

# Nursing Knowledge: 2016 Big Data Science



## Conference Proceedings

June 1 – 3, 2016

Minneapolis, Minnesota

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UNIVERSITY OF MINNESOTA

School of Nursing

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## **Complete Conference Information**

This proceeding provides a summary of the Nursing Knowledge: 2016 Big Data Science Conference. To see the conference agenda, detailed 2013, 2014 and 2015 action plan abstracts and posters, and 2016 action plans, please visit <http://z.umn.edu/bigdata>

## **2017 Nursing Knowledge Conference**

*Nursing Knowledge: 2017 Big Data Science Conference* will be held June 7 – 9, 2017, at the University of Minnesota in Minneapolis, Minnesota.

## **Our Vision:**

### Why a Nursing Knowledge Conference Series

We share a vision of better health outcomes resulting from the standardization and integration of the information nurses gather in electronic health records and other information systems, which is increasingly the source of insights and evidence used to prevent, diagnose, treat and evaluate health conditions.

The addition of contextual data about patients, including environmental, geographical, behavioral, imaging, and more, will lead to breakthroughs for the health of individuals, families, communities and populations.

# Improved Patient Care Through Sharable, Comparable Nursing Data

## Conference Overview

More than 170 professionals from nursing practice, education, research, information, technology and professional nursing, informatics and standards organizations gathered for the *Nursing Knowledge: 2016 Big Data Science* conference at the University of Minnesota in Minneapolis.

This fourth annual *Nursing Knowledge* conference aimed to advance a National Action Plan to ensure that nursing data is captured in electronic health records and other information systems – and that the data is available in shareable and comparable formats so that clinicians, nursing administrators, researchers, policy makers and others can use it to gain useful, actionable insights. The ultimate aim, of course, is to ensure that nursing data is used to inform changes leading to better outcomes, lower cost and an improved patient experience.

Following opening remarks by Connie White Delaney, PhD, RN, FAAN, FACMI, dean of the University of Minnesota School of Nursing, 10 work groups presented major milestones achieved during the year. Looking to the future, the individual work groups convened to map plans for the coming year.

The second day of the conference featured two panel discussions, one focused on integrating nursing data into health policy and the other on embedding nursing data into research, quality and finances. General insights from the panels are reported in the Insights section of these proceedings, beginning on page 4.

The conference concluded with “Where Do We Go Next?” Each of the work groups presented three priority actions for the coming year. Later, conference attendees gathered to provide feedback on the coming year’s priorities, helping the work groups identify gaps or overlapping areas of focus.

With clear progress toward the goal of ensuring that nursing data is captured in electronic health records and other information systems and with a path forward, attendees were energized to continue efforts to pursue a National Action Plan for consistently documenting and using nursing and interprofessional data – a critical foundation for better health outcomes, lower costs, a high level of patient satisfaction and a safe and supportive workplace for clinicians.

# Insights: Perspectives from Nursing Leaders

Two panels of experts provided their insights to conference participants on:

## Integrating Nursing Data into Health Policy

Panelists:

- **Pamela Cipriano**, President, American Nurses Association
- **Deborah Trautman**, Chief Executive Officer of the American Association of Colleges of Nursing
- **Erin Murphy**, State Representative, Minnesota House of Representatives

## Embedding Nursing Data into Research, Quality and Finances

Panelists:

- **Norma Lang**, Professor and Dean Emerita of Nursing, University of Pennsylvania School of Nursing
- **Maryan Zirkle**, Program Officer on the Research Infrastructure, Patient-Centered Outcome Research Institute
- **Dave Anderson**, Aerospace Engineering, Data Engineer, Fellow at OptumLabs (a UnitedHealth Group company)

## Perspectives Shared

### Policy

- Big data can be used to shape health policy to improve health, support evolving models of care delivery, achieve better outcomes, lead innovation, build strategic partnerships.
- Data analysis leads to the evidence and knowledge needed to inform health policy.
- More nurses are needed in leadership roles to influence practice, policy and data systems.
- Data, patient stories and a consistent and active voice at all levels of nursing are needed to influence policy.
- Nursing needs to do more to advocate for policies that promote solutions to solve greater health care needs – for our special interest and for the public interest.
- We know we have the trust of the people we care for and their families. While we are trusted, there is a blending of nurses' role with those of health care roles in the minds of legislators. They see our tasks and what we do. But we need to help them see the value we bring – and we need more data to prove our value at all levels. That's why the work this group and the profession are doing is so important.
- We need to make sure nursing is at the table in big data and big data analytics. The voice of the nurse needs to be heard.
- It's critical to educate the broader population of nurses and nurse leaders about big data and its place in safe, high-quality patient care.
- It's not enough to be able to find our data, we also need to be able to share it.
- Our focus on data must not cause us to lose sight of our relationships with patients and their loved ones. Nursing is a key vehicle for patient-family voice.
- Collaboration is key to moving policy priorities forward. Collaboration is in nurses' DNA.
- All registered nurses should have their national provider identification number as other health professionals do.
- Longitudinal data can support the importance of care coordination. Only when dollars are assigned to what nurses do can we demonstrate value. So we need to make sure payment is expanded to all individuals providing care coordination. Further, funding to measure nursing's contribution to care coordination is needed.

## Policy, continued

- Allowing patients to gain access to their own health data is increasingly recognized as a key aspect of patient safety. Nurses have long supported patient access to their health information. Now a growing number of organizations are recognizing that consumers have a significant voice in their care.
- The health of the nursing workforce impacts patient safety, quality and outcomes. We need more provider workforce data.
- Any payment system designed to encourage quality and value must link services provided to a patient with the actual provider, rather than masking provider information in the billing procedures of a system or group practice.

## Research

- If we can't name what we do, we can't put it into electronic health records, practice it, control it, research it, teach it, finance it, create public policy or implement and coordinate it. Nursing stories and work need to be named.
- Nationally and internationally, nursing has done a lot of work already to name what we do and make our data shareable and comparable, including minimum data sets and nursing terminologies. However, more of nursing's contributions – from assessments to interventions – need to be included.
- Nursing needs to take the data interoperability pledge.
- Nurses need to connect standardized nursing data with national research networks, for example, PCORnet, the National Patient-Centered Clinical Research Network.
- There continue to be gaps in some nurse scientist education programs in areas such as software programming, data modeling, data visualization and evaluation methods.
- Nursing needs to partner with data scientists and software developers, in addition to physicians, pharmacists and others. Nursing needs to continue to partner with research colleagues to encourage their use of LOINC and SNOMED CT standards.
- Nurses need to be equipped to be a voice at every table, including with electronic health record vendors to ensure their products and services reflect nursing's needs and contributions.

*Panelists Pamela Cipriano, President, American Nurses Association; Deborah Trautman, CEO, American Associates of Colleges of Nursing; and Erin Murphy, Minnesota State Representative shared insights on how to integrate nursing data into health policy. The panel was facilitated by Connie White Delaney, Dean, University of Minnesota School of Nursing.*



# 2015-2016 Progress on the National Action Plan

Status reports from the 10 work groups follow.

## Care Coordination

### PROJECT TEAM

#### Co-Leaders

**Jean Scholz**, MS, RN, NEA-BC, Healthcare Workforce Transformation, PhD Candidate, University of Cincinnati

**Laura Heerman-Langford**, PhD, RN, Intermountain Health Care

**M.J. Swanson**, DNP, RN, Fairview Medical Center

#### Members

Christina Baker  
Rhonda Cady  
Lynn Choromanski  
Kelly Cochran  
Dawn Dowding  
Mary Hook  
Alex Knutson-Smisek  
J. Raney Linck  
Erin Maughan  
Elizabeth Meyers  
Lisa Moon  
Karyn Nicholson  
Jud Simonds

### ACCOMPLISHMENTS

- Established common ground regarding care coordination.
- Provided feedback on consensus model for care coordination that was based on an extensive literature review.
- Provided insight and collaboration with the American Nurses Association on strategic agenda for care coordination.
- Agreed on the need to deliver care coordination across the continuum (beyond nursing) based on a review of literature.
- Began the process of engaging cutting-edge nurse scientists.
- Identified next steps from qualitative analysis of comments from work group members, ANA staff and leaders, and nurse scientists.

### PUBLICATIONS

- Scholz, J. & Minaudo, J. (2015). Registered nurse care coordination: Creating a preferred future for older adults with multimorbidity. *OJIN: The Online Journal of Issues in Nursing*, 20 (3), doi: 10.3912/OJIN.Vol20No03Man04



# Clinical Data Sets and Analytics

## PROJECT TEAM

### Co-Leaders

**Connie White Delaney**, PhD, RN, FAAN, FACMI, Professor & Dean, School of Nursing, University of Minnesota

**Bonnie L. Westra**, PhD, RN, FAAN, FACMI, Associate Professor, University of Minnesota School of Nursing, and Director, Center for Nursing Informatics

### Members

Vicki Baukner  
 Kathryn Bowles  
 Christopher Cruz  
 Janet Cuddigan  
 Dianna Dodd  
 Denise Dowding  
 Meg Furukawa  
 Grace Gao  
 Adam Helgren  
 Maria Hendrickson  
 Steven Johnson  
 Gail Keenan  
 Janice Kelly  
 Catherine Kleiner  
 Andrea Kline  
 Rebecca Kohler  
 Anne LaFlamme  
 Kay Lytle  
 Debra Konicek  
 Stephanie Lambrecht  
 Susan Newbold  
 Ann O'Brien  
 Jung In Park  
 Lisiane Pruinelli  
 Roxy Rewolinski  
 Rachel Richesson  
 Amy Rosa  
 Patricia Senk  
 Theresa (Tess) Settergren  
 Luann Whittenburg  
 Roxanne Wilson  
 Tamara Winden  
 Jim (Woody) Woodburn

## ACCOMPLISHMENTS

- An increasing number of attendees attended or indicated interest in participating in the National Institute of Nursing Research – Translational Research Interest Group and Nursing Informatics Subgroup.
- Five organizations are pursuing participation in validation of nursing information models for flowsheet data. (Allina Health System, Cedar Sinai, Duke Health System, MediComp, Visiting Nurse Service of New York).
  - First priority is validating the information model was for pain, then four additional conditions – pressure ulcers, falls, catheter associated urinary tract infection and venous thrombosis embolism – will be added.
- Multiple presentations by group members for NINR – TRIG-NIS.
- Initiated collaboration via Rachel Richesson to evaluate PCORnet Common Data Model to support nurse research questions.
- Provided consultation to Nursing Value Workgroup on data dictionary.
- Screened 650 articles for applied nursing big data science to synthesize studies that are published in nursing informatics, general bioinformatics and nursing research journals. Article near completion for submission.
- Co-chairs edited special issue of Western Journal of Nursing Research about nursing big data research.

## PUBLICATIONS

- Pruinelli L, Delaney CW, Garcia A, Caspers B, Westra B. (2016). Nursing Management Data Set (NMMDS): Cost Effective Tool to Demonstrate the Value of Nursing Staffing in the Big Data Science Era. *Nursing Economic\$*. 34 (2), p66-89.
- Westra BL, Pruinelli L, Delaney CW. (2015). Nursing Knowledge: 2015 Big Data Science. *CIN: ANI Connection*. 33(10), 427-431.
- Garcia A, Caspers B, Westra B, Pruinelli L, Delaney C. (2015). Sharable and Comparable Data for Nursing Management. *Nurs Adm Q*. 39(4), 297-303.
- Pruinelli L, Park JI, Sylvia ML, Hart CM, Brixey JJ, Delaney CW, Westra BL. (2015). Applied Nursing Informatics Research Methods: a Systematic Review. *Applied Clinical Informatics*. (Not Accepted)

## PRESENTATIONS

- Big Data & Other Types of Analysis. Clinical Care Classification User Group, Nashville, December 2015. (Westra, B.).
- Creating and Using Big Data Sets for Nursing Research (Panel). Bakken, S.; Bowles, K.; Dowding, D.; Westra, B.L. 8th Annual Mid-Atlantic Healthcare Informatics Symposium, Philadelphia, October 2015.
- Big Data in Healthcare NINR Big Data in Symptoms Methodologies Research Boot Camp, NIH, Bethesda, June 2015 (Westra, B.).
- Healthcare Analytics and Patient Outcomes, NINR Big Data in Symptoms Methodologies Research Boot Camp, NIH, Bethesda, June 2015 (Westra, B.).
- Nursing and Health Informatics: Empowering Research, NINR Big Data in Symptoms Methodologies Research Boot Camp, NIH, Bethesda, June 2015 (Delaney, C.).
- PCORI and Other Collaboratives Supporting Nursing Research, National Institute for Nursing Research – Nursing Informatics Subgroup of the Translational Science Interest Group, December 2015 (Richesson, R. & Westra, B.)

# Connect Emerging and Expert Nurse Informatics Leaders

## PROJECT TEAM

### Co-Leaders

**Kari Ballou**, MSN, RN, Informatics Nurse Specialist, AORN

**Anne LaFlamme**, DNP, RN, Chief Nursing Information Officer, Fairview Health System

### Members

Robin Austin	Yvonne Mugford
Kay Burke	Amy Rosa
Lynn Choromanski	Jud Simonds
Michelle Dardis	Roy Simpson
Meg Furukawa	Lily Tunby
Candice Hall	Jessica Zwiefelhofer
Lex Hokanson	

## ACCOMPLISHMENTS

- Narrowed down list of communication platforms to three: LinkedIn, Facebook and Google+Communities.
- Collected content for communication and posting
- Collected suggestions on wants, needs and ideas for upcoming meetings and possible offering of "Meet the Experts," an opportunity for discussion with specific expert nurses.



## Context of Care

## PROJECT TEAM

### Co-Leaders

**Amy Garcia**, DNP, MSN, RN, CENP, Director and Chief Nursing Officer, Clairvia Workforce and Capacity Management, Cerner Corporation

**Barbara Caspers**, MSPHN, BSN, RN, Health Care Management Consultant

### Members

Beverly Christie  
Connie Delaney  
Nancy Dunton  
Linda Groah  
Pamela Johnson  
Christopher Looby  
Amber Oliver  
Lisiane Pruinelli  
William Roberts  
Sally Schlak  
Elizabeth (Liz) Swanson

## ACCOMPLISHMENTS

- Engaged stakeholder subject matter experts with workgroup members in a daylong, in-person meeting to develop a road map for implementing the NMMDS across the care continuum
- Created a beginning foundational big data set by assembling and compiling data from multiple accessible, authentic data sources to use as test data.
- Developed an initial Detailed Clinical Model associated with the test Big Data Set. Identified gaps and semantic differences across care settings, and the capacity of the model to address multiple transitions in care.

## PUBLICATIONS

- Englebright J, Caspers B. (2016) Role of the Chief Nurse Executive in the Big Data Revolution. Accepted for publication in Nurse Leader May/June 2016 issue.
- Pruinelli L, Delaney CW, Garcia A, Caspers B, Westra B. (2016) Nursing Management Minimum Data Set : Cost Effective Tool to Demonstrate the Value of Nursing Staffing in the Big Data Science Era. Nursing Economics\$/March-April/ vol.34/No.2., 66-71, 89.
- Garcia A, Caspers B, Westra B, Pruinelli L, Delaney C. (2015). Sharable and Comparable Data for Nursing Management. Nurs Adm Q. 39(4), 297-303.

## PRESENTATIONS

- Englebright, J, Caspers B. (2016 April). The CNE and the big data revolution. Podium presentation at the 2016 American Organization of Nurse Executives Annual Meeting Fort Worth.
- Garcia, A. (2016 April). Illustration of sharable and comparable data sets for nursing management. Poster presentation at the Sigma Theta Tau Evidence Based Nursing Conference, Wichita.



# Education

## PROJECT TEAM

### Co-Leaders

**Judith J. Warren**, PhD, RN, FAAN, FACMI, Professor Emeritus, School of Nursing, University of Kansas

**Thomas Clancy**, PhD, MBA, RN, FAAN, Clinical Professor and Associate Dean, School of Nursing, University of Minnesota

### Members

Barb Caspers

Connie White Delaney

Dan Pesut

Jehad Adwan

Marisa Wilson

Roy Simpson

Valerie Fong



## ACCOMPLISHMENTS

### Conferences/Workshops

- A third workshop was developed based on the original Nursing Informatics Deep Dive Workshop and was presented at the American Association of Colleges of Nursing's Baccalaureate Education Summit in November 2015 in Orlando. Since the original preconference in November 2014, 13 additional events have been presented using materials and speakers from the pilot workshop for a total of 1,291 participants.

### Webinars

- A series of five webinars covering a variety of nursing informatics topics was created using materials created from the Nursing Informatics Deep Dive workshop and preconferences. The webinars were presented, one per month, from January 2015 – July 2015, using AACN's national webinar series and the Alliance for Nursing Informatics. A total of 677 participants registered for the webinars. We estimate the number of participants was higher given that multiple participants can be present in the room through one registered user. An additional 154 users downloaded webinars from the AACN website after the live presentations. The average score on the post evaluation survey ranged from 4.5 to 5.0 on the Likert Scale of 5. The webinars, free to any participant, have been linked between the National Nursing Informatics Deep Dive Program website and AACN's national website for maximum distribution. Individuals may also access the National Nursing Informatics Deep Dive Program and webinars through QSEN's national website located at the Case Western Reserve Nursing School's website. In addition, the original Nursing Deep Dive Workshop presentations, provided at the October 1, 2, and 3, 2012 workshop in San Francisco, are available on the AACN and National Nursing Informatics Deep Dive Program website.

### National Nursing Informatics Deep Dive Program Website

- A website to support nursing faculty teaching informatics has been developed at the University of Minnesota School of Nursing. The website contains slides from all of the events presented in the last two years using National Nursing Informatics Deep Dive Program materials. The site contains a crosswalk that aligns the AACN Essentials for Informatics and Patient Care Technology, The QSEN Competencies for Informatics and The TIGER Competencies for Practicing Nurses. The site also includes numerous sample assignments, links to informatics standards and professional websites and instructional videos on a variety of subjects, such as the electronic health record, standardized nursing languages, workflow, consumer informatics, telehealth and other key emerging areas. Webinars and WebEx's developed under this grant are also available on the website and are linked to the national AACN website. A total of 920 downloads and "hits" from the website were noted in the last two years.

### Seminar in Nursing Informatics Course

- An eight-module, introductory course entitled, "Seminar in Nursing Informatics," was developed by Jehad Adwan, PhD, Dan Pesut, PhD, Taylor-James Gilard, project coordinator, and Tom Clancy, PhD, MBA, RN, FAAN, under guidance from an advisory team made up of experts in nursing informatics. The audience is prelicensure faculty and nurse educators with beginning experience in informatics. The course was piloted with 16 prelicensure faculty from two schools with an overall satisfaction score of 4.59 out of 5 on a Likert Scale.

# Education, continued



## Accreditation/ Advanced Certification

- The new Chair of the CAHIIM Board of Directors is Judith Warren. CAHIIM accreditation will use the AMIA health informatics competencies in the Curriculum Standard after public comment has occurred—projected to be January 2017.
- Submitted two names to CAHIIM to be selected as accreditation peer reviewers (site visitors)—names to be announced in summer 2016; there are already several nurse reviewers.
- Appointment of Josette Jones and LaVerne Manos to the AMIA Health Informatics Competency Committee. AMIA will announce the first set of competencies in the summer of 2016.
- Appointment of Connie Delaney to the AMIA Advanced Interprofessional Informatics Certification Work Group.

## PRESENTATIONS

- Four one-hour webinars on nursing informatics – National audience through AACN, January, February, March and April 2015.
- Mississippi State Medical Center and Nursing School Deep Dive Workshop on nursing informatics, Jackson, 04/14/15.
- Medical World of the Americas Conference presentation on advances in teaching nursing informatics, Houston, 04/29/15.
- QSEN National Forum – Informatics, Technology & Teaching, San Diego, 05/26/15.
- Nursing Knowledge: 2015 Big Data Science conference update on National Nursing Deep Dive, Minneapolis, 06/04/15.
- American Nursing Informatics Association webinar on methods to teach systems analysis, workflow and flowcharting to nursing students, 07/23/15.
- Workshop on nursing informatics competencies for clinical and student nurses. Mississippi Organization of Nurse Executives and Mississippi Nurses Association (Bonnie Westra, speaker), Jackson, 09/14/15 and 09/15/15.
- Panel presentation at the Moore Foundation Annual Grantee Summit – All Grantee Summit Moore Foundation, San Francisco, 10/1/15.
- American Academy of Nursing Annual Conference: Presentation to Expert Panel on Informatics and Technology on the National Nursing Informatics Deep Dive Program, Washington DC, 10/15/15 – 10/17/15.
- Pre-conference, 2015 AACN Baccalaureate Education Conf., Orlando, 11/19/15.



# Engage and Equip All Nurses in Health IT Policy

## PROJECT TEAM

### Co-Leaders

**Joyce Sensmeier**, MS, RN-BC, CPHIMS, FHIMSS, FAAN, Vice President of Informatics, HIMSS

**Kelly Cochran**, MS, RN, Policy Advisor, Health Information Technology, American Nurses Association

### Members

Ida Androwich	Janice Kelly
Marianne Baernholdt	Norma Lang
Lori Ballantyne	Ellen Makar
Kari Ballou	Eva LaVerne
Juliana Brixey	Manos
Beverly Christie	Karen Martin
Nancy Dunton	Judy Murphy
Valerie Fong	Karyn Nicholson
Grace Gao	Darryl Roberts
Laura Heermann-Langford	

### Advisory

Carol Bickford  
Willa Fields

## ACCOMPLISHMENTS

- Collected relevant health IT policy related educational tools and resources; made them available in a resource library on Drop Box.
- Documented environmental scan.
- Reviewed options for a long term, sustainable resource library.
- Considered recommendation for collaboration on a sustainable, long-term public-facing, health IT-focused policy resource library for nurses.
- Develop a communication and awareness plan for the approved plan.

## PRESENTATIONS

- AMIA NIWG 2015: What's Hot in Policy, Joyce Sensmeier.
- ANA Tipping Point Meeting, Sept. 10, 2015, Joyce Sensmeier.
- ONC Nurse Appointee Meeting Update, Dec. 2015, Kelly Cochran.
- Nursing Knowledge: Big Data Science 2016 Conference, June 2, 2016.

# Mobile Health Data

## PROJECT TEAM

### Co-Leaders

**Victoria L. Tiase**, MSN, RNBC, Director, Informatics Strategy, New York-Presbyterian Hospital

**Robin R. Austin**, DNP, RN-BC, Clinical Assistant Professor, University of Minnesota School of Nursing

### Members

Rhonda Cady	Christie Martin
Meg Furukawa	Elizabeth Meyers
Lex Hokanson	Ramona Nelson
Susan Hull	Stesha Selsky

## ACCOMPLISHMENTS

- Discussion on goals and charge of new work group.
- Agreement on charter and common purpose.
- Established questions to use for inquiry.
- Began collection of use case examples.
- Performed literature search of University of Minnesota Health data/patient-generated data and aligned on definition of terms
- Identified and logged use case examples of U of M Health data/patient-reported data use via mobile technologies

# Nursing Assessment Coding

(Previously Encoding Nursing Assessment Using LOINC and SNOMED CT)

## PROJECT TEAM

### Co-Leaders

**Susan Matney**, PhD, RNCB, FAAN,  
Senior Medical Informaticist,  
Intermountain Healthcare

**Theresa (Tess) Settergren**, MHA, MA,  
RNBC, Director, Nursing Informatics,  
Cedars Sinai Health System

### Members

Kari Ballou  
Emily Barey  
Vicki Baukner  
Kelly Brassil  
Juliana Brixey  
Jane Carrington  
Denise Downing  
Colleen Hart  
Laura Heermann-Langford  
Maria Hendrickson  
Heather Herdman  
Mary Hook  
Janice Kelly  
Jane Koenig  
Anne LaFlamme  
Stephanie Lambrecht  
Stephanie Lenz-Norman  
Maria Loomis  
Vicky Mathis  
Chelsea Rentmeester  
Roxy Rewolinski  
Rachel Richesson  
Roberta Severin  
Amy Sheide  
Deborah Sita  
Christine Spisla  
Camila Takao-Lopes  
Kirsten Vitale  
Judy Warren  
Bonnie Westra  
Marisa Wilson  
Wilson Wu

## ACCOMPLISHMENTS

- Strategy and scope developed for 2015-2016 coding project.
- Defined “Within Defined Limits” for adults and pediatrics and gathered basic med/surg assessment data elements from initial volunteer organizations.
- Gathered data elements to describe peripheral intravenous and central venous catheter (PIV/CVC) properties, assessments and care to standardize and prepare for LOINC/SNOMED CT coding.
- Med/surg physical assessment LOINC submission complete and released January 2016 (<http://s.details.loinc.org/LOINC/80346-0.html>).
- SNOMED CT submission in final curation with expected release July 2016.

## PUBLICATIONS

- WJNR manuscript accepted; final revisions in progress; “Standardizing Physiologic Assessment Data to Enable Big Data Analytics”: Matney et al.
- NI2016 Poster Abstract accepted: “Developing Standardized Physiologic Assessments”. Poster development in progress; Matney et al.

## PRESENTATIONS

- Presented to Clinical LOINC Committee: Matney
- Mayo Midwest Nursing Conference: Vitale (informatics, clinical practice, research)
- Presentations to Clinical LOINC, Epic customer group, Mayo, Students, McKesson staff
- Big Data in Nursing Overview: Sita (McKesson internal staff)
- Curriculum inclusions of NBD2K/coding work for nursing students: Wilson  
NBD2K Overview & Updates to Epic customers’ Nursing Leaders (CNOs, CNIOs, directors) presented 11-6-15: Westra, O’Brien, Hook, Settergren



# Nursing Value

## PROJECT TEAM

### Co-Leaders

**Ellen Harper**, DNP, RN-BC, MBA, FAAN, Vice President, Chief Nursing Officer – Premier West, Cerner Corporation

**John Welton**, PhD, RN, FAAN, Professor & Senior Scientist Health Systems Research, University of Colorado School of Nursing

### Members

Bonnie Adrian  
 Martha Badge  
 Nancy Blake  
 Kathy Bowles  
 Kay Burke  
 Barbara Caspers  
 Mary Chapa  
 Lynn Choromanski  
 Gregory Clancy  
 Dawn Dowding  
 Jane Englebright  
 Amy Garcia  
 Linda Groah  
 Mary Hook  
 Cathy Ivory  
 Janice Kelly  
 Catherine Kleiner  
 Mikyoung Lee  
 Christopher Looby  
 Brandon Loy  
 Mindy Loya  
 Erin Maughan  
 Peter McMenamin  
 Beth Meyers  
 Karen Monsen  
 Lisa Moon  
 Ann O'Brien  
 Sharon Pappas  
 Mary Jane Rivard  
 Amy Sheide  
 Michael Simon  
 Jud Simonds  
 Liz Swanson  
 Martha Sylvia  
 Luann Whittenburg  
 Roxanne Wilson

## ACCOMPLISHMENTS

- Design of Nursing Value User Story Model and Template. Three user stories defined and worked in the Nursing Value User Story Template (Falls Risk, Enhanced Coping, Acute Pain).
- Ongoing data dictionary development and mapping to SNOMET CT & LOINC

## PUBLICATIONS

- Pappas, S & Welton, J.M. (2015) Nursing: essential to healthcare value. *Nurse Leader*, 13(3), 26-38.
- Welton, J. M., & Harper, E. M. (2016) Measuring nursing care value. *Nursing Economic\$*, 34(1), 14-25.
- Welton, J. M., & Harper, E. M. (2015) Nursing care value-based financial models. *Nursing Economic\$*, 33(1), 14-25.
- Welton, J.M. (2015) Conference report: big data in nursing 2015. *American Organization of Nurse*.
- Welton, J.M. (2016) What's a nurse's value? Making cents of care. *Nursing Economics* 34(2), 57, 81 [Editorial, Guest Editor].

## PRESENTATIONS

- Harper, E. & Welton, J.M. (2016) Value-based metrics to measure nurse staffing and assignment, *American Nurses Association, Connecting Quality, Safety and Staffing to Improve Outcomes*, Disney Coronado Springs Resort, Lake Buena Vista, FL. Mar 9-11, 2016.
- Harper, E. & Welton, J.M. (2016) Big data and nursing care: What would Florence say? *American Nurses Association: Connecting quality, safety and staffing to improve outcomes*, Disney Coronado Springs Resort, Lake Buena Vista, FL Mar 9-11, 2016.
- Harper, E. (2016) Big data and nursing value. Keynote conducted at Texas Tech University School of Nursing, Lubbock, Texas.
- Harper, E. (2016) Big data and nursing, Keynote conducted at ANIA Heart of America Chapter conference, Kansas City.
- Harper, E.H. & Welton, J.M. (2016) Measuring nursing value, 13th International Congress in Nursing Informatics, Geneva, Switzerland, June 22-24. [Podium Presentation].
- Pappas, S.H. & Welton, J.M. (2016) Measuring nursing financial value, *Healthcare Finance Managers Association Colorado Annual Conference*, Denver, CO, April 12-13
- Pappas, S.H. & Welton, J.M. (2015) Value-based nursing workforce, *National Forum of State Nursing Workforce Centers Conference*, Denver, CO, June 10-12.
- Welton, J.M. (2016) Seeing the "big" picture: Implications of big data for nurses. *National Institute for Nursing Research Nursing Informatics Workgroup Webinar Series*. March 2, 2016 [Webinar].
- Welton, J.M. (2015) Current topics: Big data in nursing, measuring nursing value, and what the heck are we going to do with all the data we are collecting? *California Action Coalition Webinar Series*. November 9 [Webinar].
- Welton, J.M. (2015) Measuring nursing value, *National Pediatric Nurse Scientist Collaborative, Webinar*, April 15 [Webinar].

# Social and Behavioral Determinants of Health in Electronic Health Records

## PROJECT TEAM

### Co-Leaders

**Erin D. Maughan**, PhD, MS, RN,  
APHN-BC, FAAN, Director of  
Research, National Association of  
School Nursing

**Susan C. Hull**, MSN, RN,  
Wellspring Consulting

### Members

Lynn Choromanski  
Karen Chang  
Dawn Dowding  
Kelly Faltus  
Amy Garcia  
Susan Hull  
Chelsea Rentmeester  
Susan Stafford  
Ruth Wetta

## ACCOMPLISHMENTS

- Developed case study template.
- Reviewed current resources and literature on the subject.
- Discussed three case studies and two research projects on the subject.
- Identified fundamental gaps.



# Transforming Nursing Documentation

## PROJECT TEAM

### Co-Leaders

**Ann O'Brien**, RN, MSN, Senior Director of Clinical Informatics, National Patient Care Services, Kaiser Permanente

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\*Contributors to 2015-2016 work or single-class attendees who were working in other work groups but linked to the Transform Nursing Documentation team.

## ACCOMPLISHMENTS

- Defined and explored Precision Nursing: Highly reliable, evidence-based and personalized nursing practice that supports quality outcomes.
- Examined best practice exemplars of nursing documentation supported by clinical decision support producing positive outcomes.
- Submitted for NI2016 presentation and paper published in conference proceedings: Transforming clinical documentation in EHRs for 2020: Recommendations from University of Minnesota's Big Data Conference Working Group.
- Formed subgroup to explore feasibility of creating a repository/web resource for nursing documentation best practices, evidence-based content and decision-support exemplars to support knowledge sharing.
- Submitted Panel Presentation on Library/Repository Subgroup's work and recommendations for Fall AMIA 2016; NIWG endorsed.

## PUBLICATIONS

- O'Brien, A., Weaver, C., Settergren, T., Hook, M., Ivory, C. EHR Documentation: The Hype and Hope for Improving Nursing Satisfaction & Quality Outcomes. Nurs Admin Quar. Vol. 39, No 4. pp 333-339. 08/27/2015.
- Effken, J. A., & Weaver, C. A. (in press). Spring Cleaning, the Informatics Version. OJNI.
- Effken, J., Weaver, C., Cochrane, K., Androwich, I., & O'Brien, A. (in press). Toward a central repository for sharing nursing informatics best practices. CIN July 2016.

## PRESENTATIONS

- NI 2016, Fall 2016 AMIA, NAM Committee on Clinical Decision Support, March 2016.

# 2016-2017 National Action Plan

Priority objectives and planned activities for the 10 work groups follow.

## Care Coordination

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### PURPOSE

Identify nursing implications related to big data associated with "care coordination."

### KEY PRIORITIES

- Determine the essential elements for predicting and managing patients needing care coordination and the relevance of that data to nursing big data science.

### PLANNED ACTIVITIES

- Convene a panel of experts in 1) care coordination and 2) informatics to perform a gap analysis of what is present and what is missing in existing big databases and electronic health records related to patient factors and processes of care coordination.
- Examine Sharon Hewner's work related to using patient factors and social determinants of health to triage patient strategies for care coordination.
- Examine data that is already available through regional health information organizations to develop strategies for sharing care coordination information across the continuum of care.
- Identify standardized data sets for care coordination.
- Coordinate with other big data work groups, notably Clinical Data Analytics, Encoding/ Modeling and Social Determinants of Health.
- Convene experts in care coordination to analyze patient/other factors and processes of care coordination and obtain consensus on processes associated with successful models of care coordination.
- Develop strategic plan to be successful in inserting standardized definitions into big data and electronic health records.



# Clinical Data Analytics

## PROJECT TEAM

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## PURPOSE

Demonstrate the value of sharable and comparable nurse-sensitive data to support practice and translational research for transforming health care and improving patient quality and safety.

## KEY PRIORITIES

- Examine data for population health analytics that includes nursing data along with other interprofessional data to inform risk management in population health.
- Validate flowsheet information models across multiple health systems.
- Integrate SNOMED CT nursing problem list from the National Library of Medicine into national common data models such as PCORnet or CTSA data models.

## PLANNED ACTIVITIES

- Examine what nursing data is included in population health analytics.
- Recommend nursing data (i.e., risk assessments) in population health analytics.
- Validate information models across health organizations.
- Conduct a baseline query of SNOMED CT nursing problems available in a limited number of PCORI sites.
- Collaborate with PCORnet to integrate nursing problem list in common data models.
- Disseminate through presentations and publications.



# Context of Care

## PROJECT TEAM

### Co-Leaders

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## PURPOSE

Develop a plan for disseminating the Nursing Management Minimum Data Set and design a study to compare the NMMDS to the Minimum Data Sets used by the National Forum of State Workforce Centers.

## KEY PRIORITIES

- Develop a proposal for national integration of the Kruchten 4+1 Model and Unified Modeling Language to link key workgroup activities.
- Use the NMMDS to test the framework applying test kitchen methods to inform the quadruple aim of health.
- Invite collaboration with other work groups.

## PLANNED ACTIVITIES

- Continue development of test Big Data set and Detailed Clinical Model.
- Draft a plan for communicating and disseminating the nursing management knowledge expressed using NMMDS elements in the DCM originated in the Test Kitchen.



# Education

## PROJECT TEAM

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## PURPOSE

Address informatics competencies for nurses at all levels and support faculty to prepare nurses to be informatics savvy.

## KEY PRIORITIES

- Develop training for faculty members to teach nursing informatics at the graduate level, creating resources, tools, training framework for these faculties.

## PLANNED ACTIVITIES

- Continue work in partnership with the American Association of Colleges of Nursing, HIMSS, Alliance for Nursing Informatics, AMIA and other professional organizations to educate faculty in pre-licensure programs and develop a similar educational program aimed at faculty teaching in graduate studies.
- Develop the resources and conduct workshops for faculty teaching graduate level nursing informatics.
- Encourage nursing informatics administrators and faculty to become fully informed of the changing accreditation and certification options for health/nursing informatics practitioners and programs.
- Encourage informatics nurses to be certified by appropriate certification organizations.
- Support the work of the Institute of Medicine on credentialing research.



# Encoding/Modeling

(Previously Encoding Nursing Assessment Using LOINC and SNOMED CT)

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## PURPOSE

Develop and disseminate LOINC and SNOMED CT for electronic health record nursing assessments and incorporate them into a framework and repository for dissemination.

## KEY PRIORITIES

- Communicate work group activities and results to others
- Begin implementation of the standard data assessments
- Continue terminology development with LOINC for observations and SNOMED CT for values

## PLANNED ACTIVITIES

- Data Collection/Analysis sub-group
  - Gather assessment data, select data for inclusion, define data and a starter list of values from the institutions, and units of measure.
  - Define groupings/panels.
  - Gather and complete list of values and value sets.
- Terminology Development sub-group
  - Review definitions; clarify questions with analysts.
  - Develop final list of observations and send back to group for values.
  - Map observations to LOINC.
  - Create LOINC request and submit.
  - Map values to SNOMED CT.
  - Create S-CT request and submit.
- Implementation/Dissemination sub-group
  - Discuss how terminologies are implemented within different systems.
  - Implement in systems and identify the challenges.
  - Usability testing.
- Future or ad hoc sub-groups
  - Publications:
    - Style guides: content, implementation
    - Manuscripts
    - Tutorials
  - Modeling

# Engage and Equip all Nurses in Health Information Technology Policy

## PROJECT TEAM

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## PURPOSE

Provide nurses with the education, tools and resources to equip them as knowledgeable advocates for policy efforts that are important to nursing.

## KEY PRIORITIES

- Develop/acquire relevant health IT policy-related educational tools and resources; make them available in a resource library.
- Influence the health IT policy landscape.
- Collaborate in policy efforts with other like-minded professional groups.
- Leverage relevant policy positions for advocacy efforts.

## PLANNED ACTIVITIES

- Continue to populate resource library in Drop Box.
- Map current resources to those in the resource library at the Robert Wood Johnson Foundation Nursing and Health Policy Collaborative at the University of New Mexico.
- Consider use of this public-facing resource in a formal collaboration with the Robert Wood Johnson Foundation Nursing and Health Policy Collaborative at the University of New Mexico.
- Formalize recommendation for next steps to the Nursing Knowledge: Big Data Science Initiative including a proposed repository, process for content review, sustainability, and benefits.
- Develop a communication/awareness plan.



# Mobile Health Data

## PROJECT TEAM

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## PURPOSE

Explore the use of mobile health (mHealth) data by nurses including both nursing-generated data and patient-generated data. Identify and support activities and resources to address unmet needs and create opportunities to utilize mHealth data within nursing workflows.

## KEY PRIORITIES

- Collect use case examples to support dissemination and collaboration.
- Identify gaps and define mHealth requirements and specifications.
- Explore alignment and incorporation of mHealth data into existing data models.

## PLANNED ACTIVITIES

- Once examples are collected, use data to identify best practices and generate strategies or guidelines for using mHealth data in clinical care.
- Explore alignment with Social Behavioral Determinants of Health work group.



# Nursing Value

## PROJECT TEAM

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## PURPOSE

Develop a national consensus model to measure patient-level nursing intensity and costs per patient in multiple care settings to support the continuum of care and to produce objective measures of nursing value.

## KEY PRIORITIES

- Request that every registered nurse have a National Provider Identification number.
- Finalize the format for use cases/use stories: template to use across work groups.
- Share the Nursing Value Data Dictionary as a model for use across work groups.
- Lead the first draft template visualization for modeling use across work groups.

## PLANNED ACTIVITIES

- Complete the Nursing Value Data Model Data Dictionary
- Continue to develop and refine Nursing Value User Stories using methodology created in 2015 – 2016 work group year.
- Data definition: map the data dictionary to existing taxonomies and submit missing data elements for taxonomy mapping.
- Create research proposal and submit for IRB.
- Create new nursing business intelligence tools and analytics that will utilize the common data elements to benchmark, compare and trend nursing value.
- Complete feasibility testing at a health care setting.
- Dissemination – ongoing group participation.
- Develop a campaign for all registered nurses to have a National Provider Identification number.
- Demonstrate how to format use cases and use the template visualization for modeling.



# Social and Behavioral Determinants of Health

## PROJECT TEAM

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## PURPOSE

Develop a toolkit of resources to support the inclusion of Social and Behavioral Determinants of Health (SBDOH) in electronic health records, including expected requirements for the CMS Meaningful Use Programs.

## KEY PRIORITIES

- Connect/coordinate with other work groups to consistently address Social and Behavioral Determinants of Health.
- Design and prototype how to consistently capture SBDOHs, building on data, information, and knowledge models from the Scope and Standards of Nursing Practice, comprehensive longitudinal client-centered plan supported by the American Nurses Association, Health Resources and Services Administration, and the Office of the National Coordinator, and review of the literature.
- Assess clinical workflow implications of capturing SBDOHs.





# Transform Documentation

## PROJECT TEAM

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## PURPOSE

Explore ways to decrease the documentation burden and serve up the information already in the electronic health record at the right time in the workflow to support evidence-based and personalized care. Support recommendations from the IOM Report, Best Care at Lower Cost - The Path to Continuous Learning Healthcare in America, to "accelerate the integration of best clinical knowledge into care decisions."

## KEY PRIORITIES

- Move from silos of documentation based on disciplines.
- Improve representation of the patient story.
- Incorporate documentation across the continuum of care that supports a patient-centered perspective.
- Compare repository/library sites to share work group products including the financial and resource commitments needed to create and maintain the repository.

## PLANNED ACTIVITIES

- Continue Precision Nursing exploration with examples that enable and define vision; collect examples of clinical decision support (CDS) that support frontline nurses and enable team care with outcome data.
- Continue to work with major EHR vendors to do SNOMED CT and LOINC terminology mapping within their starter databases for nursing and entire care team.
- Facilitate and inform EHR vendors' streamlining of clinical documentation to optimized workflow to enable Precision Nursing.
- Work with members from vendor and content communities to have the work of the Transform Documentation work group inform their products and development.

### Library Subgroup

- Form grant submission team and submit for 2016-2017 funding. Develop feasibility for methods and source and strategy for on-going maintenance.
- Submit grant application to Agency for Healthcare Research and Quality.
- Explore grant opportunities for proof-of-concept for a repository site and evaluation of the site.

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2017 Nursing Knowledge: Big Data Science conference will be held June 7-9, 2017 at the University of Minnesota, in Minneapolis. For more information, visit <http://z.umn.edu.bigdata>

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