



The TIGER Initiative

Revolutionary Leadership Driving Healthcare Innovation:
The TIGER Leadership Development Collaborative Report



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

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.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 Leadership 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 Leadership Development Collaborative Team analyzed how to empower nursing leaders to drive, inspire, and execute the transformation of healthcare through the use of health IT. The TIGER Leadership Development Collaborative team was comprised of various levels of nursing leadership in both practice and educational settings in order to identify effective leadership development strategies related to the use of health IT. This report describes the background, methodology, findings, and recommendations for future work in this area.

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Executive Summary

Nursing executives are responsible for their organization's values, beliefs, and behaviors and must ensure that nursing care is patient-centered, safe and high quality. In addition, a looming workforce shortage and public outcry for healthcare reform demands more efficient, timely, and cost-effective delivery of nursing care. Health information technology (HIT) is central to the healthcare reform debate, as it is viewed as the underpinning needed to support the needed changes. However, adoption of HIT will not happen without leadership that is educated and prepared to lead future technology initiatives. This requires vision, influence, risk taking, clinical knowledge, and a strong expertise relating to professional nursing practice.

TIGER VISION FOR LEADERSHIP

Revolutionary Leadership that drives, empowers, and executes the transformation of healthcare through the use of Health IT.

In 2006, the TIGER Initiative held an interactive summit to gather nursing leaders from the nation's practice, education, government and policy-making agencies, and developers of HIT solutions to create a vision for the future of nursing that uses information technology as an *enabler* to provide safer, higher-quality patient care. With the use of a wireless audience response system, the summit attendees ranked the priority of activities that must be completed to achieve the TIGER vision. One of the highest priorities identified at the TIGER Summit was to develop ***revolutionary leadership that drives, empowers and executes the transformation of healthcare.***

The TIGER Leadership Development Collaborative team engaged nursing leaders from both practice and educational settings to identify effective leadership development

strategies related to the use of health IT. Building off the recommendations of the TIGER Informatics Competencies Collaborative recommendations, the Leadership Development Collaborative completed an inventory of existing leadership development programs to determine how informatics competencies were integrated into their curriculum. They also surveyed nursing leaders to gain their perspective on health IT knowledge gaps as well as their most urgent program development needs within their management teams.

The TIGER Leadership Development Collaborative aligned with the Magnet® Recognition Program for guidance on how to build an effective culture that embraces the type of change that technology often requires. As a result, they collected dozens of examples of how organizations used HIT to facilitate their Magnet Journey. These exemplars, together with survey feedback on educational needs, helped to formulate a core set of recommendations for ongoing program development.

RECOMMENDATIONS

- Develop programs for nurse executives and faculty that stress the value of information technology and empower them to use Health IT knowledgeably.
- Expand and integrate informatics competencies into Nursing Leadership Development Programs.
- Promote sharing of best practices using Health IT effectively to improve the delivery of nursing care.
- Promote alignment with the Magnet Recognition Program as a mechanism to demonstrate nursing excellence in using technology to improve nursing practice and the delivery of safer, more effective patient care.

Background

During the last decade, information technology (IT) has transformed every aspect of life, affecting businesses in every industry and empowering consumers to change the way they work, bank, shop, and travel. However, this profound change has been slow to penetrate the healthcare system infrastructure. As a result, major reform is needed in how healthcare is delivered in the future – changes that affect organizational values, beliefs, and behaviors.

The push for better use of health IT is well established. Several major studies and organizations have demonstrated the link between technology and the delivery of safer, higher quality healthcare. For example, in 1999, a group of large employers came together to form The Leapfrog Group, designed to assess healthcare by certain quality indicators. Officially launched in November 2000, this group is supported by the Business Roundtable and the Robert Wood Johnson Foundation (RWJF). One of the four “leaps” in hospital quality, safety, and affordability, includes the presence of computerized order entry (CPOE) as a measure shown to reduce serious medication prescribing errors by more than 50%.

Nurses know that technology can reduce waste and workflow inefficiency. The American Academy of Nursing Workforce Commission teamed up with the Robert Wood Johnson Foundation (RWJF) to develop a process called *Technology Drill Down*¹ to identify the workflow inefficiencies that could be addressed through the deployment of technology. This process has been tested in more than 200 medical surgical units in the U.S., and identified more than 1,500 opportunities to improve the delivery of safer and more efficient patient care. RWJF also joined up with the Institute for Healthcare Improvement (IHI) in order to study how to

¹ Bolton LB, Gassert CA, and Cipriano PF. Smart Technology, Enduring Solutions. *The Journal of Health Information Management*. 2008; 22(4):24-30.

improve hospital work environments and its impact on nursing retention. The initiative called *Transforming Care at the Bedside* (TCAB) is now a national movement to engage clinical staff in devising changes that will improve nurses'

delivery of care and daily work lives.² Nurses can play a critical role in identifying the best opportunities to improve care at the bedside. RWJF's CEO Lavizzo-Mourey concurs: "with the

nation's focus on health care reform, now is the time for leaders and policy makers to understand and leverage the enormous energy that nurses bring to improving the quality and value of health care for every patient every day."³

Health IT is a key enabler for health care reform, and the federal government is now demanding its use. The U.S. Department of Health and Human Services states that the broad use of health IT will:

- Improve healthcare quality,
- Prevent medical errors,
- Reduce healthcare costs,
- Increase administrative efficiencies,
- Decrease paperwork, and
- Expand access to affordable care.

The American Reinvestment and Recovery Act (ARRA) of 2009 put in place financial incentives to adopt and demonstrate *meaningful use* of electronic health records (EHRs) by 2014. After 2014, healthcare organizations that do not use EHRs will be penalized with reduced

"Now is the time to understand and leverage the enormous energy that nurses bring to improving the quality and value of healthcare for every patient every day."

- Risa Lavizzo-Mourey, CEO
Robert Wood Johnson Foundation

² Hassmiller SB and Bolton LB. The Development of TCAB: An initiative to improve patient care and nursing retention. *American Journal of Nursing*. 2009; 109(11):4.

³ Lavizzo-Mourey R and Berwick DM. Nurses Transforming Care. *American Journal of Nursing*. 2009; 109(11):3.

Background

reimbursement rates for government-subsidized patients. Subsequently, national attention has turned to HIT and incentives to encourage the implementation, adoption and use of EHRs. These incentives are requiring EHRs to meet certain requirements related to *certification*, *meaningful use* and *quality reporting*. Defining “Meaningful Use” and “Meaningful Users” of EHRs is in process and critical to achieving goals for patient outcomes and population health. It is expected that more requirements for quality outcomes and population health and quality reporting will be defined over time, and these outcomes will certainly impact how nurses deliver care at the bedside.



There is no doubt that new technologies have the potential to create a safer and more efficient work environment for nurses. Health IT will also play a key role in our ability to deal with a looming workforce shortage. While HIT is expected to help realize process improvements that contribute to better patient care outcomes, it must be used in conjunction with other tools and techniques to have an effect on care. As health IT is central to healthcare reform, and nurses comprise the largest group of clinical users of an HIT system, nurse executives must play a critical role and remain engaged throughout the lifecycle of system selection, implementation and optimization. Additionally, the healthcare team will look to the nurse executive to drive adoption and articulate the goals and anticipated benefits of the technology implementation to guide health care reform.

Involvement of Nurse Leaders

One of the primary goals of the TIGER Initiative is to *engage more nurses in the development of a national healthcare information technology (NHIT) infrastructure*. As nurses comprise the largest sector of the health care workforce, it is essential that nursing is represented as new policies and legislation is developed for health care reform and technology adoption. Nurses are often at the center of care coordination for the patient and are well versed on the workflow and information flow critical to minimizing shortfalls with communication handoffs in the delivery of healthcare. Fortunately, numerous nursing leaders are positioned in critical roles to that are influence HIT at the national level. For example, **Connie Delaney, PhD, RN, FAAN, FACMI** was appointed to the HIT Policy Committee and **Judy Murphy, RN, FACMI, FHIMSS** and **Elizabeth Johnson, RN, MSN** were appointed to the HIT Standards Committee by the Director of the U.S. Department of Health and Human Services (HHS). All are helping to guide the incentives for implementation of Electronic Health Records (EHRs) for all Americans by the year 2014, as part of the HITECH (HIT for Economic and Clinical Health) component of the American Recovery and Reinvestment Act of 2009.

Linda Fischetti, RN, MS, the Chief Health Informatics Officer for the Veterans Health Administration (VHA) Office of Information at the U.S. Department of Veterans Affairs, was also appointed to the HIT Standards Committee by the Director of HHS. Linda also serves as VHA’s liaison to the U.S. Department of Health and Human Services Office of the National Coordinator for Health Information Technology, and is an elected Member at Large of the Health Level 7 (HL7) Board of Directors.

Mary Wakefield, PhD, RN, FAAN was appointed as Administrator of the Health Resources and Services Administration (HRSA) by President Obama in 2009.

Background

The American Nurses Association's CEO **Linda J. Stierle, MSN, RN, NEA-BC** continues to work toward achieving meaningful health care reform through her participation with the Health Reform Dialogue group.

Deborah Parham Hopson, PhD, RN, FAAN was appointed as a member of the new Federal Coordinating Council for Comparative Effectiveness Research, to help guide spending on health care research that was allocated in the American Recovery and Reinvestment Act of 2009.

Diane J. Skiba, PhD, FAAN, FACMI, has been appointed to the National Advisory Council on Nursing Education and Practice, Division of Nursing, Health Resources Services Administration (HRSA).

The Office of the National Coordinator for Health IT (ONC) includes Commander **Alicia Morton, MS, RN-BC**. ONC is charged with coordinating federal HIT activities, ensuring that public and private sector programs and initiatives related to HIT are aligned, and guiding the nationwide implementation of interoperable health information technology or Health Information Exchange (HIE).

These are just a few examples of the nursing leaders directly involved in health reform, and numerous opportunities exist for all nurses to provide feedback and participate in the definition of HIT standards, quality reporting and meaningful use criteria.

One of the best sources for updates on all federal initiatives, agencies, and documents related to HIT adoption and financing opportunities is the Office of the National Coordinator for Health IT's website at <http://healthit.hhs.gov> and we encourage everyone to bookmark this site and visit it often to look for opportunities to participate.



Involvement of nursing leaders at the State and Local level is equally important right now. For example, when the State of Iowa was developing legislation for the Iowa Health Information Technology System, they invited a practicing nurse practitioner and nurse informatics specialist to the Executive Committee and the Electronic Health Information Advisory Council. State, Federal and local legislators are always looking for feedback from their constituents on health care reform. TIGER encourages all nurses and nurse leaders to use these opportunities to voice an opinion and educate our policy-makers on the potential impact on nursing practice and health care delivery.



Methodology

The TIGER vision for leadership was defined at the summit in 2006 as the state of *“Revolutionary Leadership that drives, empowers, and executes the transformation of healthcare through the use of IT”*. Two action steps were identified to help achieve the leadership vision:

- Create leadership, management, education, and development strategies to support nursing leaders in transforming care through technology initiatives.
- Identify strategies to increase the power, influence and presence of nursing leadership in IT initiatives, both locally and nationally, at their own organizations, through their professional organizations, as well as governmental and legal bodies.

For the **TIGER Vision** to be realized, health care leaders must be comfortable in their knowledge of how technology can enable safer and more efficient nursing practice. This knowledge will determine how well evidence and informatics is integrated into day-to-day practice.

To address these objectives, the TIGER Leadership Development Collaborative was led by two accomplished industry leaders:

- Dana Alexander, RN, MSN, MBA
Chief Nurse Officer
GE Healthcare Integrated IT Solutions
- Judy Murphy, RN, FACMI, FHIMSS
Vice President, Information Services
Aurora Health Care, Milwaukee, WI

A call for participation in the TIGER Leadership Collaborative Team identified nearly 100 individuals that were interested in working to develop strategies for leadership development (see *participant list on Acknowledgements section of this report*). Numerous organizations from practice and education were represented on this team, as well as a broad mix of all levels of nursing management from charge nurses through nurse executives.

One of the team’s first strategies was to identify challenges that nursing leaders face within their scope of practice related to health IT. These activities often are the responsibility of the nurse executive, and examples are listed in Figure 1.

NURSING EXECUTIVE HIT-RELATED ACTIVITIES

- Develop ROI models for HIT related to patient safety imperatives
- Overcome financial and cultural barriers related to HIT
- Identify and acquire funding sources to support HIT projects
- Optimize interoperability by supporting an integrated HIT framework for all technology within the organization
- Support and provide leadership development on HIT-related topics
- Articulate the HIT vision and its alignment to the organization’s objectives
- Support competency-based training of all nursing staff to use HIT effectively
- Incorporate HIT competencies into job descriptions and career ladders
- Improve patient safety through the use of decision-support tools at the point of care
- Use HIT as an *enabler* to develop a culture of safety and evidence-based practice
- Ensure visibility to measurable patient outcomes for all healthcare providers
- Contribute to research that substantiates the business case for nursing
- Insist on technological advances that *improve* nursing practice

Figure 1 - Nurse Executive HIT Activities

In order to prepare nursing leaders to address these issues, the team established a few strategic objectives as a framework for the development of their recommendations:

Methodology

- Increase nurse executives' awareness of HIT's role in transforming healthcare practices
- Empower nurse leaders to use HIT knowledgeably
- Facilitate the development of nursing leaders to understand, promote, own and measure the success of HIT projects.

Next, the collaborative established several work groups to focus on key tactics.

TIGER Leadership Development Work Groups

- *Develop an inventory of existing resources for leadership development programs.*
- *Review informatics competencies for nurse leaders*
- *Identify and describe synergies and linkages between the Magnet Program and Health IT*
- *Identify and prioritize leadership development needs*

Each workgroup was led by a volunteer that organized the calls, webinars, and shared materials with other participants through the wiki. Monthly calls with the entire team provided updates on each group's progress, as well as challenges and strategic direction.

The work groups completed their research with the use of virtual tools such as teleconferences, wikis, webinars, websites, email lists, 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://tigerleadership.pbworks.com>). Their conclusions are published in this report and were shared with colleagues through numerous presentations at local, regional, and national and conferences.

Several professional nursing organizations that were active participants in the TIGER Initiative were influential in providing access to their members for input into these recommendations. For example, American Organization of Nurse Executives (AONE), American Academy of Nurses, Sigma Theta Tau, Intl., and Magnet all provided opportunities to discuss these recommendations at their national and international conferences.



Leadership Development Programs

In order to develop a U.S. nursing workforce capable of using electronic health records to improve the delivery of healthcare, an investment must be made in people to build an informatics-aware healthcare workforce. As reported in *Building the Workforce for Health Information Transformation*, “A work force capable of innovating, implementing, and using health communications and information technology (HIT) will be critical to healthcare’s success.” Even more critical will be equipping the healthcare executives with the necessary skills and knowledge to effectively lead this transformation.

The collaborative team developed an inventory of leadership development resources from a variety of sources, including a comprehensive literature review, ongoing research programs, expert resources, and review of known leadership development programs. The comprehensive literature review was completed using the MeSH and CINAHL headings (*nursing management, leadership, informatics, and expert resources*) as search terms. This research uncovered several different types of leadership development programs that provide education for nurses in healthcare informatics. The programs for nursing administration and health services management prepare nurses for roles that meet the demands and expectations of the evolving healthcare industry and supporting technologies.

LEADERSHIP DEVELOPMENT PROGRAMS

The collaborative identified 5 categories of leadership development programs for nurses:

1. Academic Graduate Programs for Nursing Administration with Informatics Education
2. Organizational Fellowship Programs for Nurse Executive Education and Mentorship
3. Health Industry Network Programs for Nursing Management Education
4. Technology Vendor Sponsored Programs for Nursing Leadership
5. Self-education Opportunities for Nurse Executives and Managers

Each program type was evaluated for the inclusion of informatics competencies within the program. The findings from this analysis are described within each program type.

Academic Graduate Programs for Nursing Administration with Informatics Education

The U.S. News and World 2008 Report ranked the top eight graduate level nursing administration programs. All but one of the top eight programs providing a master’s degree in nursing administration required a graduate-level informatics course, including the University of Iowa, University of Pennsylvania, University of North Carolina-Chapel Hill, University of Illinois-Chicago, University of Michigan, University of Maryland, and University of California-San Francisco. Informatics courses focus on HIT standards; information systems life cycle and management; and clinical and administrative decision-making. Kenner (2003) reports that the growing popularity of online (distance education) programs are reaching a broader market and preparing leaders with these clinical informatics objectives as well.

The TIGER inventory revealed 179 Masters programs, 46 PhD programs, and 64 certificate programs focusing on nursing service administration nationally. Whether or not these programs have informatics-related courses in the curriculum is not known at this time, but is an opportunity for future analysis.

Organizational Fellowship Programs for Nurse Executive Education and Mentorship

Professional nursing organizations, such as the American Organization of Nursing Executives (AONE) and American Medical Informatics Association (AMIA) also provide leadership

Leadership Development Programs

development programs and opportunities to network and annual conferences. Topics covered in these programs include organizational process workflow redesign as well as technology applications such as electronic medical record (EMR), computerized provider order entry (CPOE), clinical documentation, organization-wide information technology solutions, bar coding for medication administration, and picture archiving and communication system (Androwich and Haas, 2007). Other key priority topics include accessing data for process improvement and quality reporting and evidence-based practice (AONE, 2006). Other development opportunities have been identified by the Nurse Manager Institute (NMI) and Fellowship Program, and the Aspiring Nurse Leadership. AONE supports a broad leadership development education that includes technology and informatics (Harris et al, 2006; Herrin et al, 2006), emphasizing how nurse leaders can *drive the strategic direction* of the clinical EMR, build the knowledge infrastructure (Curran, 2004), and work with nursing informaticians (Sensmeier, 2006).

Health Industry Network Programs for Nursing Management Education

Many nurse leaders rely on on-the-job training for their HIT education. For example, some health systems and hospitals offer nurse leadership development programs or internships and fellowships for students. Massachusetts General Hospital and the Institute for John Hopkins Nursing Academy are examples of such programs. In contrast, the Advisory Board Leadership Academy offers a broad scope of training topics that includes measurement of performance, improvement of processes and addresses strategic and operational challenges. Educational partnerships are also available. Kaiser Permanente Nursing Leadership Institute partners with the Advisory Board to offer a program, as does the Oregon Center for Nursing with Adventist and Providence Health systems.

Others host leadership summits, conferences, and targeted workshops to foster HIT education.

Because technology and information management skills and knowledge are not uniformly or consistently integrated into the nursing management education, it is necessary to find mechanisms for continuous updating and ongoing education to remain current on the rapidly evolving HIT industry. Programs such as the Advisory Board Leadership Academy provide an educational platform that includes strategic planning of HIT resources and how to use HIT for clinical and business decision making.



Technology Vendor Sponsored Programs for Nursing Leadership

Vendors that develop HIT offer additional opportunities for nurse leaders to share best practices. These programs are often provided through national and international conferences, workshops and user groups that include leadership development (Weaver & Skiba, 2006). Vendors such as Cerner Corporation, GE Healthcare, McKesson Corporation and Siemens Healthcare are examples of HIT vendors that sponsor professional nursing leadership education. Vendor sponsored programs that provide learning through collaborative sharing at conferences and web-based user groups have been a valuable contribution to the education of nurse leaders for information technology.

Leadership Development Programs

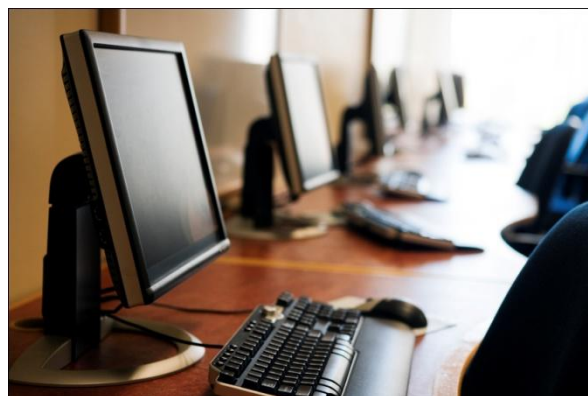
HIT vendors also partner with professional organizations to provide technology education. For example, Sigma Theta Tau International hosts a Leadership Academy that focuses on global technology issues. This strategy is invaluable for vendors that have a global presence. The International Medical Informatics Association (IMIA) also provides education that showcases technology use in different countries.

Self-Education opportunities for nurse executives and managers

Ball (2000) and Brokel (2006) reported self-education is necessary to endure the lifecycle of technology and informatics changes today. Keeping on top of HIT advancements is possible through journals such as *Nursing Management*, *Nursing Outlook*, the *Journal of the American Medical Informatics Association*, *Computers Informatics Nursing*, the *Health Informatics Journal*, and *Journal of Healthcare Information Management*.

State-wide and regional educational opportunities also offer education related to HIT. The HITECH legislation is funding 70 regional health information exchange centers that are designed to support health care providers in using HIT to share clinical information with other providers. As an example, Iowa is taking a leading role in developing a statewide health information technology plan to address policies, education, standards, requirements and economic incentives. State chapters of professional organizations such as HIMSS, ANA, and AONE offer newsletters, publications, conferences and other opportunities for their members to obtain education and share their HIT experiences. For example, the Iowa Chapter of HIMSS has sponsored education presentations on TIGER initiatives and the importance of participating in feedback to the developing HITSP use cases initiated by AHIC. Regional education on Electronic Medical Records has been provided to nurses and nursing students from a variety of settings. Within the state many healthcare

forums have provided education through a variety of organizations (Iowa Foundation for Medical Care, Iowa Hospital Association, the Governor's forums on Health Care Reform Legislation (HF2539) etc) to reach different leaders within the state. This integration of health IT into multiple publications and forums has provided the self-education opportunities for nurse executives and managers in many Iowa health care settings in recent years.



Self-education is necessary to endure the lifecycle of technology and informatics changes today.

Informatics Competencies

The explosion of HIT and new technology at the point of care has created dramatic change in the healthcare delivery. IV pumps and patient beds are “smart” with built-in rules to automatically adjust to patient changes. Robots roaming hospital halls do patient rounds and deliver medications and supplies. Hospital resources such as healthcare personnel, medications, supplies and even patients are identified with barcodes or radio-frequency identification tags. These are just a few examples of how technology is changing healthcare. Critical to the success of this transition is ensuring that the workforce is adequately trained with the skills necessary to perform their duties with the new technologies.

Nurses must be equipped to integrate technology seamlessly within their workflow, and need better tools to work safer, more efficiently, and communicate more effectively with the patient and other healthcare providers. Nurses as knowledge-workers rely on HIT as the foundation for evidence-based practice, clinical-decision support tools, and the electronic health record (EHR). At the center of healthcare delivery, nurses are constantly responding to requests for information, assistance from patients, family members, physicians, and other healthcare staff; and need better communication tools to function in their role. Today, **all healthcare providers** need the knowledge and skills to work with electronic records, including basic computer skills, information literacy, and an understanding of informatics and information management capabilities.

AN EDUCATIONAL IMPERATIVE

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 immigrants⁴,” 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. 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. In addition to the rising age of the healthcare workforce, the recent economic downturn has brought an unprecedented number of nurses back into practice, or stalled nurses' retirement plans. The nurse executive must be aware of the unique educational requirements of staff that may not be as comfortable or familiar with computer technology prior to introducing a significant HIT project such as an EHR, as the success will depend upon adequate support and educational resources.

Nursing leaders need to assess the capabilities of their workforce and support efforts to address any gaps that limit the ability of their staff to use HIT capabilities necessary for the delivery of safe and effective patient care. The TIGER Initiative has identified and published a minimum set of informatics competencies that all practicing nurses need to have to succeed in today's digital environment. In support of this initiative, the Leadership Development Collaborative team directed a work group to expand the minimum informatics competencies that all nurses need to include informatics knowledge and skills that are essential for today's nursing leader. The following pages outline their recommendations and identify educational resources to help achieve these objectives.

⁴ Prensky, M. (2001, October). Digital natives, digital immigrants. *On the Horizon*. Available online at www.marcprensky.com/writing/.

Informatics Competencies

INFORMATICS COMPETENCIES MODEL

Following an extensive review of the literature and survey of nursing informatics education, research, and practice groups, the TIGER Informatics Competencies Collaborative identified three primary categories of informatics competencies that all nurses need: basic computer skills, information literacy, and information management, or the ability to effectively use an EHR. They described the categories as components, and developed the TIGER Nursing Informatics Competencies (TNIC) model as illustrated in Figure 2 to describe the alignment of each component with an existing set of competencies maintained by standard

development organizations or defacto standards. More details on the research and recommendations of the TIGER Informatics Competencies Collaborative team can be found on the TIGER website at www.tigersummit.com.

The TIGER Leadership Development Collaborative further evaluated each component to determine if they needed to expand the competencies requirement for nursing leaders. This report will review each component of the TNIC model and the recommendations that are most relevant to different leadership roles within nursing practice.

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

Informatics Competencies

BASIC COMPUTER SKILLS

There are a substantial number of nurses practicing today who either have not mastered basic computer competencies, or have gaps in their basic computer competency skill set. Other industries have realized this shortcoming in the workforce and developed comprehensive training programs to address. One such organization with extensive experience in this area is the European Computer Driving Licence (ECDL) Foundation. The ECDL identified basic computer competencies and developed an educational course and certification exam nearly two decades ago. To date, about seven million Europeans have now taken the ECDL exam and become certified in basic computer competencies.

The European Computer Driving License (ECDL) is known as International Computer Driving License (ICDL) in the United States, anywhere outside Europe. The ECDL/ICDL is composed of seven training modules that are outlined in Figure 3. The concepts include basic computer use (e.g., turning the computer on/off), file management, word processing, spreadsheets, databases, presentation tools, and communication technologies. The knowledge and skills recommended by the ECDL training guide will set a baseline of computer competencies that individuals can use in almost any setting. **The TIGER Informatics Competencies Collaborative recommends that all practicing nurses and graduating nursing students become ECDL certified or hold a substantially equivalent certification by 2013.**

They further recommended a phased-approach to completing this education by prioritizing some of the modules to be completed by all nurses by 2011.

The TIGER Leadership Development workgroup felt that all nurses in a leadership position should be competent in all seven components of these computer skills as soon as they assume a management role. The responsibilities of nurses in leadership roles necessitates general

familiarity with spreadsheets (budgeting, evaluating metrics), advanced communication skills (through technology as well as presentations and written documentation), and a basic understanding of information management practices such as databases. While it is common to conduct a skills-and-needs assessment for clinical nurses entering a new position in a healthcare facility or system, it is uncommon for nurse leaders to provide a self-assessment of their informatics competencies. The workgroup recommends that new manager/leader orientation include all seven modules of the basic computer competencies. In addition to demonstrating these competencies, the work group recommends that the competencies be incorporated into job descriptions and performance evaluations.

ECDL/ICDL SYLLABUS

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

Module 2: Using the Computer and Managing Files

Module 3: Word Processing

Module 4: Spreadsheets

Module 5: Using Databases

Module 6: Presentation

Figure 3 – European Computer Driving License⁵

⁵ European Computer Driving License Health model Retrieved from <http://www.bcs.org/server.php?show=nav.7680> on November 17, 2009.

Informatics Competencies

Virtual communication tools

One area of basic computer competencies that needs further development for nursing leaders is related to advanced information communication tools or “virtual tools”. Sigma Theta Tau International describes this as “virtuality”, or the various technologies that support managing and leading people in a virtual space that transcends a physical location and time.⁶ The workgroup recommended that nurse leaders master the competencies needed to support, maintain and sustain leadership in virtual communities that use the mass collaboration tools, social networking, and wireless communication networks.

INFORMATION LITERACY

The American Nurses Association recognizes that nurses are “knowledge workers,” and as a result, need to access information and apply knowledge appropriately to deliver high-quality nursing care.⁷ The ability to find, evaluate and apply evidence at the point of care is a necessary skill for any practicing nurse. Clinical reasoning and evidence-based decision making prepares nurses at the frontlines, whether at the service level as a direct care provider or as an indirect care provider in management, academic or research role. Information literacy assists the professional nurse to interpret data and synthesize a plan of action based on the nursing process. Data must be interpreted within its framework and context in order to be meaningful. Data driven decision-making is one of the most essential skills for the nurse leader.

There are five levels of information literacy as illustrated in Figure 3.

⁶ Sigma Theta Tau International Nursing Honor Society. Resource Paper and Position Statement on: Leadership and Leadership Development Priorities, Retrieved on November 10, 2009 at http://www.nursingsociety.org/aboutus/PositionPapers/Documents/position_leadership.doc

⁷ American Nurses Association. (2008). *Scope and Standards of Nursing Informatics Practice*. Washington DC: American Nurses Publishing.

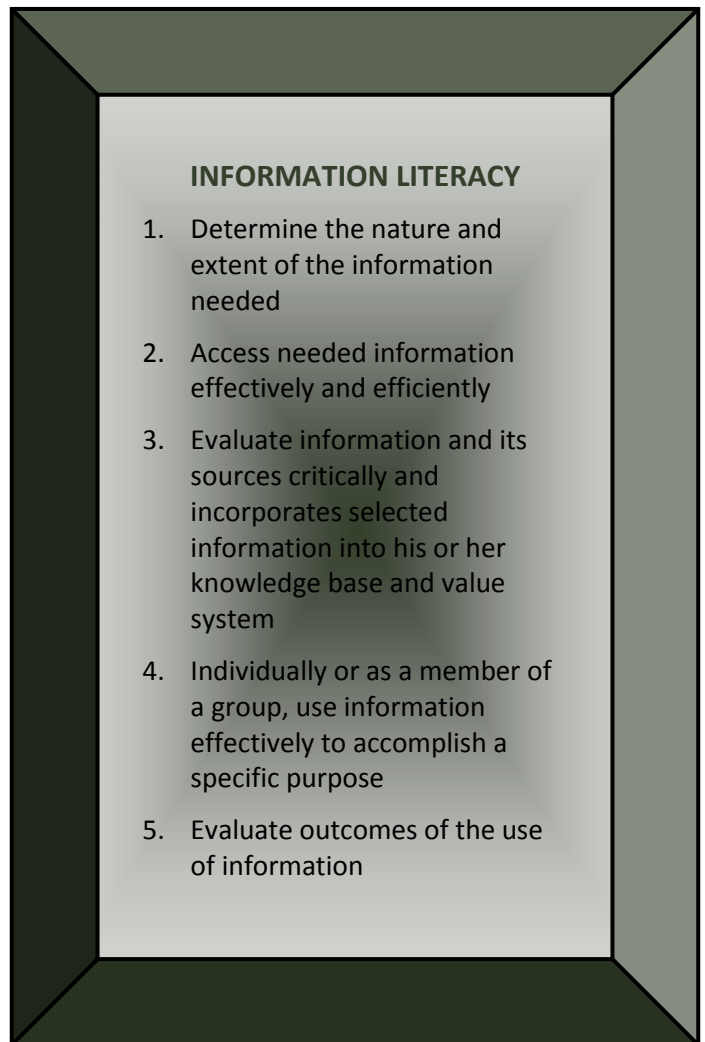


Figure 3 -The 5 Levels of Information Literacy

The TIGER Informatics Competencies Collaborative recommends that all practicing nurses and graduating nursing students will master the *first three levels* outlined above by 2011. *The TIGER Leadership Development Collaborative expanded their recommendation for nurse leaders to master all five levels of information literacy by 2011.* This means that the nurse leader will need to demonstrate the ability to maximize clinical reasoning tools and optimize access to data for the delivery of patient care and adopting best practice models of care. They further recommend that the competencies be incorporated into job descriptions and performance evaluations.

Informatics Competencies

INFORMATION MANAGEMENT

Information management describes how a nurse interacts with an electronic or personal health record, and requires a mastery of computer skills and ability to find and apply knowledge to practice. 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. These are fundamental skills for nurses as knowledge-workers, and using electronic health records (EHRs) will be the way nurses manage clinical information for the foreseeable future.

Although the navigation and arrangement of data in the patient record may be different in a digital world, this is not a significant shift in nursing responsibilities. 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 within EHRs to carry out their fundamental clinical responsibilities in an increasingly safe, effective, and efficient manner.

The TIGER Informatics Competencies Collaborative team found the most rigorous and practical work on enumerating the relevant components of the EHRs (upon which to base competencies) for clinicians was done by Health Level 7 (HL7) EHR Technical Committee and was published in February 2007 as an approved American National Standard (ANSI) publication is titled “The HL7 EHR System Functional Model, Release 1,” 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. More details on the informatics competencies requirements and available

resources are provided in the TIGER Informatics Competencies Collaborative report on the website at www.tigersummit.com.

Although the 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. 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 in addition is a set of competencies that address the importance of electronic health record and like systems to nurses and the “due care “ that nurses need to take in managing information via these systems. Again, the European Computer Driving Licence Foundation has come up with a set of items that address these concerns, with ECDL-Health, also available on the TIGER website at www.tigersummit.com.

EXPANDED COMPETENCIES FOR NURSE LEADERS

The TIGER Leadership Collaborative work group found considerable dissonance in external expectations placed upon nurse leaders regarding their use, knowledge, and access to patient-level electronic health records. Most of the controversy stems from the difference in roles and responsibilities at defined levels of nursing management. For example, staff nurses and charge nurses are intimately involved in entering and retrieving data in the EHR for patient care documentation and chart- or peer-review purposes. On the other hand, unit-level managers or directors are less likely to be involved in entering data for patient care purposes than they are in periodic and ongoing chart review to assess staff practice and documentation compliance, monitoring and analyzing quality trends, and helping to resolve performance issues. In contrast, nurse

Informatics Competencies

executives are more likely to be involved in synthesizing aggregate data gathered from the EHR in report format versus reviewing patient-level documentation.

The Leadership Development Collaborative recommends that *all levels of nursing management must have fundamental knowledge and basic navigation skills related to the EHR, and understand how EHR interactions impact nursing workflow, even if not directly involved in the delivery of patient care.* As nurses are usually the largest group of clinical users of an HIT system, the nurse executive is expected to fully understand and articulate the goals and anticipated benefits of the technology implementation. Additionally, the nurse executive must remain engaged throughout the lifecycle of system selection, implementation and optimization. Nurse leaders are often required to make tactical and purchasing decisions about design and the introduction of EHR functionality. These decisions can have widespread impact, both positive or negative, depending upon the nurse executive's understanding of the system requirements, ability to integrate with existing HIT, degree of training, support and practice changes necessary to accommodate the system, and impact upon the bedside nurse's workflow. The American Nurses Association further clarifies the nurse executive's role in data collection, assessing the effectiveness and understanding the impact on care delivery and workflow.⁸ In addition, it is critical to evaluate workflow, usability, and human factor principles prior to implementing any new technology in order to measure and mitigate any untoward effects secondary to the technological solution. The TIGER Usability Collaborative team has published recommendations and provided helpful resource in their summary report, available on the TIGER website at www.tigersummit.com.

⁸ American Nurses Association. (2004). *Scope and standards of practice for nurse administrators*. American Nurses Publishing: Washington, D.C.

The TIGER Leadership work group identified additional informatics competencies that are recommended for nursing management at the level of unit-manager, director, or nurse executive. First, the ability to obtain and evaluate outcome-related data is a necessary requirement with expanding regulatory and quality reporting criteria. The volume and extent of the reporting metrics, especially related to nurse-sensitive indicators and "present on admission" demand access to this information in an electronic media. It is anticipated that the requirements for regulatory and quality metrics will increase as more emphasis is placed on EHR adoption and comparative effectiveness research. These competencies are outlined in detail in the chart on the following two pages.

The nurse executive will require an expanded knowledge of the budgetary, regulatory, safety, security and privacy policies related to the use of EHRs. New policies will be developed as "meaningful use of EHRs" is defined, as incentives and reimbursement rates will be determined by the 2009 American Reinvestment and Recovery Act. The Joint Commission, Center for Medicaid Services, and individual state regulatory bodies will require new reporting requirements and may expand their inspection requests or visits. It is anticipated that the nurse executive will have frontline responsibility for demonstrating compliance, as the chief executive for patient care services, and need proficiency in accessing this reportable data.



Informatics Competencies

TIGER Expanded Nurse Management Informatics Competencies

Competency	Management Level	Examples
Develop “dashboards” to manage outcomes	Charge Nurse	Use data from the EHR and national standards (such as HITSP) to develop “dashboards” or clinical summary reports to demonstrate critical nursing measures, patient safety metrics, and identify patient outcomes.
	Unit-Manager or Director	
Proficient in use of electronic support systems	Charge Nurse	Proficient in the use of electronic support systems including staffing, scheduling, acuity, other clinical IS such as patient location & tracking systems.
	Unit-Manager or Director	Identify the educational requirements, time commitment and resources necessary to use electronic support systems and manages plan to implement with development, testing, education, support and sustainability processes addressed.
	Nurse Executive	Proficient in aggregate budgeting, financial planning, unit metrics/monitoring, quality measurement, clinical decision support tools, and others. Understands the skills and resources necessary to optimize the use of electronic support systems.
Support research that advances nursing and the delivery of patient care	Unit-Manager or Director	Review, plan and evaluate care delivery compared to outcomes and identify process improvements.
	Nurse Executive	Develop organizational vision for care delivery that incorporates advancing new evidence and research into delivery of care.

Informatics Competencies

TIGER Expanded Nurse Management Informatics Competencies

Competency	Management Level	Examples
Develop goals, benefits and anticipated outcomes for adoption of new technologies	Unit-Manager or Director	Use knowledgeable of best practices and standards of care to articulate care processes impacted and desired patient and organizational outcomes.
	Nurse Executive	Ongoing monitoring of adoption of technology towards achieving defined goals and benefits.
Sustain the focus on the patient care delivery model through EHR transformation	Unit-Manager or Director	Define nursing care delivery and clinical documentation model impact with EHR.
	Nurse Executive	Apply continuous quality improvement to care delivery model and interdisciplinary plan of care.
Develop and support adequate educational and support resources for new technology implementation	Unit-Manager or Director	Provide operational management of scheduling and resource allocation for provision of care <i>and</i> incorporation of new technologies.
	Nurse Executive	Advocate enterprise-wide resource planning for implementation based on strategic goals/activities.
Share knowledge with colleagues to improve best practice evidence	Unit-Manager or Director	Collaborate within the organization and industry to share knowledge of best practices and patient care models that fully realize the benefits of technology to deliver safer, higher-quality patient care.
	Nurse Executive	Collaborate with industry, policy-making and regulatory organizations to share knowledge of best practices and patient care models that fully realize the benefits of technology to deliver safer, higher-quality patient care.

Magnet Program Collaboration

Technology introduces change to many aspects of the role of the nurse, and nursing leadership is responsible for developing a culture that is innovative and ready to embrace change. Fortunately, a well-recognized professional model that engages nurses at all levels to incorporate change into their culture already exists. The TIGER Leadership Development Collaborative found significant alignment with the Magnet® Recognition Program, developed by the American Nurses Credentialing Center (ANCC) – see Figure 6. The Magnet Program exemplifies a model for change, and recognizes healthcare organizations that provide nursing excellence in the delivery of quality patient care, and demonstrates innovation in professional nursing practice.

As many HIT-savvy nurse leaders recommended correlating the Magnet Forces® to HIT implementation and adoption success, the TIGER Leadership Development Collaborative collected dozens of examples of how organizations used HIT to demonstrate aspects of their Magnet Journey. These examples help to illustrate how technology can achieve each of the 14 forces of magnetism as well as transform the nursing organization to use technology for their benefit. The exemplars were meant to demonstrate the creativity and flexibility to transform the practice of healthcare delivery by rethinking current tools through gaining access to collective organizational experiences improved through fully automated integrated healthcare processes.

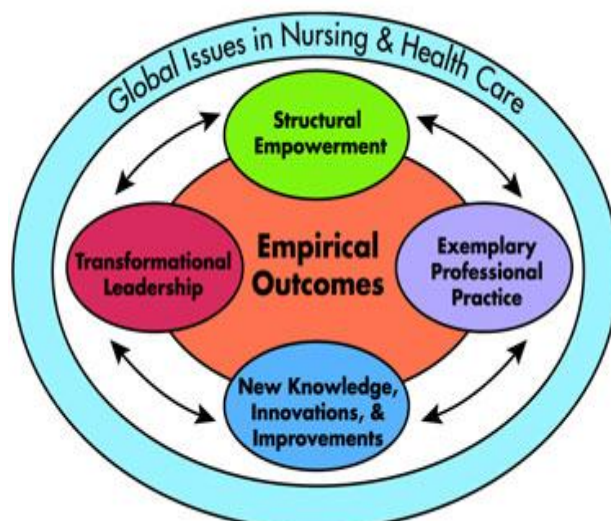


Figure 4 - Magnet Program from ANCC

One goal of the TIGER Leadership Development Collaborative team was to leverage innovative programs involving hospitals from around the United States to act as a gateway for other hospitals as they carry forward with implementing technology to benefit patients and nursing practice.



Nursing Leadership Survey

At the initial TIGER Summit, one of the important activities identified to move the nursing discipline forward was to empower nurse leaders to effectively practice in this electronic era. Data from the Nursing Leadership Survey conducted by the TIGER Leadership Collaborative team provided background data for developing programs aimed toward enhancing a leader's ability to promote technology in their respective areas of practice.

Methodology

A survey for distribution to Chief Nurse Executives was determined as a strategy to review the current status of executives' knowledge and skills about technology. The goal identified was to have a tool which would identify areas of opportunity for program development to meet the needs of nurse leaders as opposed to point deficiencies. Background for survey development included AONE's statement on "Guiding Principles for the Nurse Executive in the Acquisition and Implementation of Information Systems" (2006), and AONE's 2006 Technology Committee Survey. These documents provided guiding information for the formulation of indicators of knowledge and skills. Sections focused on Basic Computer and Technology, Communication Strategies, Project Management, and Change Management, and included indicators for each section. The survey was distributed electronically.



Results

Participants in this survey scored Chief Nurse Executives as having a proficiency utilizing technologies and the basic mechanics of developing technologies.

Participants identified the following areas for development: locating/interpreting information in chart and information on the advances in technology as it affects nursing practice, implications of a technology implementation, technology's impact on workflow, and policies and procedures. Participants in the survey scored the Director level as having a proficiency utilizing technologies in their work for the areas under their purview.

Areas identified for development for the director/associate dean role include: utilizes data for improving patient care, updating policies and procedures for clinical systems, information on advances in technology as it affects nursing practice, and workflow, implication of technology implementation, and providing resources for staff for innovation/adoption of technology.

Participants scored the Nurse Manager role as having adequate knowledge utilizing technologies and basic mechanics. Areas needing improvement include utilizing data to improve patient care, updating policies and procedures for clinical systems, information on advances in technology as it affects nursing practice and workflow, utilizes data from information systems for decision making, and provides resources for staff for innovation/adoption of technology. The role participants identified as requiring the biggest potential for development is the charge nurse role. Most indicators did not score with proficiency and were identified as areas for development. This reported area represents significant opportunity area for improving care/efficiencies since the charge nurse locus of control often represents the daily/shift care of a patient population and the flow of work on the unit often rests on the skills and knowledge of

Nurse Leadership Survey

this nurse. The nurse informaticist role was also scored by participants and the role scored as performing with adequate knowledge or above.

SURVEY RECOMMENDATIONS

The survey provides a glimpse into potential areas in each leadership role which may benefit with the development of further knowledge and skills.

Charge Nurses

Develop leadership competencies focusing on computer skills. Programs which focus on the daily workflow and skills of running a unit for a shift in which the work is touched or influenced by a computerized process would be targeted. These skills might include interpreting clinical data in its' electronic form, policies and procedures, and allocation of staff for pre- and post-implementations.



Chief Nurse Executives and Deans

Even though participants identified chief nurse executives as having a proficiency with technologies and skills in locating and interpreting data, additional opportunities exist to evaluate the interaction between nursing practices, workflow, policies and procedures, and system implementation. These areas directly impact an organization's ability to use technology to improve patient safety and the patient's access to information. As the chief nurse executive often creates the vision that permeates the care delivered, it is often the executive role that develops the strategic priorities and provides the resources for nurses to be meaningful users of EHRs.



Directors or Managers

The director or manager role identified additional opportunities in viewing and accessing information and data interpretation. Directors and managers with the knowledge and skills to locate and analyze data and evaluate nursing workflow have the ability to improve nursing efficiency and nursing practice.

Recommendations

In summary, although we are well on our way in many areas, there is still much work to do to realize the vision of the TIGER summit in 2006. If we are to develop **revolutionary leadership that drives, empowers and executes the transformation of healthcare**, the nursing profession will need to consume the recommendations and strategies in this chapter to prepare our leaders of tomorrow and ensure that they have the informatics competency education and development that is needed.

Below are the four key recommendations to achieve that vision:

- Develop programs for nurse executives and faculty that stress the value of information technology and empower them to use HIT knowledgeably.
- Expand and integrate informatics competencies into Nursing Leadership Development Programs.
- Promote sharing of best practices using HIT effectively to improve the delivery of nursing care and the overall care delivery team
- Promote alignment with the Magnet Recognition Program as a mechanism to demonstrate nursing excellence in using technology to improve nursing practice and the delivery of safer, more effective patient care.



AONE's Technology Task Force Toolkit

One of the most promising efforts to equip nursing leaders with the necessary resources to promote health IT adoption is the Technology Toolkit that AONE's Technology Task Force is creating. This toolkit will focus on topics related to standards, IT contingency planning for disasters, wireless technology, return on investment, competencies for managers and executives, job descriptions, and share key learnings. (www.aone.org)

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