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Nursing Informatics Competencies: Psychometric Validation, Dissemination, and Maintenance of Self-Assessment Tool for Nurse Leaders

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Abstract: Due to rapid advances in technology, HIT competencies for nursing leaders require frequent attention and updating from experts in the field to ensure relevance to nursing leaders' work. This workshop will target nursing informatics researchers and leaders to: 1) learn methods and findings from a study validating a Self-Assessment Scale for Nursing Informatics Competencies for Nurse Leaders, 2) generate awareness of the Self-Assessment scale, 3) discuss strategies for maintenance of competencies overtime and 4) identify strategies to engage nursing leaders in this pursuit.

Keywords: Informatics competencies, self-evaluation tool, psychometric testing, factor analysis

1. Workshop Organization

The proposed speakers are:

Andy Phillips, MGH Institute of Health Professions, Massachusetts General Hospital, Partners Healthcare System, aphillips@mghihp.edu

Andrew B. Phillips, RN, PhD is Assistant Professor at the MGH Institute of Health Professions, School of Nursing, teaching nursing informatics and an adjunct Assistant Professor of Clinical Nursing at Columbia University School of Nursing teaching health policy. Dr. Phillips studies HIT policy and technology transformations in complex adaptive systems. Mr. Phillips has a background as an actuarial consultant, pediatric critical care nurse, and founded a company developing process management software for institutional pension and health funds.

Po-Yin Yen, The Ohio State University, po-yin.yen@osumc.edu,

Dr. Yen is a Research Assistant Professor in the Department of Biomedical Informatics (BMI), an adjunct faculty member in College of Nursing at The Ohio State University, and a Nurse Scientist at OSUWMC Health System. She is an expert in HIT usability evaluation, human computer interaction, workflow analysis, time motion study, data visualization, and systematic reviews process improvement.

Mary Kennedy, Organization for Nursing Leaders MA and RI, kennm1@aol.com

Ms. Kennedy is a Nurse and Board Certified in Nursing Informatics. She is currently a Clinical Instructor at Northeastern University. Her past positions

include Director of Clinical Informatics (The Miriam Hospital), North American Product Manager (Deio), Product Manager (Datex-Ohmeda) and project leadership experience implementing various point of care clinical applications.

Sarah Collins, RN PhD, Partners Healthcare System, Brigham and Women's Hospital, Harvard Medical School, sacollins@partners.org

Sarah Collins, RN, PhD is a Senior Clinical and Nurse Informatician in Clinical Informatics Partners eCare at Partners Healthcare System and an Instructor in Medicine at Harvard Medical School and Brigham and Women's Hospital. Her research, as well as her applied clinical informatics work, is focused on modeling, developing, and evaluating standards-based, patient-centered collaborative informatics tools to further patient safety, decision-support, and coordinated care.

2. Workshop Description

2.1. Format

Agenda & Timeline for breakout group discussion: 1) Welcome and opening remarks: Motivation, Opportunities, Progress (15 minutes, Sarah Collins); 2) Nursing Informatics Competencies Factor Analysis (20 minutes, Andy Phillips & Po-Yin Yen); 3) Self introductions by Workshop Participants [if less than 25 participants] (15 minutes, Mary Kennedy); 4) Focus Areas for Breakout group discussion organized by Foundations and Applications for Nursing Informatics Competencies (30 minutes): a) Foundations Path: i. Review of Factor Analysis and outstanding items (Po-Yin), ii. Self-Assessment Tool Implementation and Evaluation (Sarah Collins); b) Applications Path: i. Strategies for maintenance of competencies overtime (Andy Phillips), ii. Strategies to engage nursing leaders, outside the traditional informatics community, in this pursuit (Mary Kennedy); 5) Summation and Next Steps (10 minutes)

2.2. Description

2.2.1. Foundations Path: Nursing Informatics Competencies and Factor Analysis

Our team conducted a 2 year, multi-method study to define and validate Nursing Informatics Competencies for Nurse Leaders. This was done in partnership with the Organization of Nurse leaders MA, RI and NH (ONL) Nursing Informatics and Technology sub-committee. The deliverable from this study is a short, validated self-assessment tool that can be used by Nurse Leaders at healthcare organizations to evaluate their levels of nursing informatics competencies and target learning and professional development opportunities. Phase 1 included a Delphi Survey to capture expert opinion on the relevance and description of each competency. Phase 2 included psychometric testing and factor analysis to validate the competencies.

The Delphi Survey consisted of three rounds with the ONL leadership and members. Based on Westra and Delaney, 108 competencies were included in the first version[1]. Content Validity Index (CVI) was used to analyze survey results[2]. Kruskai-Wallis ANOVA was used to analyze differences among groups of participants. Participants' comments were qualitatively analyzed for items with a CVI <.80 to determine if they should be retained. This process resulted in 74 items. A multi-voting method [3] was utilized to reduce the 74 items from the Delphi process to a 45 item

instrument for testing and feasibility. 539 responses were collected through a survey of nursing leaders (357 valid responses with < 20% missing values). An exploratory factor analysis was performed [3]–[5] including: 1) PA and Velicer's MAP to determine the number of components; 2) Maximum Likelihood (ML)[6]; 3) orthogonal (varimax) and oblique rotations (promax) to assess stability of factor solution across rotation types; and 4) item reductions based upon item loadings and affect on Cronbach's alpha reliabilities[7], [8]. Following item reductions, we repeated procedures until final solution was reached. Preliminary analysis resulted in 5 factors across 26 items. Final results will be presented and discussed during the workshop.

2.2.2. Applications Path: Maintenance, On-going Engagement with Stakeholders, and Use of a Nursing Informatics Competency Tool in the Field

Foundational instrument development is advanced by applying a system lifecycle approach for competency implementation and maintenance and ongoing value- and outcomes-based evaluations that are relevant to stakeholders and their organizations. The mission, vision, purpose, and measurable short and long-term goals of Nursing Informatics Competency Tool implementation will be identified. These concepts will be applied to define a business case for healthcare organizations to adopt tools that support informatics competency attainment for nurse leaders. Rogers Diffusion of Innovation model will be used to frame the discussion of specific activities such as: stakeholder engagement, adoption, integration into practice, and value demonstration[9]. Successful strategies and lessons learned from will be shared.

References

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