
Nursing Informatics

Big Data and Nursing Knowledge

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NURSING KNOWLEDGE increases exponentially with the availability and use of big data and science. In an exciting move to empower nurses to utilize information, 70 stakeholders were involved in formulating a 2013 national action plan to capture nursing information for big data research aimed at identifying effective care interventions and improving patient outcomes. As we enter 2015, it is a good time to review the national agenda that came out of this work. Information, including the 2014 agenda, as well as the 2013 national action plan can be accessed at <http://z.umn.edu/bigdata>.

The original group of stakeholders involved in this project included thought leaders from nursing practice, education, information technology, professional nursing, policy, informatics, and standards organizations. They were convened by a pioneer in informatics, Dean Connie Delaney, PhD, RN, FACMI, FAAN, who partnered with Professor Bonnie Westra, PhD,

RN, FACMI, FAAN, and Thomas Clancy, PhD, RN, FAAN to advance this national agenda. Dr Delaney is the dean at the University of Minnesota, Dr Westra teaches doctoral studies in informatics, and Dr Clancy is the former chief nurse executive of Mercy Hospital, Iowa City, who now serves as clinical professor of faculty practice, partnerships, and professional development at the University of Minnesota.

Setting the stage for national nursing informatics goals was Dr Clancy's engagement with the Robert Wood Johnson Foundation on the Quality and Safety Education for Nurses, which focuses on the 5 competencies of team and collaboration, evidence-based practice, quality improvements, safety, and informatics. This was followed by the decision to offer the University of Minnesota as a repository for the advancement of big data and science based on informatics principles and standards. As an academic center dedicated to higher learning, the university collects, houses, and maintains the history of nursing informatics as the discipline grows in knowledge with the accumulation of big data sets.

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THE 2013 NATIONAL ACTION PLAN

The 3 major areas of the 2013 national action plan are adopting common terminologies and standards; shaping policy; and educating nurses, nursing faculty, nurse executives,

nurse informaticists, and interprofessional care disciplines.

There are 19 sections under adopting terminology. All are weighted as equally important. Areas that nurse executives might wish to review include the following:

1. Leadership exemplars in the Technology Informatics Guiding Educational Reform, which includes recommendations for integrating technology to transform practice and education.
2. Use of SNOWMED clinical terms (SNOWMED-CT) for nursing diagnosis, interventions, and outcomes, as well as Logical Observation Identifiers Names and Codes (LOINC) for nursing assessment to support health information. The SNOWMED-CT can be downloaded from the national library of medicine at http://www.nlm.nih.gov/research/umls/Snomed/nursing_problemlist_subset.html
3. Updates on the Nursing Management Minimum Data Set elements. Work at the University of Minnesota includes research which demonstrates that elements contained in Nursing Management Minimum Data Set influence adverse events; patient morbidity and mortality; and staff retention, satisfaction, and well-being.
4. The work of another pioneer, John Welton, PhD, RN, FAAN, currently professor, senior scientist for health systems research at the University of Colorado, and former dean of Florida Southern University. His systematic program of research utilizes emerging business intelligence and analytic tools to model patient-level nursing costs and is being used to develop a national research strategy and framework to measure and benchmark nursing care within and across different health care settings.
5. Information on the American Nurses Association's designated National Database of Nursing Quality Indicators (NDNQI).
6. Accomplishments of the Healthcare Information and Management System Society CNO-CNIO, Vendor Roundtable. This thought leader group is sponsored by Healthcare Information and Management System Society and facilitated by Gail E. Latimer, MSN, RN, FACHE, FAAN, and Roy L. Simpson, DNP, RN, DPNAP, FAAN.

In the area of shaping policy, there are 12 sections of the action plan. Of special interest to nursing leaders is information about the following:

1. The recommendations of the Alliance for Nursing Informatics, which have been shared at town hall meetings.
2. The monitoring of 2 committees of the Office of the National Coordinator for Health Information. American Nurses Association has been designated by the Alliance for Nursing Informatics to do this monitoring of Health Information Technology policy and Health Information Technology standards committees. Other work that must be scrutinized include the National Quality Foundation, Priorities Partnership, and Measure Applications Partnership, as well as, the Meaningful Use work at the Centers for Medicare and Medicaid Services.
3. The Commission on Accreditation of Health Informatics and Information Management Education board seat currently held by informatics pioneer Judith Warren, PhD, RN, FACMI, FAAN. Dr Warren will be retiring and professional organizations will need to support the nomination of another nurse.
4. The monitoring of nursing engagement in standards development at a variety of standards development organizations. These include LOINC, International Health Terminology Standards Development Organization, Health Level Seven International, Integrating the Healthcare Enterprise, Standard and Interoperability Framework, the National Quality Forum, and NDNQI. These are organizations every nurse executive must be

aware of because they are all working to code our professional practice.

In the area of educating nurses, nursing faculty, nurse executives, nurse informaticians, and interprofessional care disciplines, the national action plan includes information on the following:

1. The key members of the American Academy of Nursing Expert Panel for Nursing Informatics and Technology. (These were published in the January 2014 edition of *Nursing Outlook*.)
2. The 2013 evaluation of the Quality and Safety Education for Nurses institutes. Nursing schools site visits and surveys indicate that resources most useful to faculty are an online nursing informatics course for prelicensure students and a series of webinars on nursing informatics.
3. The informatics competencies established by American Medical Informatics Association.
4. Quality measures that utilize data collected through the EHR in the course of care delivery, as promoted by the American Nurses Association.

In 2014, when the national agenda planning group reconvened, it established 11 priority areas for delivery to the nursing profession. Each objective is being led by a leader who exhibits high passion and interest in the goals of the national agenda. The objectives and leaders are as follows:

1. Participate in the development of interprofessional informatics certification and accreditation standards for informatics programs. (Dr Judith Warren)
2. Promote nursing involvement in the science of big data research and quality improvements. (Dr Connie White Delaney and Dr Bonnie Westra)
3. Advance the NDNQI eMeasure work on pressure ulcers as recommendation

for Phase 3 of Meaningful Use. (Dr Judith Warren and Ms Nancy Dunton)

4. Engage nurses in Health IT policy, influencing standardized nursing data. (Ms Gail Latimer and Ms Joyce Sensmeier)
5. Promote harmonization and standardization of nursing data and models. (Dr Laura Heermann-Langford and Ms Judy Murphy)
6. Develop standard curriculum for nursing informatics faculty/students. (Dr Tom Clancy and Dr Dan Pesut)
7. Develop strategies to measure the value of nursing. (Dr Ellen Harper)
8. Further develop and disseminate LOINC/SNOWMED CT using framework for integration into EHR to support nursing assessment improvement (Ms Susan Matney)
9. Build an infrastructure for the collection and dissemination of standardized workforce data across the continuum of care. (Ms Amy Garcia)
10. Transform nursing documentation into structured, coded terminology, and usable workflow across the continuum of care. (Dr Ann O'Brien and Dr Charlotte Weaver)
11. Support a personalized and population health focused interprofessional collaborative care system (Ms Susan Hull)

This synopsis of the national agenda and plans related to nurse executive leadership is presented to help nurse executives understand what is available in the repository of information related to practice, leadership, and research in nursing informatics. As a profession, we are indebted to the leadership of the University of Minnesota for their dedication and provision of resources and time to this important initiative. The unwavering commitment of leaders from a number of organizations is what will ensure that we are using big data and science to transform health care.