivery organizations to develop curriculum to impart the recommended information management competencies to all practicing nurses and graduating nursing students.

ICDL-Health Syllabus

<http://www.ecdl.com>

A significant portion of the HL7 EHR System Functional Model is covered by the ECDL-Health Syllabus. The ECDL-Health Syllabus was developed by the ECDL Foundation to extend the foundation of basic computer competency skills that are not industry specific into the healthcare industry.

Digital Patient Record Certification (DPRC)

<http://dprcertification.com>

The DPRC Program was developed with a panel of U.S. informatics subject matter experts and is endorsed by the American Medical Informatics Association. The DPRC web site states that it assesses a healthcare professional's ability to accurately, dependably, and legally manage patient records in a digital environment.

Healthcare Information and Management Systems Society

www.himss.org

The HITS program, sponsored in the United States by the Healthcare Information and Management Systems Society, uses a more international version of the ICDL-Health syllabus. Both the DPRC and HITS certifications are a substantial first step towards achieving clinical information management competencies for U.S. nurses and graduating nursing students.

Implementation Strategies

In summary, Federal initiatives mandate the use of EHRs on all patients in the U.S. necessitates the need for all practicing and graduate nurses to master a minimum set of informatics competencies. This report describes the recommended competencies, and provides recommendations for resources that have already developed related educational material, and recommends a timeline for completion.

There are several other resources that might be helpful in developing competency-based training programs for informatics. The Quality Safety Education For Nurses (QSEN) project is one such resource. QSEN, a program funded by the Robert Wood Johnson Foundation since 2006, is primarily focused on developing the knowledge, skills and attitudes (KSAs) necessary to improve the quality and safety of the healthcare systems within which they work. One of the KSAs within QSEN is informatics. The QSEN project believes that nurses need to "Use information and technology to communicate, manage knowledge, mitigate error, and support decision making" (www.qsen.org). Faculty development as well as curricular resources have been developed through QSEN and are available for dissemination on their website at <http://www.qsen.org>.

Another beneficial resource that has developed tools for nurses to assess their competencies related to informatics can be found online at <http://www.nursing-informatics.com/niassess/index.html>. This website also offers tools to help develop a "Personal development plan" to improve informatics competencies (see http://www.nursing-informatics.com/niassess/Personal_Plan_2007.pdf). Other tools available include quick informatics tutorials as well as self-tests:

<http://www.nursing-informatics.com/niassess/tutorials.html>

<http://www.nursing-informatics.com/niassess/tests.html>

As mentioned previously, four other TIGER Collaborative teams developed recommendations on how to implement the TICC competencies. Please refer to their reports for additional suggestions. These four teams include:

1. TIGER Education and Faculty Development
2. TIGER Staff Development
3. TIGER Leadership Development
4. TIGER Virtual Demonstration Center

These TIGER Collaborative reports are accessible on the TIGER website at www.thetigerinitiative.org.



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Appendix A - Basic Computer Competencies

TIGER Informatics Competencies Recommendations - Basic Computer Competencies

1. Basic Computer Competency

1.1

Hardware

1.1.1. Concepts

- 1.1.1.1 Understand the term hardware.
Understand what a personal computer is. Distinguish between desktop, laptop (notebook), tablet PC in terms of typical users.
- 1.1.1.2 Identify common handheld portabledigital devices like: personal digital assistant (PDA), mobile phone, smartphone, multimedia player and know their main features.
- 1.1.1.3 Know the main parts of a computer like: central processing unit (CPU), types of memory, hard disk, common input and output devices.
- 1.1.1.4 Identify common input/output ports like: USB, serial, parallel, network port, FireWire.

1.1.2 Computer Performance

- 1.1.2.1 Know some of the factors that impact on a computer's performance like: CPU speed, RAM size, graphics card processor and memory, the number of applications running.
- 1.1.2.2 Know that the speed (operating frequency) of the CPU is measured in megahertz (MHz) or gigahertz (GHz).

1.1.3 Memory and Storage

- 1.1.3.1 Know what computer memory is: RAM (random-access memory), ROM (readonly memory) and distinguish between them.
- 1.1.3.2 Know storage capacity measurements: bit, byte, KB, MB, GB, TB.
Know the main types of storage media like: internal hard disk, external hard disk, network drive, CD, DVD, USB flash drive, memory card, online file storage.
- 1.1.3.3

1.1.4 Input, Output Devices

- 1.1.4.1 Identify some of the main input devices like: mouse, keyboard, trackball, scanner, touchpad, stylus, joystick, web camera (webcam), digital camera, microphone.
- 1.1.4.2 Know some of the main output devices like: screens/monitors, printers, speakers, headphones.
- 1.1.4.3 Understand some devices are both input and output devices like: touch screens.

1.2

Software

1.2.1 Concepts

- 1.2.1.1 Understand the term software.
- 1.2.1.2 Understand what an operating system is and name some common operating systems.

Identify and know the uses of some common software applications: word processing, spreadsheet, database, presentation, e-mail, web browsing, photo editing, computer games.
- 1.2.1.3 Distinguish between operating systems software and applications software.
- 1.2.1.4 Know some options available for enhancing accessibility like: voice recognition software, screen reader, screen magnifier, on-screen keyboard.
- 1.2.1.5

Appendix A - Basic Computer Competencies

TIGER Informatics Competencies Recommendations - Basic Computer Competencies

1.3 Networks

1.3.1 Network Types

- 1.3.1.1 Understand the terms local area network (LAN), wireless local area network (WLAN), wide area network (WAN).
- 1.3.1.2 Understand the term client/server.
- 1.3.1.3 Understand what the Internet is and know some of its main uses.
- 1.3.1.4 Understand what an intranet, extranet is.

1.3.2 Data Transfer

- 1.3.2.1 Understand the concepts of downloading from, uploading to a network.
- 1.3.2.2 Understand what transfer rate means. Understand how it is measured: bits per second (bps), kilobits per second (kbps), megabits per second (mbps).
- 1.3.2.3 Know about different Internet connection services: dial-up, broadband.
- 1.3.2.4 Know about different options for connecting to the Internet like: phone line, mobile phone, cable, wireless, satellite.
- 1.3.2.5 Understand some of the characteristics of broadband: always on, typically a flat fee, high speed, higher risk of intruder attack.

1.4 ICT in Everyday Life

1.4.1 Electronic World

- 1.4.1.1 Understand the term Information and Communication Technology (ICT).
- 1.4.1.2 Know about different Internet services for consumers like: e-commerce, ebanking, e-government.
- 1.4.1.3 Understand the term e-learning. Know some of its features like: flexible learning time, flexible learning location, multimedia learning experience, cost effectiveness.
- 1.4.1.4 Understand the term teleworking. Know some of the advantages of teleworking like: reduced or no commuting time, greater ability to focus on one task, flexible schedules, reduced company space requirements. Know some disadvantages of teleworking like: lack of human contact, less emphasis on teamwork.

1.4.2 Communication

- 1.4.2.1 Understand the term electronic mail (email).
- 1.4.2.2 Understand the term instant messaging (IM).
- 1.4.2.3 Understand the term Voice over Internet Protocol (VoIP).
- 1.4.2.4 Understand the term Really Simple Syndication (RSS) feed.
- 1.4.2.5 Understand the term web log (blog).
- 1.4.2.6 Understand the term podcast.

1.4.3 Virtual Communities

- 1.4.3.1 Understand the concept of an online (virtual) community. Recognize examples like: social networking websites, Internet forums, chat rooms, online computer games.
- 1.4.3.2 Know ways that users can publish and share content online: web log (blog), podcast, photos, video and audio clips.
- 1.4.3.3 Know the importance of taking precautions when using online communities: make your profile private, limit the amount of personal information you post, be aware that posted information is publicly available, be wary of strangers.

Appendix A - Basic Computer Competencies

TIGER Informatics Competencies Recommendations - Basic Computer Competencies

1.4.4 Health

- 1.4.4.1 Understand the term ergonomics.
- 1.4.4.2 Recognize that lighting is a health factor in computer use. Be aware that use of artificial light, amount of light, direction of light are all important considerations.
- 1.4.4.3 Understand that correct positioning of the computer, desk and seat can help maintain a good posture.
- 1.4.4.4 Recognize ways to help ensure a user's wellbeing while using a computer like: take regular stretches, have breaks, use eye relaxation techniques.

1.4.5 Environment

- 1.4.5.1 Know about the option of recycling computer components, printer cartridges and paper
- 1.4.5.2 Know about computer energy saving options: applying settings to automatically turn off the screen/monitor, to automatically put the computer to sleep, switching off the computer.

1.5

Security

1.5.1 Identity/Authentication

- 1.5.1.1 Understand that for security reasons a user name (ID) and password are needed for users to identify themselves when logging on to a computer.
- 1.5.1.2 Know about good password policies like: not sharing passwords, changing them regularly, adequate password length, adequate letter and number mix.

1.5.2 Data Security

- 1.5.2.1 Understand the importance of having an off-site backup copy of files.
- 1.5.2.2 Understand what a firewall is.
- 1.5.2.3 Know ways to prevent data theft like: using a user name and password, locking computer and hardware using a security cable.

1.5.3 Viruses

- 1.5.3.1 Understand the term computer virus.
- 1.5.3.2 Be aware how viruses can enter a computer system.
- 1.5.3.3 Know how to protect against viruses and the importance of updating antivirus software regularly.

1.6 Law

1.6.1 Copyright

- 1.6.1.1 Understand the term copyright.
- 1.6.1.2 Know how to recognize licensed software: by checking product ID, product registration, by viewing the software licence.
- 1.6.1.3 Understand the term end-user license agreement.
- 1.6.1.4 Understand the terms shareware, freeware, open source.

1.6.2 Data Protection

- 1.6.2.1 Identify the main purposes of data protection legislation or conventions: to protect the rights of the data subject, to set out the responsibilities of the data controller.
 - 1.6.2.2 Identify the main data protection rights for a data subject in your country.
 - 1.6.2.3 Identify the main data protection responsibilities for a data controller in your country.
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Appendix A - Basic Computer Competencies

TIGER Informatics Competencies Recommendations - Basic Computer Competencies

2.1 Operating System

2.1.1 First Steps

- 2.1.1.1 Start the computer and log on securely using a user name and password.
- 2.1.1.2 Restart the computer using an appropriate routine.
- 2.1.1.3 Shut down a non-responding application.
- 2.1.1.4 Shut down the computer using an appropriate routine.
- 2.1.1.5 Use available Help functions.

2.1.2 Setup

- 2.1.2.1 View the computer's basic system information: operating system name and version number, installed RAM (random-access memory).
- 2.1.2.2 Change the computer's desktop configuration: date & time, volume settings, desktop display options (color settings, desktop background, screen pixel resolution, screen saver options).
- 2.1.2.3 Set, add keyboard language.
- 2.1.2.4 Install, uninstall a software application.
- 2.1.2.5 Use keyboard print screen facility to capture a full screen, active window.

2.1.3 Working with Icons

- 2.1.3.1 Identify common icons like those representing: files, folders, applications, printers, drives, recycle bin/wastebasket/trash.
- 2.1.3.2 Select and move icons.
- 2.1.3.3 Create, remove a desktop shortcut icon, make an alias.
- 2.1.3.4 Use an icon to open a file, folder, application.

2.1.4 Using Windows

- 2.1.4.1 Identify the different parts of a window: title bar, menu bar, toolbar or ribbon, status bar, scroll bar.
- 2.1.4.2 Collapse, expand, restore, resize, move, close a window.
- 2.1.4.3 Switch between open windows.

2.2 File Management

2.2.1 Main Concepts

- 2.2.1.1 Understand how an operating system organizes drives, folders, files in a hierarchical structure.
- 2.2.1.2 Know devices used by an operating system to store files and folders like: hard disk, network drives, USB flash drive, CD-RW, DVD-RW.
- 2.2.1.3 Know how files, folders are measured: KB, MB, GB.
- 2.2.1.4 Understand the purpose of regularly backing up data to a removable storage device for off-site storage.
- 2.2.1.5 Understand the benefits of online file storage: convenient access, ability to share files.

2.2.2 Files and Folders

- 2.2.2.1 Open a window to display folder name, size, location on a drive.
- 2.2.2.2 Expand, collapse views of drives, folders.
- 2.2.2.3 Navigate to a folder, file on a drive.
- 2.2.2.4 Create a folder and a further subfolder.

2.2.3 Working with Files

- 2.2.3.1 Identify common file types: word processing files, spreadsheet files, database files, presentation files, portable document format files, image files, audio files, video files, compressed files, temporary files, executable files.
- 2.2.3.2 Open a text editing application. Enter text into a file, name and save the file to a location on a drive.

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TIGER Informatics Competencies Recommendations - Basic Computer Competencies

- 2.2.3.3 Change file status: read-only/locked, read-write.
- 2.2.3.4 Sort files in ascending order by name, size, type, date modified.
- 2.2.3.5 Recognize good practice in folder, file naming: use meaningful names for folders and files to help with recall and organization.
- 2.2.3.6 Rename files, folders.
- 2.2.4 *Copy, Move*
 - 2.2.4.1 Select a file, folder individually or as a group of adjacent, non-adjacent files, folders.
 - 2.2.4.2 Copy files, folders between folders and between drives.
 - 2.2.4.3 Move files, folders between folders and between drives.
- 2.2.5 *Delete, Restore*
 - 2.2.5.1 Delete files, folders to the recycle bin/wastebasket/trash.
 - 2.2.5.2 Restore files, folders from the recycle bin/wastebasket/trash.
 - 2.2.5.3 Empty the recycle bin/wastebasket/trash
- 2.2.6 *Searching*
 - 2.2.6.1 Use the Find tool to locate a file, folder.
 - 2.2.6.2 Search for files by all or part of file name, by content.
 - 2.2.6.3 Search for files by date modified, by date created, by size.
 - 2.2.6.4 Search for files by using wildcards: file type, first letter of file name.
 - 2.2.6.5 View list of recently used files.

2.3 Utilities

- 2.3.1 *File Compression*
 - 2.3.1.1 Understand what file compression means.
 - 2.3.1.2 Compress files in a folder on a drive.
 - 2.3.1.3 Extract compressed files from a location on a drive.
- 2.3.2 *Anti-Virus*
 - 2.3.2.1 Understand what a virus is and the ways a virus can be transmitted onto a computer.
 - 2.3.2.2 Use anti-virus software to scan specific drives, folders, files.
 - 2.3.2.3 Understand why anti-virus software needs to be updated regularly.

2.4 Print Management

- 2.4.1 *Printer Options*
 - 2.4.1.1 Change the default printer from an installed printer list.
 - 2.4.1.2 Install a new printer on the computer.
- 2.4.2 *Print*
 - 2.4.2.1 Print a document from a text editing application.
 - 2.4.2.2 View a print job's progress in a queue using a desktop print manager.
 - 2.4.2.3 Pause, re-start, delete a print job using a desktop print manager.

3.1 Using the Application

- 3.1.1 *Working with Documents*
 - 3.1.1.1 Open, close a word processing application. Open, close documents.
 - 3.1.1.2 Create a new document based on default template, other available template like: memo, fax, agenda.
 - 3.1.1.3 Save a document to a location on a drive. Save a document under another name to a location on a drive.
 - 3.1.1.4 Save a document as another file type like: text file, Rich Text Format, template, software specific file extension, version number.
 - 3.1.1.5 Switch between open documents.

Appendix A - Basic Computer Competencies

TIGER Informatics Competencies Recommendations - Basic Computer Competencies

7.1 The Internet

7.1.1 Concepts/Terms

- 7.1.1.1 Understand what the Internet is.
- 7.1.1.2 Understand what the World Wide Web (WWW) is.
- 7.1.1.3 Define and understand the terms: Internet Service Provider (ISP), Uniform Resource Locator (URL), hyperlink.
- 7.1.1.4 Understand the make-up and structure of a web address.
- 7.1.1.5 Understand what a web browser is and name different web browsers.
- 7.1.1.6 Know what a search engine is.
- 7.1.1.7 Understand the term Really Simple Syndication (RSS) feed. Understand the purpose of subscribing to an RSS feed.
- 7.1.1.8 Understand the term podcast. Understand the purpose of subscribing to a podcast.

7.1.2 Security Considerations

- 7.1.2.1 Know how to identify a secure web site: https, lock symbol.
- 7.1.2.2 Know what a digital certificate for a web site is.
- 7.1.2.3 Understand the term encryption.
- 7.1.2.4 Know about security threats from web sites like: viruses, worms, Trojan horses, spyware. Understand the term malware.
- 7.1.2.5 Understand that regularly updated anti-virus software helps to protect the computer against security threats.
- 7.1.2.6 Understand that a firewall helps to protect the computer against intrusion.
- 7.1.2.7 Know that networks should be secured by user names and passwords.
- 7.1.2.8 Identify some risks associated with online activity like: unintentional disclosure of personal information, bullying or harassment, targeting of users by predators.
- 7.1.2.9 Identify parental control options like: supervision, web browsing restrictions, computer games restrictions, computer usage time limits.

7.2 Using the Browser

7.2.1 Basic Browsing

- 7.2.1.1 Open, close a web browsing application.
- 7.2.1.2 Enter a URL in the address bar and go to the URL.
- 7.2.1.3 Display a web page in a new window, tab.
- 7.2.1.4 Stop a web page from downloading.
- 7.2.1.5 Refresh a web page.
- 7.2.1.6 Use available Help functions.

7.2.2

Settings

- 7.2.2.1 Set the web browser Home Page/Start page.
- 7.2.2.2 Delete part, all browsing history.
- 7.2.2.3 Allow, block pop-ups.
- 7.2.2.4 Allow, block cookies.
- 7.2.2.5 Delete cache/temporary Internet files.
- 7.2.2.6 Display, hide built-in toolbars.

7.2.3 Navigation

- 7.2.3.1 Activate a hyperlink.
- 7.2.3.2 Navigate backwards and forwards between previously visited web pages.
- 7.2.3.3 Navigate to the Home page.

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7.2.4 Bookmarks

- 7.2.4.1 Bookmark a web page. Delete a bookmark.
- 7.2.4.2 Display a bookmarked web page.
- 7.2.4.3 Create, delete a bookmark folder.
- 7.2.4.4 Add web pages to a bookmark folder.

7.3 Using the Web

7.3.1 Forms

- 7.3.1.1 Complete a web-based form using: text boxes, drop-down menus, list boxes, check boxes, radio buttons.
- 7.3.1.2 Submit, reset a web-based form.

7.3.2 Searching

- 7.3.2.1 Select a specific search engine.
- 7.3.2.2 Carry out a search for specific information using a keyword, phrase.
- 7.3.2.3 Use advanced search features to refine a search: by exact phrase, by excluding words, by date, by file format.
- 7.3.2.4 Search a web based encyclopedia, dictionary.

7.4 Web Outputs

7.4.1 Saving Files

- 7.4.1.1 Save a web page to a location on a drive.
- 7.4.1.2 Download files from a web page to a location on a drive.
- 7.4.1.3 Copy text, image, URL from a web page to a document.

7.4.2 Prepare and Print

- 7.4.2.1 Prepare a web page for printing: change printed page orientation, paper size, printed page margins.
- 7.4.2.2 Preview a web page.
- 7.4.2.3 Choose web page print output options like: entire web page, specific page(s), selected text, number of copies and print.

7.5 Electronic Communication

7.5.1 Concepts/Terms

- 7.5.1.1 Understand the term e-mail and know its main uses.
- 7.5.1.2 Understand the make-up and structure of an e-mail address.
- 7.5.1.3 Understand the term short message service (SMS).
- 7.5.1.4 Understand the term Voice over Internet Protocol (VoIP) and know its main benefits.
- 7.5.1.5 Understand the main benefits of instant messaging (IM) like: real-time communication, knowing whether contacts are online, low cost, ability to transfer files.
- 7.5.1.6 Understand the concept of an online (virtual) community. Recognize examples like: social networking websites, Internet forums, chat rooms, online computer games.

7.5.2 Security Considerations

- 7.5.2.1 Be aware of the possibility of receiving fraudulent and unsolicited email.
- 7.5.2.2 Understand the term phishing. Recognize attempted phishing.
- 7.5.2.3 Be aware of the danger of infecting the computer with a virus by opening an unrecognized e-mail message, by opening an attachment.
- 7.5.2.4 Understand what a digital signature is.

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7.5.3 E-mail Theory

- 7.5.3.1 Understand the advantages of e-mail systems like: speed of delivery, low cost, flexibility of using a web-based e-mail account in different locations.
 - 7.5.3.2 Understand the importance of network etiquette (netiquette) like: using accurate and brief descriptions in e-mail message subject fields, brevity in e-mail responses, spell checking outgoing e-mail.
 - 7.5.3.3 Be aware of possible problems when sending file attachments like: file size limits, file type restrictions (for example, executable files).
 - 7.5.3.4 Understand the difference between the To, Copy (Cc), Blind copy (Bcc) fields.
-

7.6 Using e-mail

7.6.1 Send an e-mail

- 7.6.1.1 Open, close an e-mail application. Open, close an e-mail.
- 7.6.1.2 Create a new e-mail.
- 7.6.1.3 Enter an e-mail address in the To, Copy (Cc), Blind copy (Bcc) fields.
- 7.6.1.4 Enter a title in the Subject field.
- 7.6.1.5 Copy text from another source into an e-mail.
- 7.6.1.6 Insert, remove a file attachment.
- 7.6.1.7 Save a draft of an e-mail.
- 7.6.1.8 Use a spell checking tool and correct spelling errors.
- 7.6.1.9 Send an e-mail, send an e-mail with a low, high priority.

7.6.2 Receiving e-mail

- 7.6.2.1 Use the reply, reply to all function.
- 7.6.2.2 Forward an e-mail.
- 7.6.2.3 Save a file attachment to a location on a drive and open the file.
- 7.6.2.4 Preview, print a message using available printing options.

7.6.3 Enhancing Productivity

- 7.6.3.1 Add, remove message inbox headings like: sender, subject, date received.
 - 7.6.3.2 Apply a setting to reply with, without original message insertion.
 - 7.6.3.3 Flag an e-mail. Remove a flag mark from an e-mail.
 - 7.6.3.4 Identify an e-mail as read, unread. Mark an e-mail as unread, read.
 - 7.6.3.5 Display, hide built-in toolbars. Restore, minimize the ribbon.
 - 7.6.3.6 Use available Help functions.
-

7.7 e-mail Management

7.7.1 Organize

- 7.7.1.1 Search for an e-mail by sender, subject, e-mail content.
- 7.7.1.2 Sort e-mails by name, by date, by size.
- 7.7.1.3 Create, delete an e-mail folder.
- 7.7.1.4 Move e-mails to an e-mail folder.
- 7.7.1.5 Delete an e-mail.
- 7.7.1.6 Restore a deleted e-mail.
- 7.7.1.7 Empty the e-mail bin/deleted items/trash folder.

7.7.2 Address Book

- 7.7.2.1 Add contact details to an address book. Delete contact details from an address book.
 - 7.7.2.2 Update an address book from incoming e-mail.
 - 7.7.2.3 Create, update a distribution list/ mailing list.
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Appendix B - Information Literacy Competencies

TIGER Recommendations -Information Literacy Competencies

[Source: Modified from American Library Association's Information Literacy Competency Standards for Higher Education (2000).]

Information Literacy Competencies

All practicing nurses and graduating nursing students will have the ability to:

1. Knowledge - Determine the nature and extent of the information needed.

- 1.1 Recognize a specific information need
- 1.2 Focus and articulate the information need into a researchable question.
- 1.3 Understand that the type and amount of information selected is determined in part by the parameters of the need, as well as by the information available.

2. Access - Access needed information effectively and efficiently

- 2.1 Recognize the availability of a variety of sources and of assistance with using them.
- 2.2 Identify types of information resources in a variety of formats (e.g., primary or secondary, journals, policies and procedures, electronic references) and understand their characteristics.
- 2.3 Select types of information resources appropriate to a specific information need.
- 2.4 Understand that different information sources and formats require different searching techniques, including browsing.
- 2.5 Select the search strategies appropriate to the topic and resource.
- 2.5 Understand that various resources may use different controlled vocabularies to refer to the same topic.
- 2.6 Use search language appropriate to the source, such as a controlled vocabulary, key words, natural language, author and title searches to locate relevant items in print and electronic resources.
- 2.7 Use online search techniques and tools to locate relevant citations and to further refine the search.
- 2.8 Understand that the Internet may be a useful resource for locating, retrieving and transferring information electronically.
- 2.9 Understand how to use classification systems and their rationale.

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TIGER Recommendations -Information Literacy Competencies

[Source: Modified from American Library Association's Information Literacy Competency Standards for Higher Education (2000).]

3. Evaluate information and its sources critically and incorporates selected information into his or her knowledge base and value system

- 3.1 Understand that search results may be presented according to various ordering principles (e.g., relevance ranking, author, title, date, or publisher).
- 3.2 Assess the number and relevance of sources cited to determine whether the search strategy must be refined.
- 3.3 Use the components of a citation (e.g., currency, reputation of author or source, format, or elements of a URL) to choose those most suitable for the information need.
- 3.4 Perceive gaps in information retrieved and determine whether the search should be refined.
- 3.5 Understand that the Internet may be a useful resource for locating, retrieving and transferring information electronically.
- 3.6 Use a variety of criteria, such as author's credentials, peer review, and reputation of the publisher, to assess the authority of the source.
- 3.7 Assess the relevancy of a source to an information need by examining publication date, purpose, and intended audience.
- 3.8 Recognize omission in the coverage of a topic.
- 3.9 Distinguish between primary and secondary sources in different disciplines and evaluate their appropriateness to the information need.
- 3.10 Apply evaluation criteria to all information formats.
- 3.11 Integrate the new information into existing body of knowledge.

4. Individually or as a member of a group, use information effectively to accomplish a specific purpose

- 4.1 Recognize and evaluate documentation for the information source, such as research methodology, bibliography or footnotes.
- 4.2 Use appropriate documentation style to cite sources used.
- 4.3 Summarize the information retrieved (e.g., write an abstract or construct an outline).
- 4.4 Recognize and accept the ambiguity of multiple points of view.

Appendix B - Information Literacy Competencies

TIGER Recommendations -Information Literacy Competencies

[Source: Modified from American Library Association's Information Literacy Competency Standards for Higher Education (2000).]

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- 4.5 Organize the information in a logical and useful manner.
 - 4.6 Synthesize the ideas and concepts from the information sources collected.
 - 4.7 Determine the extent to which the information can be applied to the information need.
 - 4.8 Create a logical argument based on information retrieved.

5. Evaluate outcomes of the use of information

- 5.1 Describe the criteria used to make decisions and choices at each step of the particular process used.
- 5.2 Assess effectiveness of each step of the process and refine the search process in order to make it more effective.
- 5.3 Understand that many of the components of an information seeking process are transferable and, therefore, are applicable to a variety of information needs.
- 5.4 Understand the structure of the information environment and the process by which both scholarly and popular information is produced, organized and disseminated.
- 5.5 Understand the ethics of information use, such as knowing how and when to give credit to information and ideas gleaned from others by appropriately citing sources in order to avoid plagiarism.
- 5.6 Respect intellectual property rights by respecting copyright.
- 5.7 Understand concepts and issues relating to censorship, intellectual freedom, and respect for differing points of view.
- 5.8 Understand the social/political issues affecting information, such as:
 - a) privacy
 - b) privatization and access to government information
 - c) electronic access to information
 - d) the exponential growth of information
 - e) equal access to information

Appendix C - Information Management Competencies

TIGER Recommendations - Information Management Competencies

[Source: Modified from the Health Language 7 (HL7) EHRs Functional Model]

3. Clinical Information Management Competencies

Concepts

Verbalize the importance of Health Information Systems to clinical practice

Have knowledge of various types of Health Information Systems and their clinical and administrative uses

Due Care

Assure Confidentiality of protected patient health information when using Health Information Systems under his or her control

Assure Access Control in the use of Health Information Systems under his or her control

Assure the Security of Health Information Systems under his or her control

Policy and Procedure

Understand the Principles upon which organizational and professional Health Information System use by healthcare professionals and consumers are based.

User Skills

Have the User Skills as outlined in direct care component of the HL7 EHRS model (see below: **Using and EHRs, the nurse can:**) , which includes all of the ECDL-Health User Skills of Navigation, Decision Support,

Appendix C - Information Management Competencies

TIGER Recommendations - Information Management Competencies

[Source: Modified from the Health Language 7 (HL7) EHRs Functional Model]

Example Competency Statements: Using an EHR, the nurse can:

1.0 Demographic/patient info

- 1.1 Identify and Maintain a Patient Record
- 1.2 Manage Patient Demographics
- 1.3 Capture Data and Documentation from External Clinical Sources
- 1.4 Capture Patient-Originated Data
- 1.5 Capture Patient Health Data Derived from Administrative and
- 1.6 Interact with Financial Data and Documentation
- 1.7 Produce a Summary Record of Care
- 1.8 Present Ad Hoc Views of the Health Record
- 1.9 Manage Patient History

2.0 Consents and Authorizations

- 2.1 Manage Patient and Family Preferences
- 2.2 Manage Patient Advance Directives
- 2.3 Manage Consents and Authorizations

3.0 Medication Management

- 3.1 Manage Allergy, Intolerance and Adverse Reaction Lists
- 3.2 Manage Medication Lists
- 3.3 Manage Problem Lists
- 3.4 Manage Immunization Lists
- 3.5 Manage Medication Administration
- 3.6 Manage Immunization Administration
- 3.7 Manage Medication Orders as appropriate for her scope of practice

4.0 Planning Care

- 4.1 Interact with Guidelines and Protocols for Planning Care
- 4.2 Manage Patient-Specific Care and Treatment Plans
- 4.3 Interact with Clinical Workflow Tasking
- 4.4 Interact with Clinical Task Assignment and Routing
- 4.5 Interact with Clinical Task Linking
- 4.6 Interact with Clinical Task Tracking

5.0 Order/Results Management

- 5.1 Manage Non-Medication Patient Care Orders
- 5.2 Manage Orders for Diagnostic Tests
- 5.3 Manage Orders for Blood Products and Other Biologics
- 5.4 Manage Referrals
- 5.5 Manage Order Sets
- 5.6 Manage Results

6.0 Care Documentation

- 6.1 Manage Patient Clinical Measurements
- 6.2 Manage Clinical Documents and Notes
- 6.3 Manage Documentation of Clinician Response to Decision Support Prompts
- 6.4 Generate and Record Patient-Specific Instructions

Appendix C - Information Management Competencies

TIGER Recommendations - Information Management Competencies

[Source: Modified from the Health Language 7 (HL7) EHRs Functional Model]

Example Competency Statements: Using an EHR, the nurse can:

7.0 Decision Support

- 7.1 Manage Health Information to Provide Decision Support for Standard Assessments
- 7.2 Manage Health Information to Provide Decision Support for Patient Context- Driven assessments
- 7.3 Manage Health Information to Provide Decision Support for Identification of Potential Problems and Trends
- 7.4 Manage Health Information to Provide Decision Support for Patient and Family Preferences
- 7.5 Interact with decision Support for Standard Care Plans, Guidelines, and Protocols
- 7.6 Interact with decision Support for Context-Sensitive Care Plans, Guidelines, and Protocols
- 7.7 Manage Health Information to Provide Decision Support Consistent Healthcare
- 7.8 Management of Patient Groups or Populations
- 7.9 Manage Health Information to Provide Decision Support for Research Protocols Relative to Individual Patient Care
- 7.10 Manage Health Information to Provide Decision Support for Self-Care
- 7.11 Interact with decision support for Medication and Immunization Ordering as appropriate for her scope of practice
- 7.12 Interact with decision Support for Drug Interaction Checking
- 7.13 Interact with decision Support for Patient Specific Dosing and Warnings
- 7.14 Interact with decision Support for Medication Recommendations
- 7.15 Interact with decision Support for Medication and Immunization Administration
- 7.16 Interact with decision Support for Non-Medication Ordering
- 7.17 Interact with decision Support for Result Interpretation
- 7.18 Interact with decision Support for Referral Process
- 7.19 Interact with decision Support for Referral Recommendations
- 7.20 Interact with decision Support for Safe Blood Administration
- 7.21 Interact with decision Support for Accurate Specimen Collection

8.0 Notifications

- 8.1 Interact with decision support that Presents Alerts for Preventive Services and Wellness
- 8.2 Interact with decision Support for Notifications and Reminders for Preventive Services and Wellness
- 8.3 Manage Health Information to Provide Decision Support for Epidemiological
- 8.4 Investigations of Clinical Health Within a Population.
- 8.5 Manage Health Information to Provide Decision Support for Notification and Response regarding population health issues
- 8.6 Manage Health Information to Provide Decision Support for Monitoring Response
- 8.7 Notifications Regarding a Specific Patient's Health
- 8.8 Access Healthcare Guidance

9.0 Facilitating Communications

- 9.1 Facilitate Inter-Provider Communication
- 9.2 Facilitate Provider -Pharmacy Communication
- 9.3 Facilitate Communications Between Provider and Patient and/or the Patient Representative
- 9.4 Facilitate Patient, Family and Care Giver Education
- 9.5 Facilitate Communication with Medical Devices

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CO-CHAIRS

Brian Gugerty DNS, RN

Clinical Informatician
Principal Consultant
Gugerty Consulting, LLC

Connie Delaney PhD, RN, FAAN, FACMI

Dean and Professor
School of Nursing
University of Minnesota

Their efforts were supported by the TIGER Executive Program Director.

PROGRAM DIRECTOR

Donna DuLong, BSN

TIGER Initiative

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CONTRIBUTING AUTHORS

P. Ann Coleman, EdD, RN, MPA, PMP

Texas Woman's University

Wanda Kelley, RN, MSN

Catholic Healthcare Initiatives

Denise Tyler, RN-BC, MSN, MBA

Kaweah Delta Health Care District

Sarah Tupper

Taylor-Tupper and Associates

EDITORS

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For additional information, please contact:

Brian Gugerty, RN, DNS
Gugerty Consulting, LLC
brian_gugerty@hotmail.com

Connie Delaney, RN, PhD, FACMI, FAAN
University of Minnesota
delaney@umn.com

Pat Hinton Walker, PhD, RN, FAAN, PCC
TIGER Initiative Phase III
phintonwalker@comcast.net

TIGER Website
[**www.thetigerinitiative.org**](http://www.thetigerinitiative.org)

