

Nursing Knowledge Conference Proceedings



Proceedings of the Conference:

Nursing Knowledge: Big Data and Science for Transforming Health Care

June 5-6, 2014

Sponsored by

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Our Purpose

The 2014 Nursing Knowledge: Big Data & Science for Transforming Health Care Conference brought together more than 70 stakeholders from nursing practice, education, information technology, professional nursing, and informatics and standards organizations. The goal: Advance a national plan for capturing nursing information for big data research aimed at identifying effective care interventions and improving patient outcomes.

This second annual Nursing Knowledge conference, an event initiated and sponsored by the University of Minnesota School of Nursing, focused on the transformation of nursing practice, research, and education. In an era of big data, massive databases of health information are being amassed within electronic health records systems and related

repositories making them available to be analyzed to ascertain patterns, trends, and evidence that will guide patient care. However, for research to accurately reflect all factors influencing patient outcomes, the data must reflect nursing, as well as medical and other interprofessional information. The Nursing Knowledge conferences aim to develop and foster execution of a plan that will ensure that nursing information is captured – and to integrate the concepts and application of big data into nursing practice, research, and education through collaboration.



See page 16 for a list of participants in the 2014 Nursing Knowledge: Big Data & Science for Transforming Health Care Conference.

Conference Overview

This year's conference, held in Minneapolis, Minnesota, continued – and expanded upon – the discussion begun at the inaugural 2013 Nursing Knowledge conference. The 2014 agenda (Appendix A), 2013 National Action Plan (Appendix B), 2014 abstracts (Appendix C), and 2014 presentations (see Appendix D) from the conference are provided.

In summary, the 2014 conference began with reports on actions taken since the 2013 Nursing Knowledge conference to advance progress in areas critical to ensuring that nursing data is sharable and comparable. Participants presented actions taken to integrate nursing information into electronic health records systems; implement standardized language to represent nursing diagnoses, interventions, and outcomes of care; modify and standardize nursing informatics education to build understanding and competencies; and influence policy and standards for documenting and coding nursing information in health care knowledge systems.

The second day featured three panels: advancing nursing information in electronic health records in practice settings; ensuring that nursing e-measures are included in interprofessional national and international standards; and using sharable and comparable nursing data in research and quality improvement. Following each of the panel presentations, participants joined small work groups to brainstorm 2014 strategies and action steps. Each of the groups then presented their recommended “actions” to the entire assembly.

The conference concluded with an “action auction,” led by Roy Simpson, DNP, RN, DPNAP, FAAN, vice president, nursing informatics, at Cerner Corporation. Attendees bid on actions they were willing to continue to advance to ensure that sharable and comparable nursing information is included in electronic health records – and that all aspects of the nursing profession are knowledgeable about the potential of big data to transform practice, research and education.



Our Vision

We share a vision of better health outcomes that will result from the standardization and integration of the information nurses gather in electronic health records, which are increasingly the source of insights and evidence used to prevent, diagnose, treat, and evaluate health conditions. The addition of rich contextual data about patients (including environmental, geographical, behavioral, imaging data, and more) will lead to breakthroughs for individuals, families, communities, and populations. How will nursing knowledge lead to better care?

- A 15-year-old presents a persistent rash at her sports physical that can be immediately traced to a rare bacterial infection reported at a summer camp 600 miles away where she recently attended.
- Residents of a sprawling long-term care system experience a 50 percent reduction in the incidence of pressure ulcers after the system introduced new protocols based on big data intervention research.
- Fewer intensive care patients at a regional hospital are dying during the overnight shift since administrators have been able to routinely compare staffing ratios to health outcomes and make informed management decisions.

Through education, advocacy, policy changes, and



University of Minnesota Dean Connie White Delaney (right) and Joyce Sensmeier of HIMSS discuss the 2014 National Action Plan at Nursing Knowledge: Big Data and Science for Transforming Health Care.

adoption of common terminologies and standards, this vision is within our reach.

Connie White Delaney, PhD, RN, FACMI, FAAN
Professor and Dean,
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Recommendations

- Develop a national library for evidence based quality bundles for open sharing
- Standardize and develop processes for updating nursing evidence based content
- Collaborate to accelerate integration of the best clinical knowledge into care decisions
- Support the development of predictive analytics to support the
- Leverage partnerships
- Advance nursing informatics as key leadership in care

Progress on 2013 National Action Plan

Adopting common terminologies and standards

1. Kaiser Permanente collaborated with Epic and CPM Resource Center on aligning mapping of nursing interventions to Logical Observation Identifiers Names and Codes (LOINC) and Systemized Nomenclature of Medicine (SNOMED).
2. Leveraged Kaiser Permanente's Convergent Medical Terminology tools to map nursing flow sheet rows and nursing observations/interventions.
3. Contributed a leadership exemplar in the Technology Informatics Guiding Education Reform (TIGER) Leadership Imperative: Recommendations for Integrating Technology to Transform Practice and Education.
4. Published: Harrison, Tonya: "Beyond Data Entry: Leveraging Data to Enable Actionable Clinical Intelligence for Nursing" Journal of Health Information Management. Summer 2013. Exemplars were summarized from research projects supported by Agency for Healthcare Research and Quality (AHRQ) at Partners, Kaiser Foundation, Veterans Affairs, and Intermountain Healthcare that demonstrated that within multiple settings, data had to be harmonized and standardized in order to determine the quality and efficiency of care in areas such as pressure ulcers, pain, and falls. Since different individual settings used different terminologies, these national groups harmonized on SNOMED-CT and LOINC.
5. Using SNOMED-CT for nursing diagnoses, interventions, and outcomes and LOINC for nursing assessments to support health information demonstrated an initial evaluation of assessments for adult medical surgical patients who receive care in any setting.
6. The Center for Nursing Informatics at the University of Minnesota completed updating the Nursing Management Minimum Data Set (NMMDS) elements and is completing coding of these elements in LOINC. The NMMDS was developed to provide a standardized set of essential data elements describing contextual factors influencing nursing work in any setting. The NMMDS environmental and nurse resources have been harmonized with other national data collection efforts. NMMDS elements #10 was renamed as Accreditation/Certification/Licensure, including existing accreditation, certification, and licensure organizations.
7. Electronic Health Record (EHR) adoption has exploded nationally. Today 91% of eligible hospital and 68% of eligible providers have been paid in the EHR Incentive Program (Medicare/Medicaid), with more than \$22.9 billion being paid out as of March 2014. Stage 2 EHR adoption is growing. It requires enhanced capabilities for interoperability, patient engagement and quality measures. There were 893 certified products and 8 hospitals and 252 providers have attested as of May 2014. Stage 3 measures are being finalized. Office of the National Coordinator for Health Information Technology (ONC) held first (annual) Nursing Summit with 239 attendees; 80% from frontline nursing roles.
8. University of Colorado established in 2013 a systematic program of research housed within the Colorado Collaboration for Nursing Research under the leadership of John Welton (2013 Big Data Conference Steering Committee Member). The program tests models for deriving patient-level nursing costs and is developing a national research strategy and framework to address ways to measure and benchmark nursing care within and across different health care settings using current and emerging business intelligence and analytic tools. Two preliminary articles on this work have been published. Several research proposals to implement this strategy and disseminate results are advancing in collaboration with partners.
9. American Nurses Association (ANA) has designated a National Database of Nursing Quality Indicators (NDNQI) staff member to be active in HL7, be a member of the Clinical Quality Information (CQI) workgroup and monitor the development of the Health Quality Message Format (HQMF) and Quality Reporting Document Architecture (QRDA). Joined the Quality Data Model User Group.
10. Designated an NDNQI staff member to monitor the work of the National Committee on Vital and Health Statistics (NCVHS), the Standards & Interoperability (S&I) Framework, the National Library of Medicine (SNOMED CT, LOINC, VASC) and

Centers for Medicare and Medicaid Services work on Meaningful Use. Joined the Quality Data Model User Group.

11. ANA conducted reliability, validity, and feasibility studies for a suite of Pressure Ulcer eMeasures, to include 3 EHR vendors and 9 hospitals; lead development of these eMeasures, their submission to NDNQI, and the indicator analysis and benchmarking. Completed one EHR vendor and enrolled 6 hospitals.
12. University of Minnesota: 1) established National Coordinating Center for Interprofessional Practice & Education architecture & data base 2) created, tested, and implemented seven standardized surveys 3) implemented national center data repository (NCDR), 4) established NCDR mappings 5) established initial NCDR standard analyses, and 6) engaged with Health Resources and Services Administration (HRSA), National Institute of Nursing Research (NINR), CMII, etc – expansion.
13. Two major grants that reuse EHR data build on a common data model and data standardization have been advanced by the University of Minnesota. The Patient Centered Outcomes Research Institute (PCORI) grant is building the Great Plains Collaborative Clinical Data Research Network. The Clinical Translational Science Award (CTSA) network at the University of Minnesota is one of two funded sites extending clinical data models to include nursing data documented most often in the flow sheet data.
14. HIMSS CNO-CNIO Vendor Roundtable was established. The Roundtable is sponsored by HIMSS and facilitated by Gail E. Latimer, MSN, RN, FACHE, FAAN, and Roy Simpson, DNP, RN, DPNAP, FAAN, includes HIMSS Corporate Diamond or Platinum member nurse executives. Participants are “thinkers” in their organization, work in revenue driven organizations, and are committed to participating in an open dialogue in the spirit of HIMSS volunteer committee operating guidelines.
15. Vanderbilt University organized inpatient nursing documentation using the Clinical Care Classification (CCC) framework and corresponding SNOMED-CT codes. The CCC terminology is available in the public domain, limited in number of concepts, and easily understood by nursing staff.
16. Local public health agencies (LPHA) in Southeast Minnesota are beginning to exchange electronic health information in the form of a C-CDA using a standardized nursing terminology, Omaha System. LPHA use of EHRs is nearly universal and Omaha System is embedded in almost all of those EHRs. Actual use of Omaha System agency to agency is not consistent, but ever growing and poised to become more widespread as LPHAs begin using health information exchange to coordinate their clients’ care with other providers. These LPHAs are in good position to comply with the recent recommendation by the Minnesota e-Health Initiative for all health care settings to plan to implement an ANA-recognized nursing terminology in their EHRs.
17. SNOMED CT, a nursing problem list subset, was created for use on patient problem lists and can be downloaded from the National Library of Medicine’s website, www.nlm.nih.gov/research/umls/Snomed/nursing_problemlist_subset.html
18. International Classification for Nursing Practice (ICNP) harmonization activities have advanced. Examples include ICNP projects with National Nurses Association members, Health Ministries, the World Health Organization, International Health Terminology Standards Development Organization (IHTSDO), SNOMED CT, and SabaCare (Clinical Care Classification).
19. University of Minnesota, under the CTSA grant, conducted a pilot project to evaluate documentation practices influencing the capture of clinical quality measures that are largely documented in flow sheets including the prevention of pressure ulcers, falls, venous thrombosis embolism, catheter associated urinary tract infections, and pain management. The database of 200,000 flow sheet measures representing 66,000 patients was created. An ontology for flow sheet data is being developed and engagement with major health system partner (8 hospitals, 40+ primary and specialty care clinics) and their software partners to code flowsheet data using SNOMED CT and LOINC is occurring.

Progress on 2013 National Action Plan, continued

Shaping Policy

1. The American Medical Informatics Association (AMIA) Nursing Informatics Working Group (NIWG) embraced the 2013 National Action Plan in many ways, including adopting common terminologies and standards. The NIWG has continued to monitor nursing engagement in standards development activities at several standards development organizations such as LOINC, IHTSDO, HL7, Integrating the Healthcare Enterprise (IHE), S&I Framework, National Quality Forum (NQF), and NDNQI.
2. The AMIA NIWG continued to participate in shaping policy responding to several calls for public comment contributing responses representing the nursing perspective, having members with sustained participation in several of the ONC S&I Framework Initiatives.
3. One of the recommendations from the 2013 National Action Plan was to support the work of the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM) and to get a nurse on the Board of Directors. Judith Warren appointed to CAHIIM Board of Directors.
4. Engaged American Medical Informatics Association in membership discussion.
5. ANA continues its efforts to promote an exemplar for quality measures using data collected through EHRs in the course of care delivery. Specifically, ANA developed a pressure ulcer incidence and prevention eMeasure – Pressure Ulcer Cumulative Incidence eMeasure (ePressUlcerCI) – that is built exclusively for use in EHRs. This particular eMeasure positions nursing well as the ONC continues to move toward the seamless use of eMeasures regardless of EHR vendor.
6. ANA is promoting its Framework for Measuring Nurses' Contributions to Care Coordination across the CMS, the AHRQ, the NQF, and ONC. In particular, ANA has been advocating for the incorporation of elements of the framework into NQF's framework, which is currently under development. Care coordination is also an ONC priority area for measure development, particularly with regard to eMeasure development for inclusion in the Meaningful Use programs.
7. In 2014, Minnesota e-Health Advisory Committee convened meetings and consulted with nursing informatics experts and health practitioners from multiple settings in the state and approved a recommendation that a standard ANA-recognized nursing terminology be adopted and used in all health care settings in Minnesota.
8. Alliance for Nursing Informatics (ANI) has shared Big Data Conference recommendations with the ANI Governing Directors at Town Hall meetings.
9. ANI has shared news items about sharable/ comparable data via the ANI list serv.
10. Bonnie Westra and Joyce Sensmeier presented "Call to Action: Realize Sharable, Comparable Big Data" at HIMSS14 Conference in Orlando, FL.
11. ANI has published an article in Computer Informatics Nursing Journal: ANI Connections on the first Big Data Conference outcomes/ recommendations.
12. ANI designated ANA to monitor the work of the two ONC committees (Health Information Technology (HIT) policy and HIT standards), NQF's National Priorities Partnership and Measure Applications Partnership, and CMS's work on Meaningful Use.

Educating Nurses, nursing faculty, nurse executives, nurse informaticians and interprofessional care disciplines

1. Key members on the American Academy of Nursing (AAN) Expert Panel for Nursing Informatics and Technology attended the inaugural Big Data Conference in 2013 and made a commitment to publish “A Call to Action” in Nursing Outlook and advance the strategic objectives of the conference. Since the conference a Call to Action: Engage in Big Data Science was published in the January 2014 edition of Nursing Outlook.
2. An open conference call to all Expert Panel members was conducted in June 2013 to update members on the objectives being advanced as a result of the Big Data Conference. Finally, at the October 2013 Annual AAN Conference the expert panel reviewed the objectives and strategic plan developed at the 2013 Big Data Conference and supported advancing them through the 2014 Expert Panel on Nursing Informatics and Technology Action Plan.
3. Educating nurses, nurse faculty, nurse executives, nurse informaticians, and interprofessional care disciplines has been an area of significant focus for AMIA NIWG. The group has sponsored multiple webinars reaching their membership and non-members to promote many areas of interest to the 2013 National Action Plan.
4. The AMIA NIWG has continued work on the Scholarly Initiative promoting nursing knowledge through integration of nursing informatics science into education, research, and practice to ensure optimal health and well-being of people as well as continuing to be a lead and financial supporter of the Alliance for Nursing Informatics TIGER Initiative.
5. In 2013 Quality and Safety Education for Nurses (QSEN) consultants evaluated the outcomes of the QSEN Institutes and pilot workshop, at 6 months (site visit) and one year (survey) and noted significant improvements in the integration of QSEN’s knowledge, skills, and attitudes (KSAs) for nursing informatics in participating nursing schools curriculum. Results of the site visit and survey indicated that resources most useful to faculty include: an online nursing informatics course for pre-licensure students with an instructor manual, a series of webinars and webex’s on specific topics in nursing informatics, and a series of workshops focused on nursing informatics content and teaching methods.
6. AMIA became the professional member to establish informatics competencies.
7. ANA continues its efforts to promote an exemplar for quality measures using data collected through EHR in the course of care delivery.
8. Based on the successes identified in 2013 through evaluation of the Gordon and Betty Moore Foundation-funded pilot of the University of Minnesota School of Nursing, University of Maryland and the American Association of Colleges of Nursing (AACN), the foundation provided funding in 2014 to facilitate the development of these resources to make them available at the national level.

2014 National Action Plan

- I. **Participate in the development of interprofessional informatics certification and accreditation standards for informatics programs** (Lead: Judith Warren)
 - A. Participate with AMIA in preparing interprofessional informatics specialists for advanced informatics certification.
 - B. Determine if a professional nursing organization should apply for membership in CAHIIM.
 - C. Encourage nurse members of AMIA to run for CAHIIM liaison positions upon AMIA becoming a member of CAHIIM.
 - D. Encourage nursing informatics faculty to become site visitors for CAHIIM accreditation of informatics programs.
 - E. Encourage nursing and health informatics graduate programs to become CAHIIM accredited, in addition to Commission on Collegiate Nursing Education (CCNE) accreditation. Consider use of the model developed by nurse midwife and anesthesia programs.
 - F. Develop a guide and validate the curriculum of informatics in nursing programs.
- II. **Promote nursing involvement in the science of big data research and quality improvement** (Leads: Connie White Delaney, Bonnie Westra)
 - A. Expand the development of data analytics methods to incorporate nursing and interprofessional datasets and encompass all standardized terminologies and structured data.
 - B. Support the advancement of prescriptive analytics to support the Triple Aim to optimize the work of nursing and health care.
 - C. Support and connect research methods and results with quality departments within organizations.
 - D. Support and connect the work to the JC nursing advisory group.
 - E. Collaborate with CTSA partners to extend a common data model with the inclusion of flowsheet data across CTSA's to support nurse researchers to do big data science.
 - F. Explore funding opportunities for nursing and big data science through NIH, AHRQ, and other funders.
 - G. Establish a common data sharing strategy about research data.
 - H. Share information about governance issues related to the information/data in the cloud.
 - I. Understand opportunities related to corporate and nursing school partnerships to advance nursing informatics.
 - J. Advocate for more research funding to support big data pilots as exemplars in multiple settings within regional, national, and international settings.
 - K. Expand on AMIA's NIWG on scholarship for phase II of its work.
 - L. Participate in CTSA/Nursing Informatics subgroup and increase informatics nurse research participation in the CTSA nurse scientist group.
 - M. Continue to refine definition of "nursing data" vs. patient data important to nurses.
 - N. Create a metadata repository of tools to evaluate evidence used in practice for clinical decision support, include AHRQ guidelines, specialty organization standards and recommended practices (e.g. Association of periOperative Registered Nurses, Emergency Nurses Association, etc.), measurement criteria, and content experts.
 - O. Provide education on the role of nursing in the continuously learning health system.
 - P. Advocate for nursing research in the breadth of clinical settings, partnering with academic settings and include small, rural organizations.
 - Q. Expand understanding of nursing actions to improve cost, quality, and measures.
 - R. Include a Chief Nursing Officers panel for the 2015 Big Data Conference to foster communication, collaboration, and understanding of opportunities and the barriers for improving care.
 1. Consider collaborative voice of ANA together with CNO across industry. Publish the CNO panel to inform audience about their needs and barriers. Create the value proposition of the role of the CNIO similar to the existing value proposition for the CMIO to address the challenges organizations have and justify the CNIO position.
 2. Explore how to fund research within current

infrastructure which is currently limited by predetermined and diverse quality measures.

3. Use informatics systems to build consensus within an individualized/American culture.
4. Use research to develop strong outcome measures for nursing.
5. Harmonize research in population health, rapidly bringing the research back to the individual patient or clinician (Learning Health System).
6. Develop strategies to advance the use of data analytic methods (natural language processing, machine learning, and visualization) using the EHR to research structured and unstructured data in nursing big data.

III. Advance the NDNQI eMeasure work on pressure ulcers as recommendation for Phase 3 of Meaningful Use (Leads: Judith Warren, Nancy Dunton)

- A. Continue studies on the reliability, validity, and feasibility studies for Pressure Ulcer eMeasures; enroll 2 EHR vendors and 3 hospitals.
- B. Support the ANA in the political work of insuring the adoption of NDNQI's eMeasures.
 1. NQF: National Priorities Partnership and Measure Applications Partnership.
 2. CMS Patient Safety measures and AHRQ-PSI.
- C. Apply the identified eMeasure process to the remaining NDNQI indicators (long term).
- D. Encourage vendors and EHR users to implement NDNQI eMeasures.
- E. Get funding for moving NDNQI data collection to electronic format and add to Big Data Conference scope of work.

IV. Engage nurses in Health IT policy, influencing standardized nursing data (Leads: Gail Latimer, Joyce Sensmeier)

- A. Adoption of standardized nursing terminologies in EHRs.
 1. Implement strategies that advance the adoption of standardized terminologies for clinical documentation by nurses in EHRs.
 2. Promote the adoption and implementation of standardized nursing data capture within all vendor products.

3. Advance education for data mapping (experts) and convey its importance.
4. Promote standardization of installed vendor products as a strategic imperative to support interoperability.
 - a. Leverage vendor partnerships and international standards organizations to ensure consistent nursing information models and standardized mapping of nursing assessments and interventions to LOINC and SNOMED CT.
 - b. Approve and disseminate a position statement regarding the nurse vendor's stance on nursing terminology.
5. Engage Judy Murphy in helping us understand how ONC could help us with these recommendations and conversely how we can help ONC.
6. Support ANA Tipping Point recommendation to encourage use of ANA standardized terminologies for quality measures.
 - a. Leverage current work such as the ANA Position Statement on Standardization and Interoperability of HIT, The Tipping Point recommendations, and LOINC and SNOMED nursing workgroups and data models to align recommendations and socialize a consistent message.
 - b. Develop a high level fact sheet for CNOs that describes the role and importance of standards in achieving sharable, comparable data to improve patient outcomes.
7. Advocate for appointment/hiring of a nurse informatician as a Chief Nursing Information Officer at the National Library of Medicine to coordinate the standards and mapping of nursing data and models.
8. Create strategies to support a plan for implementing an ANA-recognized terminology within their EHR in all ehealth settings.
 - a. Each setting type should achieve consensus on a standard terminology that best suits its needs and select that terminology for its EHR.
 - b. Education should be provided and guidance developed for selecting the

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- terminology standard that suits the needs for a specific setting.
 - c. SNOMED-CT and LOINC should be used when exchanging a C-CDA with another setting for problems and care plans.
 - d. Declare a national recommendation to utilize LOINC and SNOMED CT as the standardized terminologies for nursing mapping within EHRs.
 - e. Terminologists need to commit to keeping mappings to SNOMED/LOINC current and to make changes to their terminologies as needed based on feedback.
- B. Hold policy updates.**
1. Promote the AAN Informatics Expert Panel to conduct two policy update phone conferences or webinars for the expert panel membership (June 2014 and September 1, 2014) following the Big Data Conference.
 2. Support the AAN positioning to conduct an open “Policy Dialogue” entitled “Putting the Health Back in Electronic Health Records” at the 2014 Annual AAN Conference in October 2014.
 3. Advocate for national policies to support the steps in harmonizing nursing content into national and international standards and consensus within the nursing profession nationally and internationally.
 4. Describe and advocate a process for achieving statewide consensus on standards for information exchange (Use Minnesota as the model).
- C. Engage more nurses in HIT policy.**
1. The HIT Policy and Standards Committees are re-organizing their working groups – goal is to have a nurse on every working group.
 2. Start engaging successors in developing nursing informatics standards.
 3. Discover more nurses and nurse practitioners to include in the ONC Fellows Program.
 4. Hold annual ONC Nursing Summit and quarterly webinars, keeping focus on frontline nursing staff attendance by working with nursing organizations.
5. Establish robust working relationships with the NP community, including their organizations AANP and NNCC to engage in HIT policy.
 6. Advocate for a feedback loop to inform direct care interventions.
 7. Collaborate with data standards groups and others to assure the inclusion of standardized nursing data in continuity of care documents.
 8. Encourage nurses to participate in SNOMED CT and LOINC nursing work groups.
 9. Advance the role of nursing informaticians as key leaders in care delivery transformation.
 10. Create a presentation abstract template to share the action plan/work of the big data conference with key audiences/groups at their conferences (e.g. AONE).
 11. Coordinate appointees to HIT committees through ANA, AAN, and ANI to assure that the background of the nurse is the right one for a committee (ex: researcher nurse for researcher committee).
- D. Meaningful use and nursing data.**
1. Support ANA Tipping Point recommendation to require nursing standardized language for Stage 3 Meaningful Use.
 2. Provide input and influence in the development and refinement of standards related to care coordination/care plan with HL7.
- V. Promote harmonization and standardization of nursing data and models (Leads: Laura Heermann-Langford, Judy Murphy)**
- A. Models/ontologies for nursing data, specifically nursing process data (flowsheets).**
1. Share an ontology for flowsheet data for five clinical quality measures (prevention of pressure ulcers, falls, VTE, CAUTI, and pain management—coordinate with NDNQI) and add these in i2b2 for de-identified cohort queries; this supports feasibility data needed for the submission of research grants.
 2. Extend the ontology for flowsheet data to other clinical topics significant to nurse

practice and science.

- B. Continue to develop and test models that can make data actionable responding to continual regulatory changes and are dependent on national and global economic conditions.
 - C. Develop criteria to evaluate “scales,” some of which can be calculated in the background of EHRs.
 - D. Integrate different nursing terminologies across the continuum of care and maintain actionable and relevant documentation of the patient’s care plan.
 - E. Create a strategy for getting all recognized terminologies mapped to LOINC/SNOMED-CT.
 - F. Develop a method for consistent coding of flowsheet data using SNOMED CT and LOINC.
 - G. Collaborate with other health systems through EHR user groups to assure that similar methodology and coding are used for the same vendor.
 - H. Evaluate the standards development process, e.g. evaluate/revise the existing work and build a consensus process that will work in various settings and specialties.
 - I. Investigate Clinical Information Modeling Initiative (CIMI) to assure there is synergy with Nursing data models (OpenCIMI.org).
 - J. Define/model the process of care coordination across disciplines/settings.
 - K. Convene pilots to validate HL7 Care Coordination Services (CCS) to validate content.
 - L. Create a common repository for sharing the data models and coding nursing data to prevent duplication of effort across researchers, health systems, and EHR vendors.
 1. Establish a web based repository of nursing problems in the public domain.
 2. Update nursing content in the UMLS to the current version to facilitate mapping and interoperability.
 - M. Continue ICNP Harmonization efforts:
 1. Among local and national projects to share internationally (e.g. Scottish Community Nursing Dataset, C-HOBIC, Portuguese NMDS).
 2. Across nursing terminologies (e.g. ICNP, CCC, PNDS).
 3. With other health care terminologies (e.g. SNOMED-CT, ICHI, LOINC).
 - 4. Involve content providers in the LOINC/ nursing assessment evaluation (critical to include).
 - N. Build the economic model for standards development, dissemination and maintenance.
 1. Avoid reliance on volunteerism.
 2. Sustainability plan (ROI).
 3. Structure for development, dissemination, improvement with strong alignment between academic, practice, patients, users, NQF, ANI, CMS, NLM, (Yellow Group: Susan Matney).
 4. ROI - Quality projects that are using standards to measure improvement, reduction in PU’s, reduction in falls have an economic return.
- VI. Develop standard curriculum for nursing informatics faculty/students** (Leads: Tom Clancy, Dan Pesut)
- A. Develop an advisory board of key leaders in nursing informatics to build consensus around a standard curriculum for nursing informatics aimed at pre-licensure nursing students.
 - B. Develop a crosswalk between the AACN Essentials for Information Management and Technology, QSEN KSA’s for Nursing Informatics and the TIGER competencies for clinical nurses and nursing students.
 - C. Develop the resources as outlined in the grant by the Gordon & Betty Moore Foundation to fill gaps not being provided through existing professional organizations.
 - D. Provide the first workshop as a pre-conference at the AACN Baccalaureate Education Conference scheduled for November 2014 in Baltimore, MD.
 - E. Determine how the TIGER VLE can support the big data conference work.
 - F. Add content in nursing curriculum related to HL7 and standards supporting nursing process linked data, measurements and standards so research and quality improvement can reliably occur.
 - G. Develop informatics competencies into nursing that foster knowledge of data, the progression of data from patient through care process. Education should be more than just documentation, should be focused on how

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to understand different meaning of care and transition of practices.

- H. Support curriculum improvement through a robust education metadata repository of tools to share standards and recommendations for evidence based practice.

VII. Develop strategies to measure value of nursing

(Lead: Ellen Harper)

- A. Develop a national consensus model to measure patient level nursing intensity and costs and produce metrics to benchmark nursing care finance combined with clinical care to estimate nursing value.
- B. Develop new business intelligence and analytic tools that will utilize the rich clinical, operational, financial, and outcomes data current available in the EHR and be deployable across many different health care settings.
- C. Develop and test new nursing finance models that can be used in Accountable Care Organizations (ACO), value-based purchasing, and pay for performance programs.
- D. Develop nursing business intelligence and analytics consensus variables, metrics and analytic methods (task force → paper or publication).
- E. Link individual nurses to care provided in order to quantify workload cost and quality
- F. Create “accountability dashboards” for nurses - learning in practice both individuals and teams. Use this dashboard for learning, evidence building, nursing impact, supplies used etc.
- G. Implement measures that capture unique specialties of APRN’s. Add direct care providers - nursing impact.
- H. Generate evidence with nursing research on nursing and advanced practice nursing outcomes with big data/informatics.
- I. Create opportunities for interprofessional practice and education in informatics.

VIII. Further develop and disseminate LOINC/ SNOMED CTC using framework for integration into EHRs to support nursing assessment improvement (Lead: Susan Matney)

- A. Complete an evaluation of LOINC to identify gaps for which assessments require LOINC standardization and which exist.

- B. Create teams to work on specific areas.
 1. Include domain experts (professional organizations, etc).
 2. Recommend assessments for inclusion in LOINC.
 3. Code assessments and submit for approval.
 4. Need a framework/structure that has a defined decision making and communication strategy for these teams to work within.
- C. Disseminate content using the framework for integration into EHRs.
- D. Develop communication plan for disseminating resources.
- E. Create a strategy to disseminate standardization information that is specific to nursing organization leaders.
- F. Investigate nursing scales used at the bedside re copyright and possible inclusion in LOINC.
- G. Adopt the SNOMED CT nursing problems list posted on UMLS.
- H. Participate in the IHTSDO Nursing Work Group to increase nursing content in SNOMED CT.
- I. Improve the user experience - drop down lists are not the answer.

IX. Build an infrastructure for the collection and dissemination of standardized workforce data across continuum of care (Lead: Amy Garcia)

- A. Find a meaningful way to connect with The Future of Nursing: Campaign for Action with nursing leaders and researchers who are working on “big data” initiatives in the nursing field.
- B. Finalize LOINC coding updated NMMDS data elements, which includes standardization of workforce data needed for national comparison.
- C. Create targeted dissemination strategy for sharing all NMMDS data elements with:
 1. Workforce data collection through State Boards of Nursing to support the Future of Nursing requirements.
 2. NDNQI
 3. Disseminate information through professional organizations, software vendors, and policy makers.
 4. Support the identification of nursing informaticists as a SOC code.
 5. Follow the money, look at the impact

nursing care has on patient care by following the patient.

- D. Ensure “nurse informaticist” is an option to select as nursing occupation employment standards.

X. Transform nursing documentation into structured, coded terminology and usable workflow across continuum of care (Leads: Ann O’Brien, Charlotte Weaver)

- A. Encourage researchers and developers in practice to incorporate nursing care elements. (Nursing process data needs to be linked to outcome data.)
- B. Include nursing diagnosis in a shared interdisciplinary problem list in all vendor EHR applications.
- C. Focus on what nurses do in documentation, and represent the reality of the patient.
- D. Identify top 10 nursing problems.
- E. Identify a core set of interventions and desired outcomes.
- F. Begin the next phase of the analyses of preferred terms that support and inform evidence-based practice.
- G. Launch an initiative on how to address/decrease the burden of documentation with the front line clinicians.
- H. Address the importance of data integrity and the issue of localization with clinical leader.
- I. Assure that documentation supports patient safety that is patient-centered care, is accurate and current, logical, and not burdensome.
- J. Integrate CDS tools that are seamless for nursing.
- K. Support evidence-based practice:
 1. Develop a national library for evidence based quality bundles for open sharing across health care organizations and vendors.
 2. Standardize and develop processes for updating nursing evidence based content in EHRs.
 3. Collaborate with EHR and content vendors to accelerate the integration of best clinical knowledge into nursing workflows, interventions, and documentation.
 4. Create a center for storage data that may be the common use for all (ex: CDC

recommendations for clinical issues).

Pushing evidence-based leading practices to the existing used EHR to facilitate nurse practices at bed side. Pushing evidence-based leading practices into nursing informatics committees. A coded repository of evidence-based leading practices warehouse for nursing informaticians to access which would be accessible for practitioners, educators, and researchers.

- L. Ensure that information systems support the practice role in all levels.
- M. Electronically capture interdisciplinary nursing problems to generate prioritized episodic and longitudinal problem lists.
- N. Promote usability of electronic systems with streamlined workflow, valid data, establish and care planning that fits the scope of the clinician.
- O. Support regulatory bodies understanding of the workflow and care of clinicians so that regulations can better align with practice.

XI. Support a personalized and population health focused inter-professional collaborative care system (Lead: Susan Hull)

- A. Advance use of visualization tools to support a network effect of big data, to guide care and outcome evaluation for personalization and population health focused inter-professional collaborative care system. Sense-making tools are also needed for the patient/family caregiver and community.
- B. Encourage an ongoing focus on personalized health.
- C. Support population health focused on interprofessional collaboration across the continuum of care.

2014 Steering Committee

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Steering Committee members (front row, from left) Judith Warren, Connie White Delaney, Bonnie Westra and Joyce Sensmeier. Back row, from left Gail Latimer, Roy Simpson, and Susan Matney.

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