February 26, 2021

NI Scope and Standards Revision Workgroup
American Nurses Association
8515 Georgia Ave # 400
Silver Spring, MD, 20910

Re: 2021 Draft Nursing Informatics: Scope and Standards of Practice, Third Edition

Submitted electronically at: https://surveys.nursingworld.org/s3/NI-Scope-and-Standards-Public-Comment?_ga=2.240886789.762523240.1613525638-1968623803.1597777549 and to carol.bickford@ana.org

Dear Members of the NI Scope and Standards Revision Workgroup:

Thank you for the opportunity to provide comments on the 2021 Draft Nursing Informatics: Scope and Standards of Practice, Third Edition.

The Alliance for Nursing Informatics (ANI), co-sponsored by AMIA & HIMSS, advances nursing informatics leadership, practice, education, policy and research through a unified voice of nursing informatics organizations. We transform health and healthcare through nursing informatics and innovation. ANI is a collaboration of organizations that represents more than 20,000 nurse informaticists and brings together 25 distinct nursing informatics groups globally. ANI crosses academia, practice, industry, and nursing specialty boundaries and works in collaboration with the more than 4 million nurses in practice today.

Having reviewed the draft Nursing Informatics: Scope and Standards of Practice, we offer our comments as nursing informatics stakeholders. ANI applauds the rigorous effort of the workgroup in developing this important document. To ensure wide use of this important reference, we strongly recommend substantial revisions to the current draft. ANI offers two overarching recommendations for improvement to the NI Scope and Standards Revision Workgroup.

1. **Increase emphasis on patient-centered and systems perspectives.**
2. **Improvements in clarity and consistency in language and definitions**

Our detailed rationale and comments on specific sections are included below.

1.   Increase emphasis on person-centered and systems perspectives.

ANI has long advocated for person-centeredness in health care and informatics. Patients, their caregivers, and nursing care teams continue to manage care at home. Increasingly policies and practices are shifting to emphasize patient-focused information management, within and outside healthcare settings. Health-related data is being captured and used across diverse settings through sensors,

mHealth, remote monitoring, online communities and more. Informatics Nurses (IN) and Informatics Nurse Specialist (INS) play a significant role in the co-production and co-design of technologies with patients, application and advocacy for person-centered design, support for compliance with information-blocking policies, and the education of patients and families on roles and responsibilities in information sharing and management. In addition, systems-thinking and systems design are important foundational concepts of nursing informatics and need to be included in the NI scope and standard of practice.

2. Improvements in clarity and consistency in language and definitions

ANI strongly recommends that the NI Scope and Standards of Practice documents be reviewed and revised for clarity. Most notably, the use of the acronyms for IN and INS is inconsistent throughout the document, causing some distraction. In addition, we encourage the use of high-level language as appropriate (e.g., connected health instead of telehealth). Finally, there is not a clear connection between the scope and the standards. For clarity, ANI recommends developing a crosswalk to connect the two parts of the document, including changes from the previous NI Scope and Standards.

Comments on specific sections
1. *Introduction, Scope, Value Statements (pp.3-10, lines 39-197):*
   ANI applauds the ANA in working towards transparency by describing how the Scope and Standards of Practice document was developed. However, this description (pp.3-4, lines 40-63) would be most beneficial as an appendix.
   ANI emphasizes the importance of the Nursing Informatics: Scope and Standards of Practice as an accessible and easily readable resource. Including too much spurious information or adding unnecessary complexity has the potential to hamper the utility and usability of this important document substantially.
   Figure 1 (p.5) may be a better fit for the following section on metastructures. As currently presented, the figure is overly complex and does not appear to contribute to an improved understanding of the definition of nursing informatics.

2. *Metastructures (pp. 10-15, lines 198-283)*
   This section goes into substantial detail on the D-I-K-W framework; however, it lacks essential metastructures from cognitive psychology and decision-making sciences, which have a strong basis in evidence and are vitally important for nursing informatics practice and science. Also, the narrative around Figures 1 through 3 seems to imply a strong connection between these three frameworks and somewhat based on one another. Still, this connection and/or historical progression is unclear. The inclusion of all three frameworks without a clear understanding of how they relate to one another adds unnecessary complexity to this section.

3. *The Theory of Wisdom (pp. 15-18, lines 284-339)*
   While the Theory of Wisdom in Action has great potential in furthering the understanding of the concept and wisdom in nursing practice, this theory is relatively early in its evolution and has not been applied to the context of NI (as indicated in line 288). As indicated in the most recent publication on the model, there is preliminary evidence supporting the utility of this theory, based on a study of 30 emergency department nurses, but the model has not yet been evaluated in other settings.[1] As such, ANI questions whether this section is fully appropriate to the Scope of Nursing Informatics. Contrastingly, there is a strong evidence base for cognitive science and human decision-making theories as underlying frameworks for nursing informatics practice and

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[1] Matney SA, Avant K, Clark L, Staggers N. Development of a Theory of Wisdom-in-Action for Clinical Nursing. *Advances in Nursing Science.* 2020;43(1):28–41. doi: 10.1097/ANS.0000000000000304.

science. For example, when NI studies workflow, it uses cognitive task analysis, and instruments that measure cognitive load. Perhaps a more appropriate focus of this section would be these more established theories that underlie contemporary NI practice and have a strong basis in evidence. The theory of wisdom could be included and discussed, with care, as an emerging but not yet robustly applied and tested in the domain of nursing informatics.

4. *Value of Integration and Other Content (pp. 18-21, lines 340-410)*
To reflect the diverse settings nursing informatics practice and science occurs, we suggest that the focus in this section be expanded beyond electronic health information systems (page 2, line 345), to include the use of technology at the point of care and the point of need, and the use of clinical information across the care continuum including where patients live, work and play.

5. *Concepts and Tools (pp. 21-32, lines 411-640)*
The use of phrases related to artificial intelligence in this section are not consistent with the definitions commonly used by others in the biomedical informatics space. Examples include the following:
>   Line 482, while semantic representation and extraction of semantic concepts is a common application of NLP, not all NLP is semantic. Another common use of NLP is syntactic analysis.
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>   Lines 484-485, Machine Learning (ML) procedures do not only utilize structured data. Further, ML are generally not considered statistical methods, although there are some examples of ML algorithms developed in parallel by both statistical and CS communities (CART, C4.5). Additionally, it is misleading to say that ML is often applied within the NLP space. Rather, ML and NLP are often used together to automate NLP processes.
>
>   Line 488, Clustering in only one of the many applications of ML.
>   We recommend worrying less about the distinctions or differences between the concepts in favor of discussing their applications and potential use cases. For example, spending more time discussing how natural language processing can be used for information extraction from text data or how predictive analytics can include diverse data sources for predicting an infinite number of outcomes would be of higher yield than attempting to describe the overlaps and differences between NLP and predictive analytics.
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>   Lines 622-623, A list of free, non-durable web resources does not seem appropriate for this type of document. In addition, we suggest that any resources shared should be thoroughly vetted.

6. *Professional Practice (pp. 32-37, lines 641-760)*
Pp. 35-36, lines 709-747. We suggest that the focus on the Project Management Institute and their frameworks is not the best use of this space. Various project management frameworks exist, and the choice of framework may vary based on setting and context. Rather, we suggest focusing on the project management skills and functions integral to NI.

7. *Clinical Informatics, Data Management & Analytics (pp.37-47, lines 761-1002)*
P37, from line 761. The distinction of clinical informatics from nursing or health informatics is unclear as written, and the discussion of the different terms may be unnecessary. There should be an acknowledgement of variation in this classification/ use of terms. Many would consider clinical informatics very closely to nursing informatics, and for all these branches to fall under the

term "biomedical informatics". We highly recommend aligning with recent efforts of the AMIA community in delineating domains, tasks, and knowledge for health informatics[2] and clinical informatics[3] practice.

P39, lines 796-797 This final summary sentence on the contribution of informatics nurses is unclear and difficult to understand as written.

P41, from line 844. The mention of one of the most commonly used and contemporary common data models, the Observation Medical Outcomes Program (OMOP), is missing from this document. We believe nurse informaticists should at least be aware of the existence and structure of this data model. In addition, there is no mention of the United States Core Data for Interoperability (USCDI) and the Standards Advancement Process. We recommend these be included, given their importance in national interoperability and standardization efforts.

8. Research and Evaluation (pp. 48-52, lines 1003-1091)
    No comment

9. Evolution of NI Competencies (pp. 52-63, lines 1092-1334)
    Pp 52-53, lines 1103-1133. We suggest that this section include a discussion of the role of IN and INS in education. As informatics competencies become requisite for all registered nurses, the expertise of IN and INS will be integral to support faculty in the development and implementation of new curricula and course development.

10. *Ethics (pp. 63-68, lines 1335-1447)*
    This section lacks a discussion of the important role of NI in ethical issues and algorithmic bias. The potential for doing harm in this area of work is very real and this should be discussed. It is important to include in the scope of practice for IN and INS the role they play in evaluating and minimizing bias at every level of the algorithmic development process – from source data to model evaluation and ongoing monitoring of models that have been deployed. Nursing informatics experts are skilled in bridging the lens of the often complex and interdependent ethical, legal, and social issues in the use of technology, for the nursing, for patients and family caregivers and communities. We reiterate our previous comments on the ANA's proposed position statement on the Ethical Use of Artificial Intelligence in Nursing Practice and offer our professional nursing and informatics expertise to further develop this section.

    ANI recommends that a discussion of relevant ethical issues be infused into relevant sections throughout the document, along with clarifications of the role of NI in addressing those. ANI strongly recommends the acknowledgement of systemic racism and implicit bias in a document governing the practice of nursing informatics, and explicit identification of our responsibilities in mitigating it. Clinical decision support, AI, and systems of care dependent upon access to technologies and high-speed internet are all examples of areas where the risks for bias, exclusion, and harm is grave. There is a need for further discussion of the role of NI in considering and addressing these risks.

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[2] Cynthia S Gadd, Elaine B Steen, Carla M Caro, Sandra Greenberg, Jeffrey J Williamson, Douglas B Fridsma, Domains, tasks, and knowledge for health informatics practice: results of a practice analysis, *Journal of the American Medical Informatics Association*, Volume 27, Issue 6, June 2020, Pages 845–852, https://doi.org/10.1093/jamia/ocaa018

[3] Howard D Silverman, Elaine B Steen, Jacqueline N Carpenito, Christopher J Ondrula, Jeffrey J Williamson, Douglas B Fridsma, Domains, tasks, and knowledge for clinical informatics subspecialty practice: results of a practice analysis, *Journal of the American Medical Informatics Association*, Volume 26, Issue 7, July 2019, Pages 586–593, https://doi.org/10.1093/jamia/ocz051

11. *Innovative Future (pp. 68-88, lines 1448-1915)*
    The section beginning on Line 1558 is missing a number of evolving technologies. Many mentioned are already commonplace. The gaming/VR section is missing Augmented Reality (AR) and does not mention the use of AR/VR in nursing education, especially during COVID.

    Wearables, body worn sensors, digital health and mobile applications, and home based sensors are not necessarily innovative; however, the use of PGHD and environmental data integration is an emerging need. The interoperability section (line 1640) does not belong in this section but fits better with the Value of Integration earlier in the document.

    The machine learning paragraphs (Line 1682) do not belong in this section but may fit better in the earlier concepts section where ML was first introduced. The telehealth section (line 1755) should place an emphasis on remote patient monitoring and less on telehealth as it is not innovative. After line 1811, we would recommend a section dedicated to information blocking as this will be a big part of the immediate future of NI. Please include the role of IN/INSs role in the support of patients/caregivers on how to access, use and share their health data.

ANI appreciates the opportunity to offer our comments to contribute to the latest draft of the Nursing Informatics: Scope and Standards of Practice. We are available and interested in supporting future public responses to this important document.

Sincerely

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The Alliance for Nursing Informatics (ANI), cosponsored by AMIA & HIMSS, advances nursing informatics leadership, practice, education, policy, and research through a unified voice of nursing informatics organizations. We transform health and healthcare through nursing informatics and innovation. ANI is a collaboration of organizations representing more than 20,000 nurse informaticists and brings together 25 distinct nursing informatics groups globally. ANI crosses academia, practice, industry, and nursing specialty boundaries and collaborates with the more than 4 million nurses in practice today. Contact ANI.