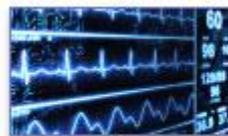


Nursing Informatics Year in Review

April 1, 2012-March 31, 2013

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May 3, 2013



data



information



knowledge



wisdom

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.

Purpose

- 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

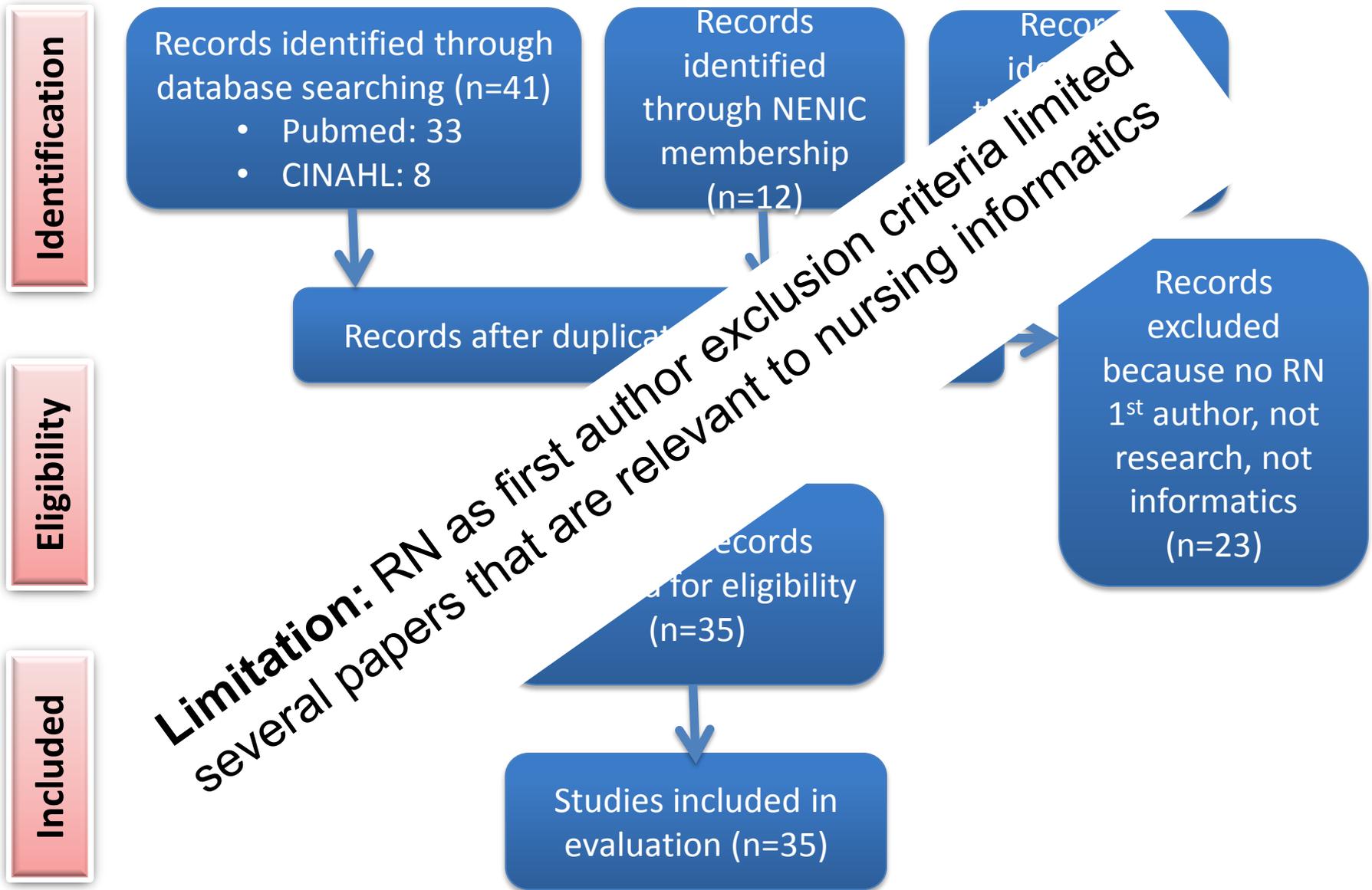
Objectives

- 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



Papers Submitted by NENIC Members

Author	Title	Journal
N. Glover	<i>Challenges implementing bar-coded medication administration in the emergency room in comparison to medical surgical units.</i>	Comput Inform Nurs, 2013. 31 (3): p. 133-41.
N. Watkins	<i>Destination bedside: using research findings to visualize optimal unit layouts and health information technology in support of bedside care.</i>	J Nurs Adm, 2012. 42 (5): p. 256-65.
S. Collins	<i>Workarounds Used by Nurses to Overcome Design Constraints of Electronic Health Records.</i>	The 11th International Congress on Nursing Informatics. 2012. Montreal, Canada.
S. Collins	<i>Health literacy screening instruments for eHealth applications: a systematic review.</i>	J Biomed Inform, 2012. 45 (3): p. 598-607.

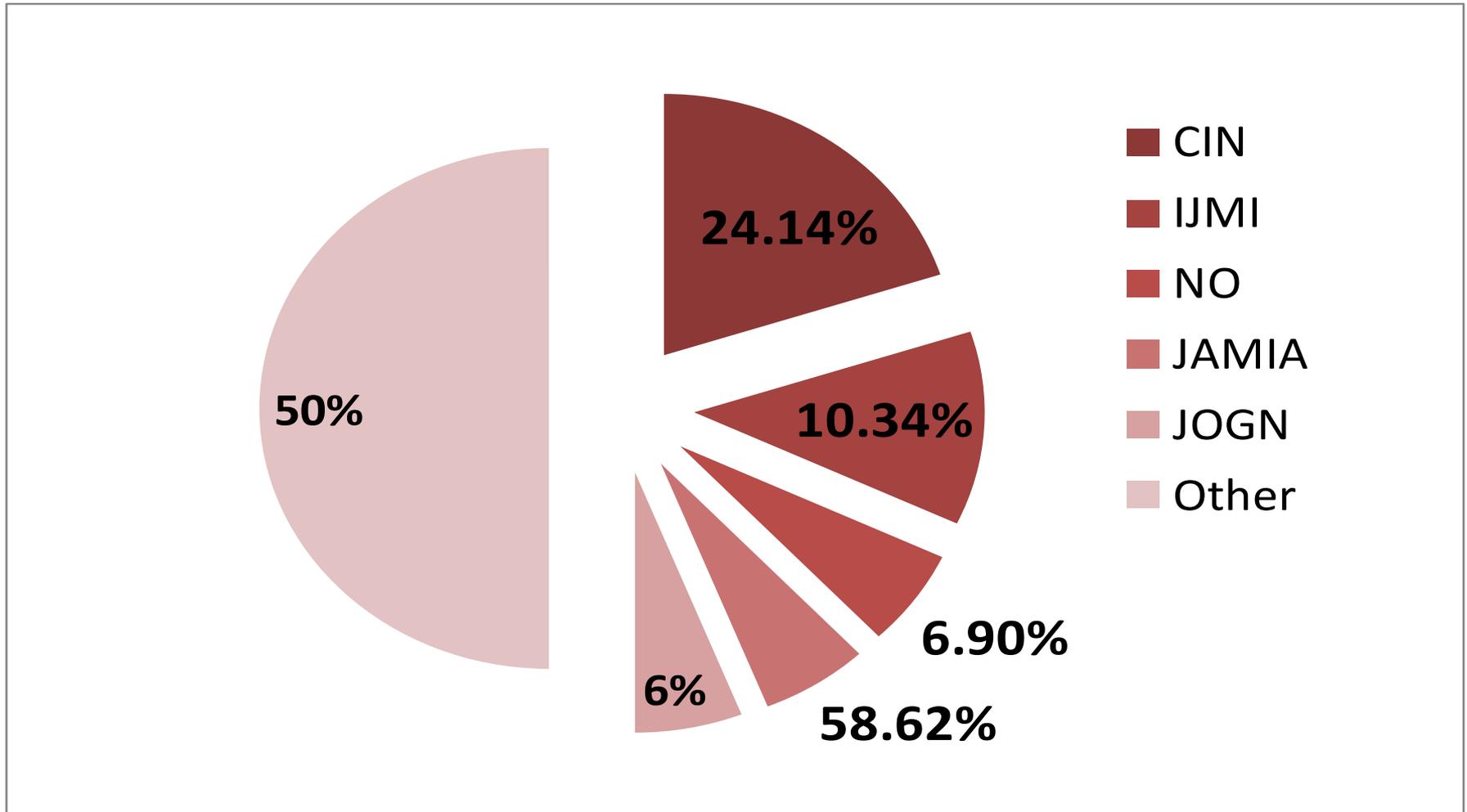
Papers Submitted by NENIC Members

Author	Title	Journal
S. Collins	<i>In search of common ground in handoff documentation in an Intensive Care Unit.</i>	J Biomed Inform, 2012. 45 (2): p. 307-15.
C. Caligtan	<i>Bedside information technology to support patient-centered care.</i>	Int J Med Inform, 2012. 81 (7): p. 442-51.
P. Dykes	<i>Building and testing a patient-centric electronic bedside communication center.</i>	Journal of Gerontological Nursing, 2013. 39 (1): p. 15-9.
R. Newhouse	<i>Methodology issues in implementation science.</i>	Med Care, 2013. 51 (4 Suppl 2): p. S32-40.
P. Dykes	<i>A case control study to improve accuracy of an electronic fall prevention toolkit.</i>	AMIA Annual Symp Proc, 2012. 2012 : p. 170-9.

Papers Submitted by NENIC Members

Author	Title	Journal
I.C. Hou	<i>A modified Delphi translation strategy and challenges of International Classification for Nursing Practice (ICNP).</i>	Int J Med Inform, 2012.
D. Carroll	<i>An electronic fall prevention toolkit: effect on documentation quality.</i>	<i>Nurs Res, 2012. 61(4): p. 309-13.</i>
U. Kinnunen	<i>Developing the standardized wound care documentation model: a Delphi study to improve the quality of patient care documentation.</i>	J Wound Ostomy Contience Nurs, 2012. 39(4): p. 397-407; discussion 408.

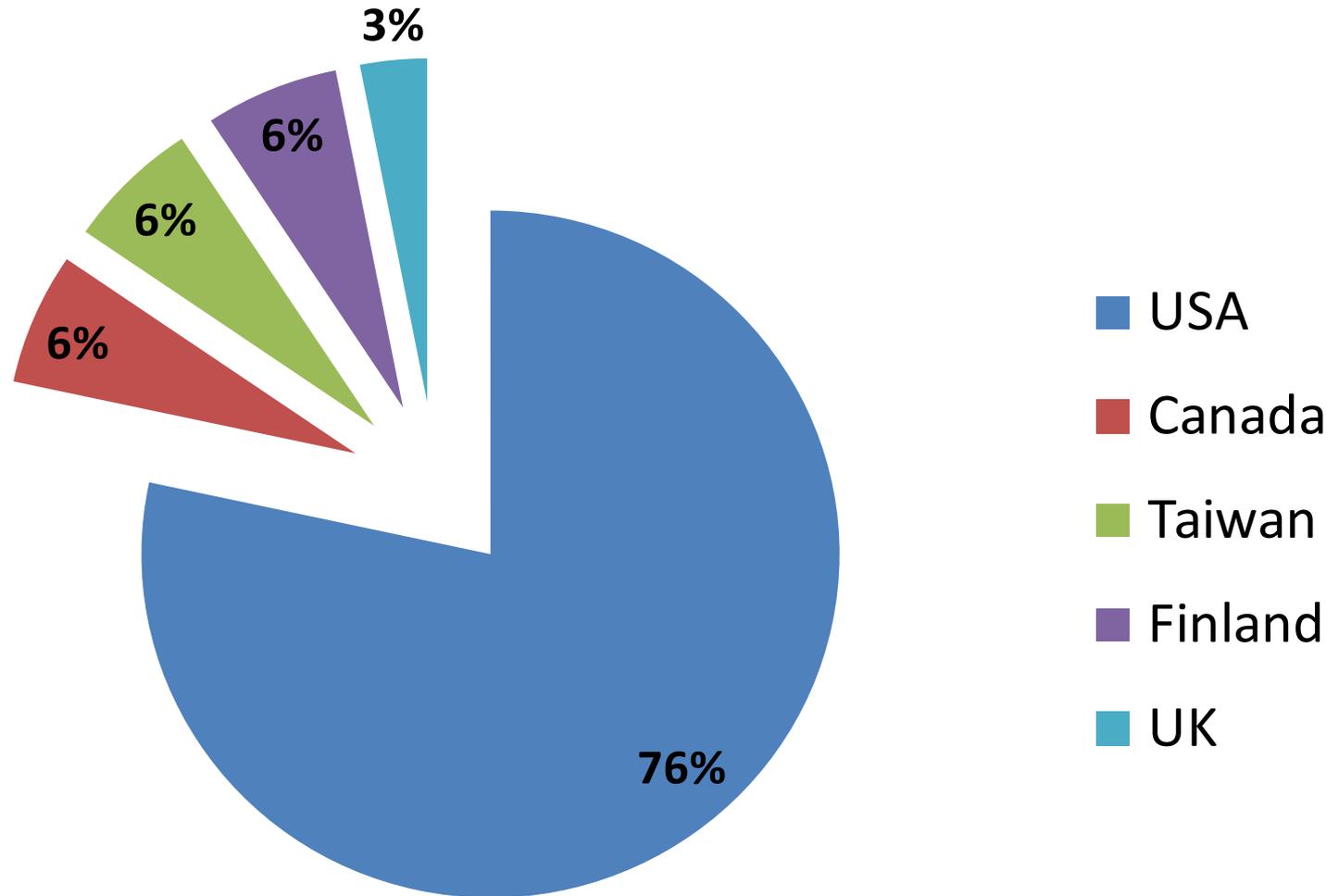
Journals



- CIN: Computers Informatics & Nursing
- IJMI: International Journal of Medical Informatics
- NO: Nursing Outlook

- JAMIA: Journal American Medical Informatics Association
- JOGN: Journal of Gerontological Nursing

Countries of First Author



Research Settings & Topics

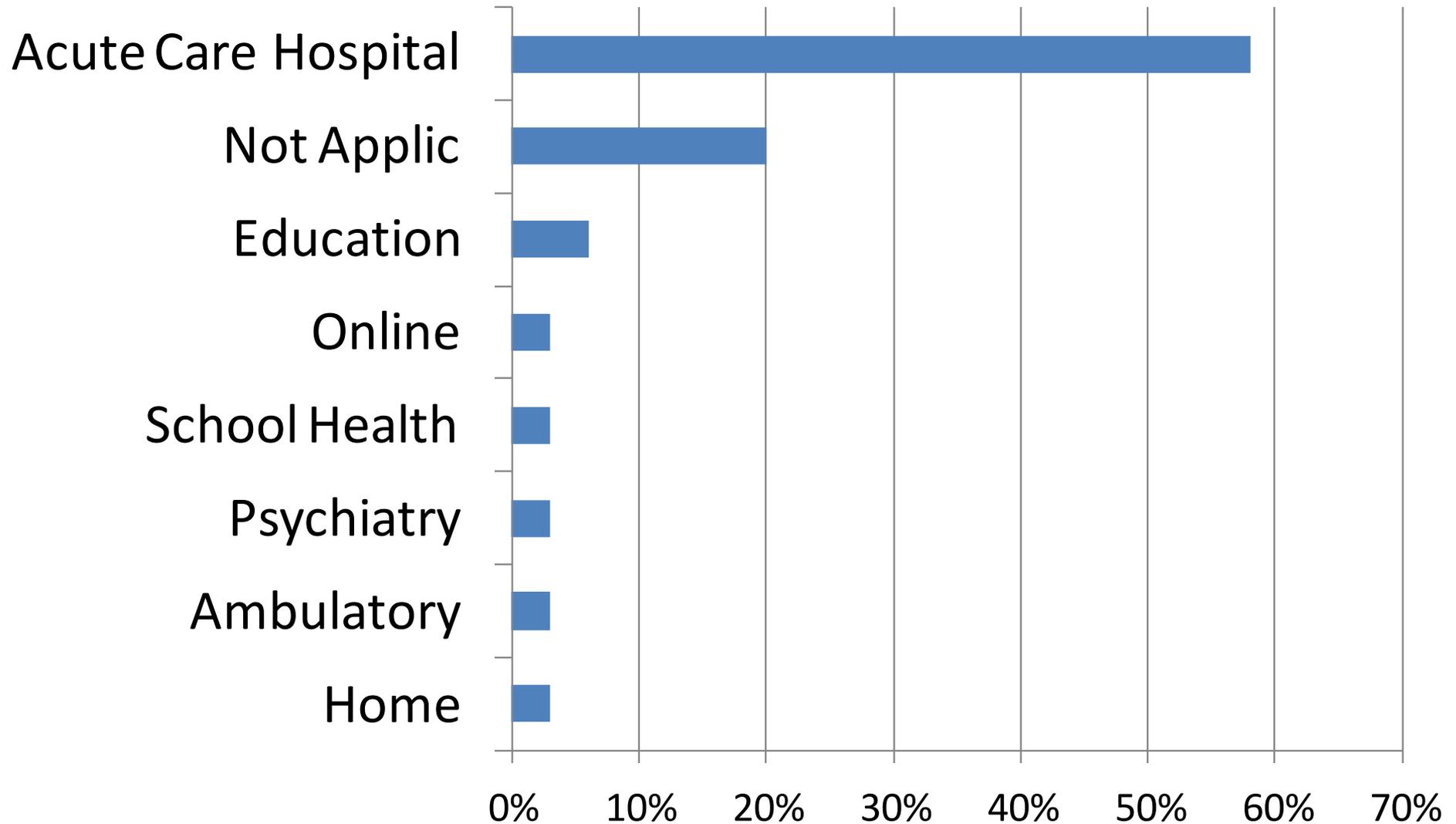
Settings

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

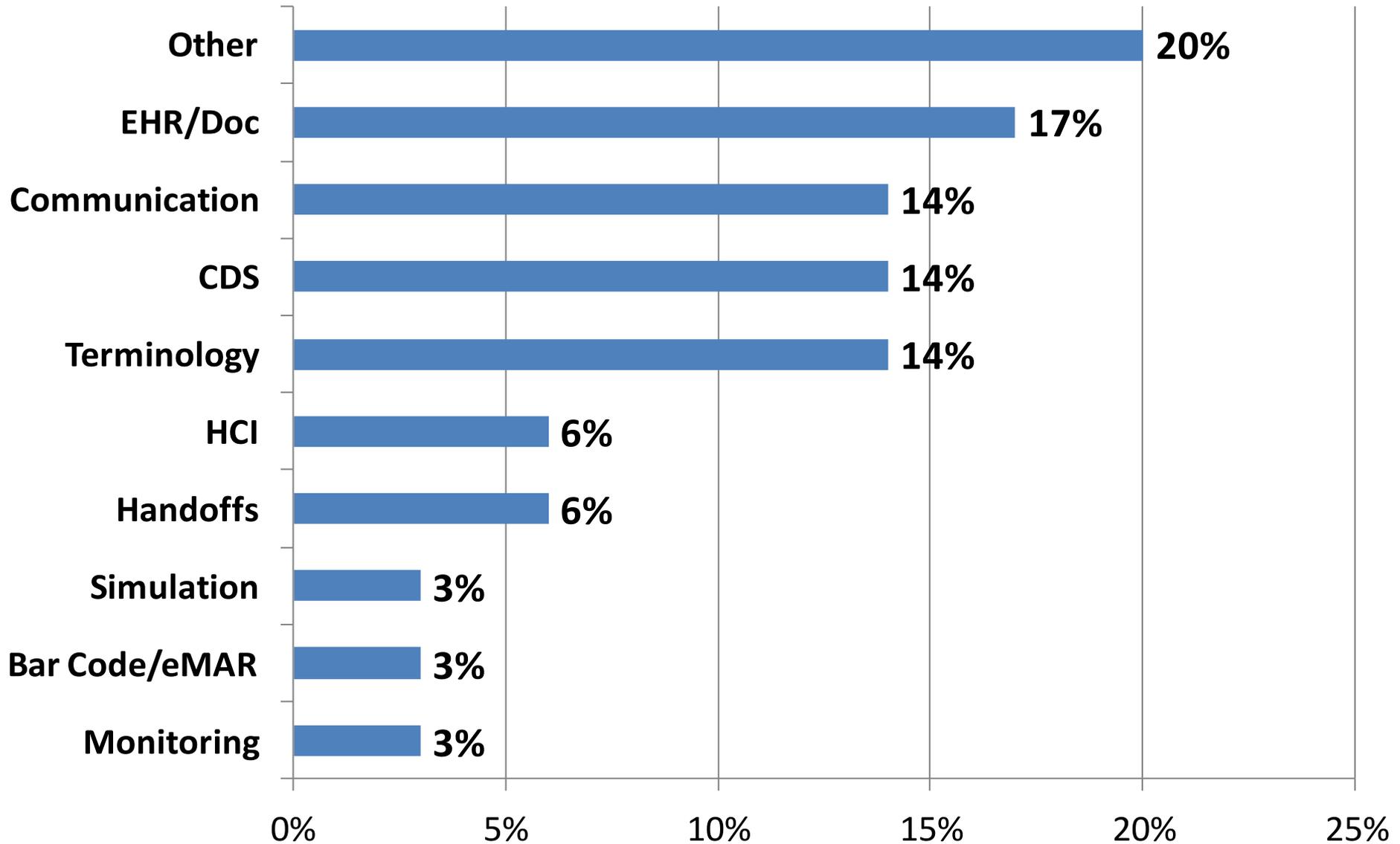
Topics

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

Research Setting



Research Topics



2012-2013 Highlighted Publications

Rantz, M. J., Skubic, M., Koopman, R., Alexander, G.L., Phillips, L., Musterman, K., Back, J., Aud, M. A., Galambos, C., Guenvara, R.d. Miller, S.J. (2012). Automated technology to speed recognition of signs of illness in older adults. *Journal of Gerontological Nursing*, 38(4), 18-23.

- **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.

Caligtan, C. A., Carroll, D. L., Hurley, A. C., Gersh-Zaremski, R., & Dykes, P. (2012). Bedside information technology to support patient-centered care. *International J of Medical Informatics*, 81, 442-451.

- **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 recover, 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)

Dykes PC, Carroll DL, Hurley AC, Benoit A, Chang F, Pozzar R, Caligtan CA. *Building and testing a patient-centric electronic bedside communication center*. Journal of Gerontological nursing, 2013. **39(1)**: p. 15-9.

- **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.

Dowding, D. W., Turley, M., and Garrido (2012). The impact of an electronic health record on nurse sensitive patient outcomes: An interrupted time series analysis. . *JAMIA* 19, 615-620.

- **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

Koch, S. H., Weir, C., Haar, M., Staggers, N., Agutter, J, Gorges, M., & Westenskow, D. (2012). Intensive care unit nurses' information needs and recommendations for integrated displays to improve nurses' situation awareness. *JAMIA* 19, 583-590.

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)

Matney, S.A., Warren, J.J., Evans, J.L., Kim, T.Y., Coenen, A., & Auld, V.A. (2012). Development of the nursing problem list subset of SNOMED CT. *Journal of Biomedical Informatics*. 2012 Aug;45(4):683-8.

- **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

Schnall, R., Cimino, J.J., & Bakken, S. (2012). Development of a prototype continuity of care record with context-specific links to meet the information needs of case managers for persons living with HIV. *International J Medical Inform*, 81, 549-555.

- **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

Wentworth L, Diggins J, Bartel D, Johnson M, Hale J, Gaines K. SBAR: Electronic Handoff Tool for Noncomplicated Procedural Patients. J Nurs Care Qual. 2012 Apr-Jun;27(2):125-31.

- **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)

Glover, N. (2012). Challenges implementing bar-coded medication administration (BCMA) in the emergency room in comparison to medical surgical units. *Comput Inform Nurs*, 2013. 31(3): p. 133-41.

- **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.

Collins SA, Currie LM, Bakken S, Vawdrey, DK, Stone PW. *Health literacy screening instruments for eHealth applications: a systematic review*. J Biomed Inform, 2012. 45(3): p. 598-607.

- **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.

Nykänen P, Kaipio J, Kuusisto A. Evaluation of the national nursing model and four nursing documentation systems in Finland--lessons learned and directions for the future. *Int J Med Inform.* 2012 Aug;81(8):507-20.

- **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

Harrison RL, Lyerla F. Using nursing clinical decision support systems to achieve meaningful use. *Comput Inform Nurs.* 2012 Jul;30(7):380-5.

- **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.

Wittmann-Price RA, Kennedy LD, Godwin C Use of personal phones by senior nursing students to access health care information during clinical education: staff nurses' and students' perceptions. J Nurs Educ. 2012 Nov;51(11):642-6.

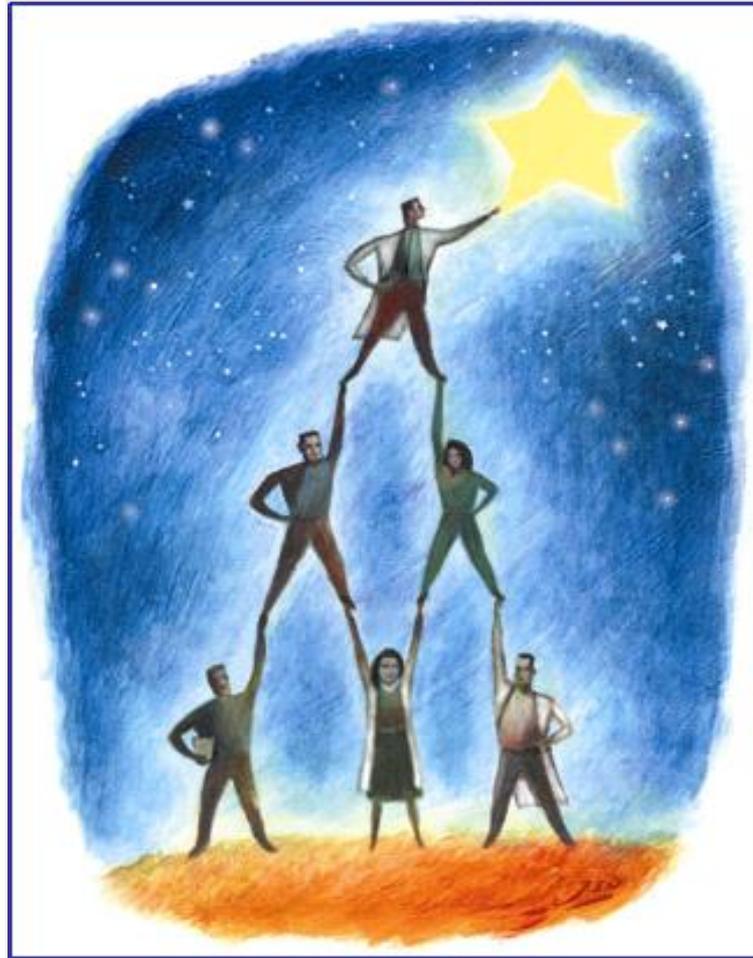
- **Topic:** Decision support/mobile technology
- **Purpose:** To explore the use of personal phones by nursing students in clinical settings to assist with clinical decisions and to promote confidence in patient care
- **Setting:** Education
- **Methods:** Mixed methods-Qualitative, descriptive, content 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.

Summary

- 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?



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