Nursing Informatics Year in Review
April 1, 2012-March 31, 2013

Patricia C. Dykes DNSc, RN
Jane M. Carrington, PhD, RN
Kathy Johnson, RN, PhD(c)
Jane Peace, RN, PhD
Victoria Tiase, RN, MS

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Objectives: Nursing Informatics Year in Review

• Review purpose, objectives and search strategies and associated limitations.
• Identify papers submitted by NENIC members.
• Review 2012-2013 nursing informatics research highlights.
• Discuss strategies for applying nursing informatics research into practice.
To survey the published literature in the area of nursing informatics using the following criteria:

- Research (systematic reviews, RCTs, observational & qualitative research, case studies)
- Informatics
- Published (including early e-published) in peer-reviewed journal between April 1, 2012-March 31, 2013
- First author is an nurse
Objectives

• Describe the corpus of publications collected in terms of:
  – Database
  – Author country
  – Setting
  – Topic
Search Strategies in Databases

- Databases: CINAHL, PubMed
- Terms: “nursing informatics” combined with keyword “research”, narrowed to publication dates April 1, 2012- March 31, 2013
- Exclusions: Articles that focused on informatics education programs
Search Results

Identification
- Records identified through database searching (n=41)
  - Pubmed: 33
  - CINAHL: 8
- Records identified through NENIC membership (n=12)

Eligibility
- Records after duplicates removed (n=58)
- Records identified through AMIA membership (n=6)
- Records excluded because no RN 1st author, not research, not informatics (n=23)

Included
- Records identified for eligibility (n=35)
- Studies included in evaluation (n=35)

Limitation: RN as first author exclusion criteria limited several papers that are relevant to nursing informatics.
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# Papers Submitted by NENIC Members

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Journals

- CIN: Computers Informatics & Nursing
- IJMI: International Journal of Medical Informatics
- NO: Nursing Outlook
- JAMIA: Journal American Medical Informatics Association
- JOGN: Journal of Gerontological Nursing

- 50%
- 24.14%
- 10.34%
- 6.90%
- 6%
- 58.62%
Countries of First Author

- USA: 76%
- Canada: 6%
- Taiwan: 6%
- Finland: 6%
- UK: 3%
Research Settings & Topics

**Settings**
- Education
- Home
- Hospital
- Online
- Ambulatory
- School Health
- Other

**Topics**
- BCMA/eMAR
- EHR/Documentation
- Human Computer Interaction
- Communication
- Decision support
- Monitoring
- Simulation
- Standards/Terminology
- Transitions/handoffs
- Other
Research Topics

- Other: 20%
- EHR/Doc: 17%
- Communication: 14%
- CDS: 14%
- Terminology: 14%
- HCI: 6%
- Handoffs: 6%
- Simulation: 3%
- Bar Code/eMAR: 3%
- Monitoring: 3%
2012-2013 Highlighted Publications

• **Topic:** Monitoring  
• **Purpose:** Technology evaluation  
• **Setting:** Community (Elderly Independent Living)  
• **Methods:** Mixed-qualitative and quantitative; retrospective/prospective  
• **Intervention:** In-home sensors delivered data driven alerts to a nurse care coordinator indicating potential decline in health status  
• **Outcomes:** Functional performance, mental status, ease of use  
• **Findings:** System identified decline in walking function and hand grip function 1-2 weeks earlier than traditional assessment methods. Sensors-participants reported increased confidence in sensor data and relevance of data. Found the system easy to use.

- **Topic:** Communication
- **Setting:** Acute Care Hospital
- **Purpose:** To identify the “core set” of information needed by patients to engage in their recovery plan
- **Methods:** Mixes qualitative/quantitative-focus groups and survey
- **Findings:** Patient and nurse bedside information priorities are different. Pts sought information about their progress towards recovery, schedule and hospital routines, medications, and personalized health information. Nurses sought information to facilitate safety and efficiency. Privacy was a shared concern (pts and RNs)

- **Topic:** Communication
- **Setting:** Acute Care Hospital
- **Purpose:** To develop and pilot test an electronic bedside communication center (eBCC) prototype to improve access to health information for hospitalized adults and their family caregivers
- **Methods:** Qualitative/bedside usability testing
- **Findings:** Qualitative methods within an iterative, participatory approach supported the development of an eBCC prototype that was considered both easy to use and helpful for accessing tailored patient information during an inpatient hospitalization to receive acute care.

- **Topic:** Decision support
- **Purpose:** EHR evaluation
- **Setting:** Hospital (Kaiser Permanente)
- **Methods:** Interrupted time series 2003-2009
- **Intervention:** EHR with nursing documentation and alerts to support documentation of pressure ulcer/fall risk assessments and interventions
- **Outcomes:** Percentage of completed risk assessments and rates of pressure ulcers and falls
- **Findings:** Increased rates of documentation of pressure ulcer assessment (significant) and falls (not significant); nursing documentation risk assessment tools in EHR associated with decreased pressure ulcers, but not falls

**Topic:** Other (Information needs)  
**Purpose:** Analyze type of tasks/information gaps in ICU  
**Setting:** Acute Care Hospital (ICU)  
**Methods:** Mixed methods- Observations, storyboards, concept mapping  
**Findings:** Information in ICU was fragmented with many gaps. Information difficult to access or difficult to read at a distance. More integrated displays are needed to prevent errors and to enhance practice.  
**Recommendations:** Authors recommend integrated, consolidated information displays to improve RN’s situational awareness (SA)

- **Topic**: Terminology/Standards
- **Purpose**: To create an interoperable set of nursing diagnosis for use in patient problem list in EHR to support interoperability
- **Setting**: NA
- **Methods**: Queries executed against the UMLS Metathesaurus
- **Findings**: 1320 concepts were returned by search in UMLS query. 591 concepts mapped in SNOMED. Final cleaned dataset $n=369$

- **Topic**: Terminology/Standards
- **Purpose**: To develop and evaluate prototype Continuity of Care Record (CCR) with context-specific links to electronic HIV information resources
- **Setting**: Ambulatory care
- **Methods**: Think-aloud usability evaluation
- **Findings**: Case managers found prototype to be convenient, easy to use and to understand. Areas for improvement include labels for resources and additional resources

• **Topic:** Handoff

• **Purpose:** To introduce a communication handoff tool that was succinct, comprehensive, and in a format immediately usable and relevant to the routine patient population.

• **Setting:** Acute Care Hospital

• **Methods:** Mixed-participatory design for tool development and survey evaluation

• **Findings:** Easy to use and efficient. The electronic SBAR tool was a reliable and standard way to provide a patient handoff without interrupting the workflow (sample tool included in article)

• **Topic:** BCMA/eMAR

• **Purpose:** To discuss the varying success in utilization of BCMA on medical-surgical units and in ED

• **Setting:** Acute Care Hospital (ED/Med-Surg)

• **Methods:** Utilization report analysis

• **Findings:** Inability to use BCMA (verbal orders, or to document meds distributed by the prescribing providers), alert fatigue, unique nursing workflow impeded use in ED. Hardware problems affected all users.

- **Topic:** Other (Health literacy)
- **Purpose:** To systematically review current health literacy (HL) instruments for use in consumer-facing and mobile health information technology screening and evaluation tools
- **Setting:** NA
- **Methods:** Systematic review
- **Findings:** 11 different instruments found. Screening questions (e.g., asking a patient about need for assistance in navigating health information) were evaluated in 7/11 studies — promising for use as a valid, reliable, and feasible computer-based approach to identify patients that struggle with low health literacy.

Limitations include 1) lack of consistency in the types of screening questions proposed and 2) lack of information regarding the psychometric properties of computer-based health literacy instruments.

- **Topic:** EHR/Documentation
- **Purpose:** To evaluate the feasibility of the national nursing model and usability of four widely used nursing documentation systems and to study their usefulness in multi-professional collaboration and information exchange
- **Setting:** NA
- **Methods:** Mixed-Qualitative usability methods including scenario walkthroughs, contextual inquiries, thematic interviews, and inspection-based expert reviews
- **Findings:** The nursing process model was shown to be feasible in nursing practice but the national nursing classification was considered too detailed, multi-layered and difficult to use and understand.
- **Recommendations:** nursing models should support documentation and information utilization

- **Topic:** EHR/Documentation
- **Purpose:** To use the Plan-Do-Study-Act process for creating and implementing a nursing decision support to improve guideline adherence for a “high priority condition”, hypoglycemia management
- **Setting:** Acute Care Hospital
- **Methods:** Plan-do-study-act
- **Findings:** Reported on the finished decision support algorithm and documentation tools (samples provided). Anticipates that embedding reminders will help nurses to easier to learn the guidelines.

- **Topic:** Decision support/mobile technology
- **Purpose:** To explore the use of personal phones by nursing students in clinical settings to assist with clinical decisions and to promote confidence in patient care
- **Setting:** Education
- **Methods:** Mixed methods-Qualitative, descriptive, content analysis of student logs
- **Outcomes:** frequency of phone use; number of times per day references/internet accessed to assist with patient care. Perceptions phone use from students/nursing staff perspectives
- **Findings:** All students reported phones were easy to use, most commonly used to look up information related to medication administration. Students reported increased confidence with phone use. Staff nurses perception was that phones made students more “prepared” for clinical assignment. Barrier- cost.
In 2012-2013 nursing informatics research was published on a wide variety of topics and in informatics, nursing and health care journals.

NENIC members are significant contributors to the nursing informatics research literature.

Excluding nursing informatics research publications with first authors who are not nurses, precludes some papers that are relevant to nursing informatics.
Discussion Questions

• Which of these studies have relevance for your practice?
• What are the barriers to implementing the findings from these studies?
• What recommendations do you have for future research?