Nursing Informatics 101
Contributors

Christel Anderson
Director, Clinical Informatics
HIMSS

Melissa F. Barthold, MSN, RN-BC, CPHIMS, FHIMSS
Senior Clinical Solutions Strategist
University of Mississippi Medical Center

Tammy Duecker, RN

Patty Guinn, RN, BS
Director, Clinical Informatics
Cornerstone Advisors

Ruth MacCallum, BS RN-BC

Joyce Sensmeieier MS, RN-BC, CPHIMS, FHIMSS, FAAN
Vice President, Informatics
HIMSS
Why Nursing Informatics?

“If we cannot name it, we cannot control it, finance it, teach it, research it or put it into public policy.”

Source: Lang, N. 1993
Nursing Informatics Defined

Nursing informatics (NI) is a specialty that integrates nursing science, computer science, and information science to manage and communicate data, information, knowledge, and wisdom in nursing practice. NI supports consumers, patients, nurses, and other providers in their decision-making in all roles and settings. This support is accomplished through the use of information structures, information processes, and information technology.

*Nursing Informatics: Scope and Standards of Practice, ANA 2008*
Who are Informatics Nurses?

• Expert nursing clinicians in utilizing the nursing process
  • Expert analytical & critical thinking skills
  • Understand patient care delivery workflow & integration points for automated documentation
• Clinicians with extensive clinical practice
  • Experienced in utilizing and implementing the nursing process
• Have additional education & experience related to technology and information systems
  • Are excellent project managers because of the similarity between the project management process & the nursing process
  • May be board certified in Nursing Informatics by ANCC
Nursing Informatics is Nursing!

• NI is was recognized as a specialty by the ANA in 1992
  • 1st Scope and Standards of Nursing Informatics Practice published
• Meets Panniers and Gassert’s (1996) attributes of a specialty in nursing
  • A differentiated practice
  • A defined research program
  • Organizational representation
  • Educational programs
  • A credentialing mechanism
Nursing Practice

Nursing Process is the cornerstone of Professional Nursing Practice

- Defines the “What” and “How” of professional practice
- The steps of the process are measurable
- The process steps can also be used by other clinical disciplines
Nursing Process

Well-documented information provides:

- What care has been provided and what is outstanding
- Outcomes of care provided and responses to the plan of care
- Current patient status & assessments
- Support decisions based on assessments to drive new plans of care
Automation of Documentation

• Why automate documentation – not only for nursing but for all of patient care?

• Up-to-date, accurate information of each step of the Nursing Process is the power behind safe, high quality patient-centered care!
Successful Automation

Successful implementation of Electronic Health Records requires:

• Well designed systems that support Nursing Process within the culture of an organization and/or specific care providers

• Acceptance & integration of information systems into the regular workflow of nursing process & patient care

• Resources that can support the above
How do Informatics Nurses Impact the Nursing Process?

Enable the professional nurse to be the “Coordinator” of each patient’s care

- Communicate & coordinate care with ALL other clinical disciplines
- Coordinate discharge planning, education & teaching, transitions of care
- Manage ALL information related to the nursing process and patient care delivery
How do Informatics Nurses Impact the Nursing Process?

Because information management is integrated into nursing practice, there are now additional steps in the nursing process:

- Assessment
- Planning
- Implementation
- Evaluation
How do Informatics Nurses Impact the Nursing Process?

• Standardized Documentation
  • The collection tool for information management

• Information Management
  • Key role for Nursing Informatics
  • Key to research and evidence collection

• Process Re-engineering
  • Key to successful implementation

• Research and Evidence Collection
  • Key to repeatable, standardized care and improved outcomes
The Value of Nurse Informaticists

• Nurse Informaticists are bilingual
• Support nursing work processes using technology
• Re-engineer clinical workflow & facilitate change management

Acute care – all specialties
Ambulatory care
Redesign work flows
Outpatient settings

Home health
Software development
Long-term care
Telehealth
The Value of Nurse Informaticists

• Analyze clinical and financial data
• Promote and facilitate access to resources and references
• Provide nursing content to standardized languages
• Enhance continuity of care
• Improve relationships between providers and recipients of health care
• Enable cost savings and productivity goals
The Benefits of Nurse Informaticists

- Nurse Informaticists promote and facilitate access to resources and references
- Support for their mission to deliver high quality, evidence-based care
- Support for better service by facilitating true interdisciplinary care
- Improvement in key relationships with providers & care recipients
- Enable cost savings and productivity goals
- Facilitate change management
- Enhance continuity of care
The Many Roles of a Nurse Informaticist

• Administration, leadership, & management
• Analysis
• Compliance and integrity management
• Consultation
• Coordination, facilitation, and integration
• Development
• Educational and professional development
• Policy development and advocacy
• Research and evaluation
Data from HIMSS Industry Surveys
25th Annual HIMSS Leadership Survey
Primary Clinical IT Focus – Top Ten

- Focus on Physician Systems: 21%
- Ensuring Organization has Fully Functional EHR: 13%
- Linking Clinical Systems with Quality Measures: 13%
- Supporting Workflow Changes: 9%
- Focus on Data Warehouse: 9%
- Implementing Patient Portal: 6%
- Implementing Ambulatory EMR Solution: 4%
- Creating Standards-Based Care Summary: 3%
- Ancillary Systems: 2%
- Establishing Clinical Protocols: 2%
- Interoperability of EHR and Mobile Devices: 2%
25th Annual HIMSS Leadership Survey
Most Significant Barriers to Implementing IT – Top Ten

- Lack of Financial Support: 19%
- Lack of Staffing Resources: 18%
- Vendors Inability to Deliver Project: 13%
- Lack of Interoperable Systems: 7%
- Difficulty Achieving End-User Acceptance: 7%
- Difficulty Proving ROI: 6%
- Lack of Time by Clinicians: 6%
- Lack of Top Management Support: 4%
- Lack of Strategic IT Plan: 4%
- Constraints at Higher Policy Level: 4%
25th Annual HIMSS Leadership Survey
2013 IT Staffing Needs (Top Ten)

- Clinical Application Support: 36%
- Network/Architecture Support: 29%
- Clinical Informatics: 21%
- IT Security: 20%
- Systems Integration: 16%
- User Training: 13%
- System Design/Implementation: 12%
- Help Desk: 12%
- PC/Server Support: 12%
- Regulatory/Reimbursement: 10%
25th Annual HIMSS Leadership Survey
Role of Clinicians

- Project Champions: 74%
- IT Evaluation and Selection: 73%
- Development of Policies: 56%
- Hospitallist: 53%
- Clinician Training: 53%
- Innovative Ways of Using IT in Clinical Areas: 45%
- Employed by IS Department: 44%
- Business Project Leader: 43%
- CMIO: 40%
- CNIO: 15%
- Department Managers Select IT Systems: 13%
- No Role: 4%
25th Annual HIMSS Leadership Survey
Area that Can Most Impact Patient Care

- Improving Quality Outcomes: 37%
- Reducing Medical Errors: 18%
- Helping Standardize Clinical Care: 13%
- Supporting Staff Productivity: 8%
- Sharing/Accessing Data with External Entities: 8%
- Providing Competitive Advantage: 6%
- Enabling Patient Access to Clinical Information: 4%
- Telemedicine/Remote Monitoring: 2%
- Ensuring Patient Data is Secure: 1%
- Allowing Clinicians to Access Data Remotely: 0%
- Other: 1%
- Don't Know: 0%
2014 NI Workforce Survey
Primary Workplace

- Academic Setting: 2014 - 7%, 2011 - 9%, 2007 - 5%
- Vendor: 2014 - 4%, 2011 - 5%, 2007 - 10%
- Ambulatory Care: 2014 - 3%, 2011 - 5%, 2007 - 2%
- Other: 2014 - 3%, 2011 - 5%, 2007 - 5%
2014 NI Workforce Survey
Nursing Education

- Bachelors in Nursing: 42% (2014), 42% (2011)
- Masters in Nursing: 41% (2014), 35% (2011)
- Registered Nurse: 41% (2014), 29% (2011)
- Other Masters: 11% (2014), 18% (2011)
- Other Bachelors: 13% (2014), 24% (2011)
- Doctor of Nursing Practice: 1% (2014), 1% (2011)
- PhD in Nursing: 2% (2014), 1% (2011)
- Licensed Practical Nurse: 2% (2014), 1% (2011)
- Nurse Practitioner: 1% (2014), 1% (2011)
- Other PhD: 3% (2014), 1% (2011)
Nursing Informatics Education

• Nursing Informatics courses at the BSN level
• Specialty in Nursing Informatics – MSN
  • Distance learning – online
  • Traditional
• Certificate programs
• Post graduate degree
2014 NI Workforce Survey
Years of Clinical Experience

- 16 to 20 years: 13% (2014), 15% (2011), 17% (2007)
- 6 to 10 years: 12% (2014), 19% (2011), 21% (2007)
- 1 to 5 years: 13% (2014), 19% (2011), 20% (2007)
- Less than 1 year: n/a (2014, 2011, 2007)
2014 NI Workforce Survey
Nursing Experience

- Medical/Surgical: 44% (2014), 43% (2011), n/a (2007)
- Oncology: 12% (2014), 9% (2011), 10% (2007)
2014 NI Workforce Survey
Years of Informatics Experience

More than 10 years
- 2014: 25%
- 2011: 33%
- 2007: 39%

7 to 10 years
- 2014: 10%
- 2011: 13%
- 2007: 15%

5 to 6 years
- 2014: 13%
- 2011: 13%
- 2007: 14%

3 to 4 years
- 2014: 15%
- 2011: 14%
- 2007: 17%

1 to 2 years
- 2014: 13%
- 2011: 16%
- 2007: 16%

Less than 1 year
- 2014: 8%
- 2011: 14%
- 2007: n/a

2014 Results  ■  2011 Results  ■  2007 Results
2014 NI Workforce Survey

Years in Current Position

- 1 to 2 years: 19% (2014), 26% (2011), 32% (2007)
- 3 to 5 years: 24% (2014), 26% (2011), 30% (2007)
2014 NI Workforce Survey
Current Informatics Education/Training

- **On-the-Job Training**: 23% (2014), 26% (2011)
- **Masters/PhD**: 9% (2014), 11% (2011)
- **Certificate**: 5% (2014), 7% (2011)
- **Program/Course**: 4% (2014), n/a (2011)
- **Bachelors**: 1% (2014)

Survey question was revised in 2011 and not comparable to 2007 survey.
2014 NI Workforce Survey
Prior Informatics Education/Training

- On-the-Job Training: 58% (2014), 15% (2011)
- Masters/PhD: 28% (2014), 21% (2011)
- Program/Course: 26% (2014), 0% (2011)
- Bachelors: 3% (2014), 1% (2011)

Survey question was revised in 2011 and not comparable to 2007 survey
# 2014 NI Workforce Survey

## Current Informatics Education/Training

<table>
<thead>
<tr>
<th>Type</th>
<th>2014 Results</th>
<th>2011 Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-the-Job Training</td>
<td>23%</td>
<td>26%</td>
</tr>
<tr>
<td>Masters/PhD</td>
<td>9%</td>
<td>11%</td>
</tr>
<tr>
<td>Certificate</td>
<td>5%</td>
<td>7%</td>
</tr>
<tr>
<td>Program/Course</td>
<td>n/a</td>
<td>4%</td>
</tr>
<tr>
<td>Bachelors</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Survey question was revised in 2011 and not comparable to 2007 survey.
2014 NI Workforce Survey Nursing Certification Held

- **ANCC**: 19% (2011) vs. 23% (2014)
- **CPHIMS**: 4% (2011) vs. 6% (2014)
- **Other Nursing Specialty**: 9% (2011) vs. 17% (2014)
- **None**: 55% (2011, 2014, 2007)

<table>
<thead>
<tr>
<th>Certification</th>
<th>2014</th>
<th>2011</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANCC</td>
<td>19%</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>CPHIMS</td>
<td>4%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>Other Nursing Specialty</td>
<td>9%</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>55%</td>
<td>55%</td>
<td>55%</td>
</tr>
</tbody>
</table>
2014 NI Workforce Survey Nursing Certification Pursuing

2014 Results
- ANCC: 37%
- CPHIMS: 18%
- PMP: 6%
- Other Nursing Specialty: 5%
- CAHIMS: 4%
- None: 43%

2011 Results
- ANCC: 35%
- CPHIMS: 17%
- PMP: 3%
- Other Nursing Specialty: n/a
- CAHIMS: 4%
- None: 42%
2014 NI Workforce Survey Nursing
Perceived Value in Holding Certification

- Personal Satisfaction: 41%
- Enhances Credibility/Marketability: 40%
- Validates Specialized Knowledge: 35%
- Enhances Confidence: 28%
- Competitive Advantage: 28%
- Indicates Attainment of Practice/Clinical Standard: 27%
- Professional Advancement: 23%
- Recognition from Peers: 21%
- Recognition from Employer: 20%
- Prestigious Image: 12%

2014 Results
2014 NI Workforce Survey Nursing Top Barrier to Certification

- Lack of time: 45%
- Lack of financial resources: 18%
- Lack of employer/executive support: 7%
- Not interested: 6%
- Hold another certification(s): 5%
- Cannot maintain CE requirements: 5%

2014 Results
Nursing Informatics Certifications

American Nurses’ Association Credentialing Center Board Certification in Nursing Informatics

http://nursingworld.org/ancc/certification/cert/certs/informatics.html

HIMSS – CPHIMS (Certified Professional in Healthcare Information and Management Systems)

http://himss.org/ASP/certificationHome.asp
2014 NI Workforce Survey
Department to Which You Report

- Nursing: 30% (2014), 32% (2011), 38% (2007)
- Administration: 21% (2014), 22% (2011), n/a (2007)
- Corporate Headquarters: n/a (2014, 2011, 2007)
- Education Department: n/a (2014, 2011, 2007)
- Implementation: 4% (2014), 5% (2011, 2007)
- Software Design: 3% (2014), 5% (2011, 2007)

2014 Results, 2011 Results, 2007 Results
2014 NI Workforce Survey
Total Number of Reports (Direct & Indirect)

- None: 58%, 61%, 67%
- 1: 4%, 5%, 6%
- 2: 3%, 4%, 6%
- 3: 2%, 4%, 5%
- 4: 2%, 3%, 4%
- 5: 2%, 3%, 4%
- 6: 2%, 2%, 4%
- 7 to 9: 4%, 3%, 4%
- 10 to 20: 7%, 8%, 7%
- More than 20: 7%, 7%, 6%
2014 NI Workforce Survey
Applications Currently Developing/Implementing

- Bar Coded Medication Management: 2014: 41% 2011: 41% 2007: 36%
- Point-of-Care CDS: 2014: 36% 2011: 36% 2007: 33%
- Quality Improvement/Risk Management: 2014: 36% 2011: 30% 2007: n/a
2014 NI Workforce Survey
Application Experience (Background)

- Point-of-Care CDS: 2014: 39%, 2011: 41%
2014 NI Workforce Survey
Top Barrier to Success as a Nurse Informaticist – Past 10 Years

<table>
<thead>
<tr>
<th>Barriers</th>
<th>2014 Results</th>
<th>2004 Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Administrative Support</td>
<td>17%</td>
<td>16%</td>
</tr>
<tr>
<td>Lack of Staffing Resources</td>
<td>14%</td>
<td>7%</td>
</tr>
<tr>
<td>Lack of Financial Resources</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>Organizational Strategic Plan</td>
<td>12%</td>
<td>9%</td>
</tr>
<tr>
<td>User Acceptance</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Software Architecture/Design</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Regulations</td>
<td>2%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Percent of respondents who rated option as the top/largest barrier for select responses appearing in both years.
Healthcare Transformation: Opportunities for Nursing Informatics
Implications for Informatics

Nurses must be supported by a healthcare environment that adequately enables their knowledge-based work as:

- Leaders in the Effective Design and Use of EHR Systems
- Integrators of Patient Information
- Full Partners in Decision Making
- Care Coordinators Across Disciplines
- Advocates for Engaging Patients and Families
- Contributors to Standardize EHR Infrastructure

Source: ANI Testimony to the October 2009 Forum on the Future of Nursing
The Future of Nursing: Leading Change, Advancing Health

Nurses constitute the largest segment of the nation’s health care workforce at 3.1 million.

In their front-line roles, nurses can play a vital role in helping realize the objectives set forth in the 2010 Affordable Care Act.

A number of barriers prevent nurses from being able to respond effectively to rapidly changing health care settings and an evolving health care system.

These barriers must be overcome to ensure that nurses are well-positioned to lead change and advance health.
Robert Wood Johnson Foundation Initiative
The Future of Nursing

- Nurses should practice to the full extent of their education and training
- Nurses should achieve higher levels of education and training through an improved education system that promotes seamless academic progression
- Nurses should be full partners, with physicians and other healthcare professionals in the redesigning of health care in the United States
- Effective workforce planning and policy making require better data collection and an improved information infrastructure
New Ingredients in Transforming Nursing

Informatics → Technology → Engaged Consumers → Expanded Access → Data Exchange
HIMSS Position Statement

• Together, nurses and nursing informatics must lead, and be visible, vocal and present at the table to achieve healthcare delivery transformation.
Steps for Transformation

**Leadership**
- Partner with nurse executives to lead technology changes that advance health and the delivery of healthcare.
- Support the development of informatics departments and nurse informaticists in analyst, leadership and officer roles.
- Foster the evolution of nurse informaticists in leadership roles such as a Nursing Informatics Executive or Chief Nursing Informatics Officer (CNIO).

**Education**
- Transform nursing education to include informatics competencies and demonstrable behaviors at all levels of academic preparation.
- Promote the continuing education of all levels of nursing, particularly in the areas of EHRs and health IT.

**Practice**
- Ensure that data, information, knowledge and wisdom form the basis of 21st century nursing practice by incorporating informatics competencies into practice standards in all healthcare settings.
- Facilitate the collection and analysis of interprofessional healthcare workforce data by ensuring data can be collected from existing health IT systems.

**Policy**
- Enable nursing informatics leaders to be knowledgeable and engaged in current public policy initiatives.
- Government agencies must recognize that regulations and reimbursement policies that remain exclusively physician-focused will not achieve the goals of healthcare transformation in the U.S.
Improving Nursing Care through Technology

Technologies can create a better work environment for inpatient nurses:

- Improve efficiency, safety and quality
- Add value to the way nurses coordinate and provide care
  - Alarm/event messaging
  - Biomedical device integration
  - Medication administration

Source: California HealthCare Foundation, [www.chcf.org](http://www.chcf.org), 2008
Improving Nursing Care Through Technology

• Nurses do not want to be passive consumers of technology

• Nurses want devices that are integrated, voice activated, handheld, use biometrics, provide translation, are portable, are wireless, auto populate, and are “smart”

• Greater nurse satisfaction leads to greater patient satisfaction

Source: Cipriano, P., Nurse Scholar in Residence, IOM 2011
Transforming Practice through Technology & Informatics will:

• Improve safety and efficiency
• Free clinicians from tasks
• Bring evidence for decisions to point of care
• Empower patients to be involved in care
• Enable nurses to:
  • Integrate data into health information
  • Consult in the home, LTC, Assisted living
  • Coordinate care across settings
Explore the HIMSS Nursing Informatics Community
HIMSS Nursing Informatics Community

• The first “official community” within HIMSS for Nursing Informatics formed in 2004 – now represents over 6,000 individuals

• Community Framework
  • Clinical Informatics
  • Leadership
  • National Initiatives
  • Informatics Practice

• www.himss.org/nursing
About HIMSS

• **Vision**  Advancing the best use of information and management systems for the betterment of health care.

• **Mission**  To lead healthcare transformation through the effective use of health information technology.
HIMSS NI Milestones

2003
- Community Officially Launched

2004
- 1st NI Workforce Survey
- Alliance for Nursing Informatics
- NI Symposium Debut

2005
- NI Leadership & Scholarship Award

2006
- TIGER Summit Collaborator
- NI Committee Launched
- Nursing & Informatics for the 21st Century Publication

2007
- 2nd NI Workforce Survey
- NI Day: Awareness and Education
- TIGER Initiative Phase II

2008
- International Survey Impact of HIT Communication

2009
- Impact of the Informatics Nurse Survey
- Clinical Informatics Insights
- Clinical Informatics RSS Feed

2010
- 3rd NI Workforce Survey

2011
- NI Position Statement
- Clinical Transformation Survey

2012
- eNurse Mentoring Program
- NI Institute Debut
- Standard Practices Forum

2013
- NI Executive Workgroup Launch
- Global Collaboration

CELEBRATING
10 YEARS
Community Participation

- 6000 nurse members at HIMSS
- 5490 list serv subscribers
- 450+ attendees at NI Symposium
- 80+ NI Task Force call monthly participants
- 25 Deliverables
NI Community Framework

- Committee *(Strategy)*
- Task Force *(Education & Networking)*
- Workgroups *(Participation)*
- Multidisciplinary activities
- External collaborations
NI Community Tools

- NI Toolbox & NI Knowledge Repository (website)
  www.himss.org/ni

- NI Community (website)
  www.himss.org/nursing

- Nursing Informatics List serv
  NI@List.HIMSS.org

- Task Force Webinars

- Clinical Informatics Insights
  www.himss.org/files/newsletters/ClinicalInformatics/CI_Insights_201311.html

- HIMSS Blog
  http://blog.himss.org

- HIMSS NI Standards Practices Discussion Forum
  www.himss.org/niforums

- NI Facebook
  www.facebook.com/HIMSSpage

- Twitter: @HIMSS | #Informatics
Resources and References

- Alliance for Nursing Informatics
  http://www.allianceni.org
- American Nurses Association
  http://www.nursingworld.org
- American Nurses Credentialing Center
  http://www.nursecredentialing.org/
- CPHIMS
  http://himss.org/ASP/certificationHome.asp
- HIMSS Nursing Informatics
  www.himss.org/ni
- HIMSS Nursing Informatics Community
  www.himss.org/nursing