

2018

Biography of the
Role Delineation Study
National Survey Results

About this Report

This report pertaining to the practice of nursing informatics was based on the results of a 2013 national study of ANCC board-certified informatics nurses.

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Background

The American Nurses Credentialing Center (ANCC), which was incorporated in 1991 as a subsidiary of the American Nurses Association, is the largest nursing credentialing organization in the United States. Its vision is to drive nursing excellence, quality care, and improved outcomes. ANCC currently offers 25 examinations at various levels, including diploma and associate degree, baccalaureate, and advanced practice for nurse practitioners, clinical nurse specialists, and other disciplines. More than 19,000 candidates took an ANCC certification examination in 2012. In addition to certification, ANCC provides services such as the Magnet and Pathways to Excellence recognition programs for hospitals and other facilities that demonstrate excellence in nursing services, accreditation of continuing education programs, education and consultation services, and outreach to nursing organizations around the globe.

Role Delineation Study Overview

Role delineation or job analysis studies are typically carried out at the national level with the goal of describing current practice expectations, performance requirements, and environments. ANCC has a current goal of conducting a study of each specialty approximately every three years to capture changes in work activities and the knowledge and skill areas required to perform those activities. The findings are used to update the content of its respective certification examinations.

The 2013 Nursing Informatics Role Delineation Study involved two sets of processes or activities that ran more or less concurrently: a national Web-based survey and a linking activity. The national survey was designed to collect information on the work activities informatics nurses perform in practice, while the linking activity identifies the major knowledge and skill areas required to perform the work activities listed in the survey. The results of both of these processes were used in the updating of the test content outlines for each examination contained within the study.

Updated Test Content Outlines

The results of this role delineation study were used for updating the test content outline for the Informatics Nursing examination. Examination forms that are produced based on the Informatics Nursing examination content outline developed through this study are scheduled to go into effect October 25, 2014. A copy of the test content outline is available on the ANCC website.

Role of the Content Expert Panels

Throughout the study, ANCC invited professionals in practice and educators who teach courses relevant to nursing informatics to serve on a content expert panel. The panels developed the work activities and demographic items for the survey, linked knowledge and skill areas to the work activities list, and finalized the test content outlines for the certification examination. All of the content experts serving on the panels were certified by ANCC in informatics nursing and were invited to serve on the panel based upon their expertise in the specialty.

Survey Methodology

The purpose of the development and administration of the national survey was to collect information on the work activities informatics nurses perform in practice. The role delineation study panel met for three days, January 16-18, 2013, to draft a pilot version of the survey and to construct the initial map of knowledge and skill areas relevant to the work activities included in the survey.

Survey Chronology

The survey development and administration timeline was as follows:

January – March 2013

- The role delineation study panel along with staff from ANCC drafted the survey.
- The survey was pilot tested and revised.

April – May 2013

- The final survey was administered on the Web.

June – July 2013

- The survey activity results were analyzed, and activity weights were determined.
- Each panel met to review the survey results and activity weights.

Sample Selection

On January 1, 2013, there were approximately 1,039 ANCC board-certified informatics nurses. Fifty of these nurses were randomly selected to participate in the pilot survey. The rest were invited to participate in the national survey.

Survey Development and Measures

On January 16-18, 2013, the role delineation study panel met in Silver Spring, Maryland, to draft the national Nursing Informatics Role Delineation Study survey for the 2013 role delineation study. The panel members reviewed the work activities that had been used in the ANCC's previous nursing informatics role delineation as well as *Nursing Informatics: Scope and Standards of Practice* (ANA, 2008). They also discussed any additions, deletions, and changes they would make to update the previous work activity list to reflect current practice of nursing informatics. As a result of this meeting, the panel reached consensus on a list of 72 work activities, also known as task statements, to be used in the 2013 survey. These work activities were divided into eight domains: Administration and Leadership, System Analysis, Security and Compliance, Interoperability, System Design and Development, Professional Development and Education, Advocacy and Policy Development, and Evidence-based Practice and Research. The complete text of the work activities list is presented in Appendix A. The panel also identified and finalized a set of 14 demographic questions (see Appendix B).

During the same meeting, the panel reviewed and approved three scales that respondents would use to rate the work activities listed in the survey — Frequency (the frequency with which a work activity is performed), Performance Expectation (how soon on the job the performance of an activity is expected), and Consequence (the consequence of performing an activity incorrectly). The Performance Expectation scale was specifically designed to distinguish entry-level skills. These three questions and the instructions for answering them are presented in Table 1.

Table 1. Survey Questions for Rating Work Activity Statements

Performance Expectation:

The point in the career that a nurse, newly certified in nursing informatics, is expected to perform the task.

- Not at all
- After the first six months of certification (does not include exactly six months)
- Within the first six months after certification (includes exactly six months)

Example: Certified public accountants are expected to conduct financial audits in the first six months after certification, but client management would be performed later in the career.

Consequence:

The degree to which a member of the public or other stakeholder would be physically, emotionally, or financially harmed if the nurse, newly certified in nursing informatics, failed to perform the described duties competently.

- No harm
- Minimal harm
- Moderate harm
- Substantial harm
- Extreme harm

Example: It is critical that workers on high-rise buildings maintain a grip on their hammers. (Failure injures the public walking below and impacts other stakeholders such as employers, insurers, etc.)

Frequency:

The time during a one year period that the nurse, newly certified in nursing informatics, spends performing the described duties:

- Never
- Rarely
- Sometimes
- Often
- Repeatedly

Example: Flight attendants open soft drinks for passengers repeatedly, yet this job duty is neither important nor critical.

The study design included the panel review of Performance Expectation and the computation of a value, Risk, defined as the product of Frequency and Consequence. High values of Risk were associated with high values of both Frequency and Consequence whereas low values were associated with low values of those two measures. Although Performance Expectation was not used in the computation of Risk, the values of Performance Expectation were reviewed by the panel, resulting in the exclusion of some activities from the final list of performance tasks and test content outline. As such, Performance Expectation was treated as more critical than the measures of Consequence and Frequency. This scheme emphasized the work activities that are required of newly certified specialists and have the greatest impact on public health or safety.

Survey Results

Data Collection

Pilot Testing. Using the same procedures intended for administering the national data collection, the survey was piloted in March 2013. Fifty ANCC board-certified informatics nurses were randomly selected from across the nation to take the pilot survey. Overall, 24 (48%) of the informatics nurses invited to take the pilot survey responded.

The respondents of the pilot test in general indicated that the work activities were appropriate and reflective of the job of the informatics nurse. During the review of the pilot survey results, the role delineation panel made minor adjustments to the demographic questions used to demonstrate the characteristics of the respondents.

National Survey. In April 2013, the remainder of the 1,039 ANCC-certified informatics nurses were sent notifications via the United States Postal Service (USPS) and email. In addition, a follow-up reminder letter was mailed through USPS, and email reminders were sent on about a weekly basis. The notifications explained the purpose and importance of the study, the eligibility criteria of the study, and how to access the survey via the Internet. The letters also indicated that the participant's responses would be kept confidential.

In addition, the notifications indicated that respondents completing the survey received a five-hour reduction of their continuing education requirement for their ANCC recertification. The reminder letters were sent only to those who had not yet responded to the survey. At the end of the survey, 491 (56%) nurses had submitted results.

Data Analysis

The ratings of Performance Expectation were not used numerically in the computation of the test specifications. The role delineation panel evaluated the measures of Performance Expectation during the review of the survey results. Tasks for which the distribution of Performance Expectation ratings showed a substantial number of ratings of 1 and 2 were removed from the list of tasks appropriate for inclusion in the certification examination for informatics nursing.

It should be noted that the role delineation panelists anticipated removing some tasks because they were unable to reach consensus on expected entry-level performance of those tasks during the initial study, and they felt it would be better to defer the decision until they could review the survey data.

To compute the weight of each task, a quantity, Risk, was defined as the product of Consequence and Frequency. All the values of Risk are added, and this sum becomes the divisor for each value of Risk to produce the Weight of the task. (Weight is the normalized value of Risk, and the sum of all weights is one.) The values of Weight represent the fraction of the exam that will pertain to the associated task. (Multiplied by 100, these weights become percentages.)

These data were reviewed in detail in the second role delineation study panel meeting, held June 26-28, 2013. In particular, panelists examined the mean Performance Expectations ratings of the tasks to determine if the survey respondents considered a task too elementary or too advanced for inclusion on the examination. For those tasks so identified, the value of Risk

was changed from the computed value to zero so that the task would add no weight to the final test content outline. These data are presented in Appendix C.

Description of Survey respondents

The survey respondents reported being, generally, female (87.5%) and white (88.7%). They were well educated, with over half (51.8%) reporting a master's degree and nearly one-third (32.5%) reporting a bachelor's degree, both in nursing. Almost half (44.4%) reported degrees outside of nursing, with 53.8% reporting a master's degree and 29.2% reporting a bachelor's degree. The respondents also reported holding a variety of other certifications.

Just over half (51.7%) of the respondents reported being between 50 and 59 years of age, with an average of 27.0 years working as a registered nurse and 12.0 years working in nursing informatics. The respondents reported being certified in informatics nursing an average of 12.0 years.

The vast majority (93.9%) of respondents reported working in a full-time capacity (36 or more hours per week), with over half (55.8%) reporting that they work more than 40 hours per week. The respondents indicated working in a variety of capacities and spending an average of 27.4% of their time working in Administration and Leadership. In addition, the respondents reported working in several practice settings, with Health System being the most commonly cited (34.1%). Over one-third (33.8%) of the respondents reported working in cities with a population between 250,000 and 999,999 people.

The most common (18.5%) nursing informatics role cited by the respondents was Informatics Nurse. The respondents were somewhat split regarding the work unit to which they reported; 41.8% reported to IT, and 33.0% reported to Nursing. About one-quarter (25.1%) indicated reporting to some other work unit.

A detailed description of the survey respondents can be found in Appendix D.

Practice Descriptions

Means for the scale ratings of the 72 performance tasks, or work activities, were presented in Appendix C along with the average computed value of Risk. The performance tasks are also presented in Appendix E in the order of Risk.

The reliability of the scales was assessed to determine how consistently the measures contributed to the weights of the tasks and domains. Imagine a scale that registers a substantially different weight with each use for the same person. With this inconsistency (i.e., unreliability), it would be difficult to determine an accurate weight. This analogy can be extended to the Consequence, Frequency, and Performance Expectation ratings. It is important to understand the consistency of the data along these dimensions in order to draw defensible conclusions.

Reliability was measured by the intraclass correlation that measures internal consistency (i.e., Cronbach's Alpha) using the respondents' ratings of Consequence, Frequency, and Performance Expectation. This measure indicates the extent to which each task rating consistently measures what other tasks measure. Reliability coefficients range from 0 to 1. Adequate reliability ratings are above 0.7. Reliability values below 0.7 indicate an excessive amount of measurement error.

The reliability of the Consequence, Frequency, and Performance Expectation ratings were 0.981, 0.963, and 0.946, respectively. These values easily exceeded the critical value of 0.7, indicating that the measurement error is sufficiently small to use these ratings in the computation of the domain and task weights in addition to the computation of Risk for each task statement.

Table 2 presents the 20 highest ranking task statements.

Table 2. The 20 task statements with the highest values of initial Risk

Domain	Task	Task Statement	Perform. Expect.	Conseq.	Freq.	Initial Risk	Final Risk
1	5	Advocates for patient safety within clinical information systems.	2.89	3.61	4.43	15.98	15.98
1	7	Demonstrates the ethical behaviors essential to nursing informatics practice (e.g., Code of Ethics for Nurses with Interpretive Statements, ANA, 2001).	2.88	3.11	4.41	13.71	13.71
2	21	Identifies and resolves issues in clinical information systems.	2.70	3.17	4.06	12.87	12.87
1	4	Supports (e.g., plans, designs, builds, tests, implements, monitors, evaluates) all phases of the clinical information system life cycle as a member of an interdisciplinary team.	2.70	3.02	4.24	12.78	12.78
5	42	Develops and executes test scripts (e.g. integration, regression, functionality).	2.61	3.23	3.78	12.18	12.18
3	25	Identifies security and privacy issues related to clinical information systems (e.g., non-compliance issues within and outside of the organization).	2.56	3.61	3.36	12.14	12.14
2	23	Identifies the impact of clinical information systems changes, updates, and enhancements on workflow, resources, and training.	2.63	3.09	3.91	12.07	12.07
5	38	Translates user requests and requirements into informatics solutions to support clinical practice.	2.69	2.96	4.07	12.02	12.02
1	11	Implements system enhancements and optimization.	2.62	2.98	3.92	11.68	11.68
1	8	Promotes the use of evidence-based clinical informatics education and training.	2.79	2.75	4.18	11.51	11.51
6	51	Conducts training sessions.	2.70	2.87	3.98	11.43	11.43
5	44	Recommends clinical information systems enhancements or design changes to improve system functionality and adoption.	2.72	2.84	3.94	11.19	11.19
3	29	Incorporates changes to clinical information systems based on regulatory and accreditation standards (e.g., HITECH, HIPAA, The Joint Commission, Centers for Medicaid and Medicare Services (CMS), State Department of Public Health).	2.47	3.21	3.49	11.19	11.19
2	16	Validates current workflow to provide baseline for future state design.	2.77	2.90	3.85	11.16	11.16
5	37	Assesses requests for changes to system functionality for adherence to policies and procedures.	2.69	2.95	3.78	11.15	11.15
3	28	Reviews documentation and workflow processes for compliance with regulatory and accreditation standards (e.g., HITECH, HIPAA, The Joint Commission, Centers for Medicaid and Medicare Services (CMS), State Department of Public Health).	2.50	3.19	3.49	11.13	11.13
3	31	Implements plan for downtime and data re-entry processes.	2.58	3.27	3.30	10.78	10.78
2	17	Performs gap analysis to identify the impact on workflows.	2.64	2.90	3.66	10.61	10.61
1	15	Provides clinical informatics guidance for clinicians, patients, vendors, organizations, and others.	2.56	2.77	3.80	10.54	10.54
3	26	Collaborates with security and privacy officer to implement informatics solutions (e.g., physical security, device access control, unauthorized access).	2.44	3.33	3.13	10.43	10.43

Table 3. The 20 task statements with the lowest values of initial Risk

Domain	Task	Task Statement	Perform. Expect.	Conseq.	Freq.	Initial Risk	Final Risk
7	62	Advocates for the inclusion of structured design, data, and the nursing process into clinical information systems.	1.95	2.15	2.33	5.00	5.00
8	71	Disseminates informatics-related research findings to interdisciplinary clinicians.	2.24	2.09	2.50	5.22	0.00
7	60	Provides input or feedback in the development of local, state, or national policies.	2.47	1.76	3.08	5.40	0.00
8	72	Collaborates on the publication of informatics-related research findings.	2.30	2.35	2.62	6.17	0.00
1	9	Networks (e.g., shares, collaborates, consults) with other informatics professionals (e.g., HIMSS, ANIA) for process and product information and issues.	2.67	1.84	3.58	6.57	6.57
6	47	Assesses learning needs of the end-user (e.g., technical skills, barriers to adoption, application to practice) in order to develop goals and objectives.	2.37	2.23	2.99	6.67	6.67
2	22	Validates that clinical information systems and devices are compliant with national and international technical standards (e.g., HL7, CCOW, ANSI, ISO).	1.97	2.71	2.51	6.82	0.00
7	61	Facilitates patient access to personal health information.	2.18	2.39	2.89	6.89	6.89
6	48	Designs teaching plans, including goals, objectives, and delivery strategies that adhere to adult learning theory principles.	2.77	2.62	2.65	6.96	6.96
7	66	Collaborates in the development of policies and procedures for information system disaster preparedness (e.g., natural and man-made threats, data recovery and reconciliation of downtime process).	2.10	2.81	2.55	7.15	0.00
6	58	Participates in local, regional, state or national nursing and nursing informatics organizations (e.g., volunteer, appointed position to committee).	2.14	2.34	3.06	7.18	7.18
7	63	Advocates for applying evidence-based practices into the development of clinical orders and decision support systems.	2.44	2.57	2.80	7.19	7.19
4	33	Promotes the use of standardized nomenclatures in applications (e.g., NIC, NOC, NANDA, SNOMED CT, OMAHA, CCC, CPT, ICD).	2.47	2.39	3.04	7.26	7.26
8	70	Reports clinical data in accordance with organizational research policies.	2.57	2.32	3.16	7.33	0.00
7	59	Serves on policy committees to provide clinical informatics recommendations for policy development and revision.	2.44	2.31	3.38	7.81	0.00
4	35	Advises on biomedical device selection that enables system integration.	2.20	2.95	2.67	7.87	0.00
6	57	Performs ongoing assessment of informatics educational needs.	2.27	2.32	3.44	7.97	7.97
6	56	Precepts other nurses in nursing informatics.	2.74	2.22	3.68	8.17	0.00
6	46	Aligns education with informatics competencies (e.g., Technology Informatics Guiding Education Reform (TIGER), Quality and Safety Education for Nurses (QSEN)).	2.60	2.61	3.16	8.26	8.26
5	40	Develops and documents build-specifications for clinical information system components.	2.28	2.61	3.23	8.40	0.00

In these above two tables and Appendix E, the task statements are sorted by the values of Initial Risk, those being the values computed from the survey data. The rightmost columns indicate Final Risk, which is zero in those instances where the panel removed the task statement from further consideration because of low values of Performance Expectation.

The panel removed some task statements from further consideration on the role delineation because the survey data indicated the task was performed outside the period of six months after certification. These removed tasks are presented in domain and task order in Table 4.

Table 4. Tasks removed after panel consideration of Performance Expectation

Domain	Task	Domain and Task
1	3	Evaluates clinical information systems for selection (e.g., needs assessment, vendor rankings, piloting components, vendor demonstrations, RFI/RFP).
1	6	Assesses project resource needs with leaders during all phases of the system life cycle (e.g., staffing, subject matter experts, external consultants, facilities, equipment).
1	10	Collaborates with business leaders to manage the clinical systems and technology adoption process.
1	12	Serves as project lead.
1	13	Serves as a consultant on clinical informatics.
1	14	Presents clinical information systems recommendations to committees (e.g., steering, clinical, quality, financial).
2	18	Conducts a clinical information systems needs assessment.
2	20	Designs the clinical information systems to enable the collection of reportable data.
2	22	Validates that clinical information systems and devices are compliant with national and international technical standards (e.g., HL7, CCOW, ANSI, ISO).
3	32	Validates the clinical information systems functionality and data integrity after disaster recovery.
4	35	Advises on biomedical device selection that enables system integration.
4	36	Advises on interface implementations that promote data availability for clinical decision making.
5	39	Develops plans (e.g., project, communication, risk management, quality).
5	40	Develops and documents build-specifications for clinical information system components.
6	55	Mentors other nurses in nursing informatics.
6	56	Precepts other nurses in nursing informatics.
7	59	Serves on policy committees to provide clinical informatics recommendations for policy development and revision.
7	60	Provides input or feedback in the development of local, state, or national policies.
7	64	Contributes in the development of policy related to the release of patient information.
7	66	Collaborates in the development of policies and procedures for information system disaster preparedness (e.g., natural and man-made threats, data recovery and reconciliation of downtime process).
8	69	Collaborates with investigators in research projects.
8	70	Reports clinical data in accordance with organizational research policies.
8	71	Disseminates informatics-related research findings to interdisciplinary clinicians.
8	72	Collaborates on the publication of informatics-related research findings.

Appendix A Domains and Tasks

Domains and Tasks

I. Administration and Leadership

1. Serves on interdisciplinary committees (e.g., Information Technology, Clinical, Quality, Financial, Strategic Planning) to represent nursing informatics as it relates to clinical practice and technology.
2. Collaborates with leaders regarding the management of technology project charter, scope, budget, resources, and go-live strategies.
3. Evaluates clinical information systems for selection (e.g., needs assessment, vendor rankings, piloting components, vendor demonstrations, Request for Information (RFI)/Request for Proposal (RFP)).
4. Supports (e.g., plans, designs, builds, tests, implements, monitors, evaluates) all phases of the clinical information system life cycle as a member of an interdisciplinary team.
5. Advocates for patient safety within clinical information systems.
6. Assesses project resource needs with leaders during all phases of the system life cycle (e.g., staffing, subject matter experts, external consultants, facilities, equipment).
7. Demonstrates the ethical behaviors essential to nursing informatics practice (e.g., Code of Ethics for Nurses with Interpretive Statements, American Nurses Association (ANA), 2001).
8. Promotes the use of evidence-based clinical informatics education and training.
9. Networks (e.g., shares, collaborates, consults) with other informatics professionals (e.g., Healthcare Information and Management Systems Society (HIMSS), American Nursing Informatics Association (ANIA)) for process and product information and issues.
10. Collaborates with business leaders to manage the clinical systems and technology adoption process.
11. Implements system enhancements and optimization.
12. Serves as project lead.
13. Serves as a consultant on clinical informatics.
14. Presents clinical information systems recommendations to committees (e.g., steering, clinical, quality, financial).
15. Provides clinical informatics guidance for clinicians, patients, vendors, organizations, and others.

II. System Analysis

16. Validates current workflow to provide baseline for future state design.
17. Performs gap analysis to identify the impact on workflows.
18. Conducts a clinical information systems needs assessment.
19. Collaborates in the design of data collection methods to improve outcomes.
20. Designs the clinical information systems to enable the collection of reportable data.
21. Identifies and resolves issues in clinical information systems.
22. Validates that clinical information systems and devices are compliant with national and international technical standards (e.g., Health Level 7 (HL7), Clinical Context Object Workgroup (CCOW), American National Standards Institute (ANSI), International Standards Organization (ISO)).
23. Identifies the impact of clinical information systems changes, updates, and enhancements on workflow, resources, and training.
24. Evaluates the device needs for the end-user (e.g., computers, laptops, mobile devices).

Appendix A – Domains and Tasks

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Domains and Tasks

III. Security and Compliance

25. Identifies security and privacy issues related to clinical information systems (e.g., non-compliance issues within and outside of the organization).
26. Collaborates with security and privacy officer to implement informatics solutions (e.g., physical security, device access control, unauthorized access).
27. Contributes to the definition of role-based access.
28. Reviews documentation and workflow processes for compliance with regulatory and accreditation standards (e.g., Health Information Technology for Economic And Clinical Health (HITECH), Health Information Portability and Accountability Act (HIPAA), The Joint Commission, Centers for Medicaid and Medicare Services (CMS), State Department of Public Health).
29. Incorporates changes to clinical information systems based on regulatory and accreditation standards (e.g., Health Information Technology for Economic And Clinical Health (HITECH), Health Information Portability and Accountability Act (HIPAA), The Joint Commission, Centers for Medicaid and Medicare Services (CMS), State Department of Public Health).
30. Facilitates initiatives for standardization of interdisciplinary documentation.
31. Implements plan for downtime and data re-entry processes.
32. Validates the clinical information systems functionality and data integrity after disaster recovery.

IV. Interoperability

33. Promotes the use of standardized nomenclatures in applications (e.g., Nursing Information Classification (NIC), Nursing Outcomes Classification (NOC), North American Nursing Diagnostic Association (NANDA), Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT), The Omaha System (OMAHA), Clinical Care Classification (CCC), Current Procedural Terminology (CPT), International Statistical Classification of Diseases and Related Health problems (ICD)).
34. Validates data integration across disparate information systems.
35. Advises on biomedical device selection that enables system integration.
36. Advises on interface implementations that promote data availability for clinical decision making.

V. System Design and Development

37. Assesses requests for changes to system functionality for adherence to policies and procedures.
38. Translates user requests and requirements into informatics solutions to support clinical practice.
39. Develops plans (e.g., project, communication, risk management, quality).
40. Develops and documents build-specifications for clinical information system components.
41. Builds clinical information system components (e.g., order sets, templates, reports).
42. Develops and executes test scripts (e.g. integration, regression, functionality).
43. Optimizes electronic documentation to support nursing workflows (e.g., data entry redundancies).
44. Recommends clinical information systems enhancements or design changes to improve system functionality and adoption.
45. Proposes options to improve human factors (e.g., human computer interaction, usability, ergonomics, Americans with Disabilities Act).

Appendix A – Domains and Tasks

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Domains and Tasks

VI. Professional Development and Education

46. Aligns education with informatics competencies (e.g., Technology Informatics Guiding Education Reform (TIGER), Quality and Safety Education for Nurses (QSEN)).
47. Assesses learning needs of the end-user (e.g., technical skills, barriers to adoption, application to practice) in order to develop goals and objectives.
48. Designs teaching plans, including goals, objectives, and delivery strategies that adhere to adult learning theory principles.
49. Communicates clinical information system changes across the organization.
50. Develops evidence-based clinical informatics education and training materials (e.g. classroom, reference guides, computer-based training, individual support).
51. Conducts training sessions.
52. Evaluates teaching effectiveness based on learning objectives.
53. Modifies teaching plans based on evaluation results.
54. Records completion of end-user training (e.g., attendance, competency assessment)
55. Mentors other nurses in nursing informatics.
56. Precepts other nurses in nursing informatics.
57. Performs ongoing assessment of informatics educational needs.
58. Participates in local, regional, state or national nursing and nursing informatics organizations (e.g., volunteer, appointed position to committee).

VII. Advocacy and Policy Development

59. Serves on policy committees to provide clinical informatics recommendations for policy development and revision.
60. Provides input or feedback in the development of local, state, or national policies.
61. Facilitates patient access to personal health information.
62. Advocates for the inclusion of structured design, data, and the nursing process into clinical information systems.
63. Advocates for applying evidence-based practices into the development of clinical orders and decision support systems.
64. Contributes in the development of policy related to the release of patient information.
65. Creates policies and procedures related to downtime and data re-entry.
66. Collaborates in the development of policies and procedures for information system disaster preparedness (e.g., natural and man-made threats, data recovery and reconciliation of downtime process).
67. Recommends updates to policies and procedures based on changes in system functionality.

VIII. Evidence-based Practice and Research

68. Conducts literature search and incorporates evidence-based findings into clinical informatics practice.
69. Collaborates with investigators in research projects.
70. Reports clinical data in accordance with organizational research policies.
71. Disseminates informatics-related research findings to interdisciplinary clinicians.
72. Collaborates on the publication of informatics-related research findings.

Appendix A – Domains and Tasks

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Appendix B Demographic Variables

What is your gender?

Female
Male

What is your race?

African American
American Indian
Asian
Hispanic
White
Mixed
Other

What is the highest degree in nursing you have been awarded?

Diploma
Associate degree
Bachelor's degree
Master's degree
Doctor of Nursing Practice
Doctorate degree [DSN, DNSc, PhD]
Other

Do you have a degree outside of nursing?

Yes
No

What is the highest degree outside of nursing you have been awarded?

Diploma
Associate's
Bachelor's
Master's
Doctorate
Other
None

Are you currently working in nursing informatics?

Yes
No

Do you hold other nursing certifications?

Yes
No

Appendix B – Demographic Variables

2013 Role Delineation Study: Nursing Informatics – National Survey Results

Which of the following other certifications do you hold? (Select all that apply.)

Certified Associate in Healthcare Information and Management Systems [CAHIMS]
Certified Nurse Educator [CNE]
Certified Professional in Healthcare Information and Management Systems [CPHIMS]
Certified Professional in Healthcare Quality [CPHQ]
Fellow of the American College of Healthcare Executives [FACHE]
Nurse Executive [NE-BC]
Nurse Executive, Advanced [NEA-BC]
Nursing Professional Development [NPD-BC]
Project Management Professional [PMP]
Other

What is your age group?

Less than 20 years
20 to 29 years
30 to 39 years
40 to 49 years
50 to 59 years
60 to 69 years
More than 69 years

How many years have you been practicing as an RN?

How many years have you worked in nursing informatics?

How many years have you been certified in nursing informatics?

How many hours per week do you spend practicing in nursing informatics?

0 to 10
11 to 20
21 to 30
31 to 40
More than 40

What percent of your work time is spent in the following area? (Values must add to 100%)

Administration and Leadership
System Analysis
Security and Compliance
Interoperability
System Design and Development
Professional Development and Education
Advocacy and Policy Development
Evidence-based Practice and Research
Other

Appendix B – Demographic Variables

2013 Role Delineation Study: Nursing Informatics – National Survey Results

Which best describes your primary practice setting?

Ambulatory care
Health system
Long-term care
Multi-hospital
Outpatient
Payor
Single hospital
Vendor
Other

What best characterizes your current practice location?

Rural (less than 2,500 people)
Town (2,500 to 49,999 people)
City (50,000 to 249,999 people)
Metropolitan (250,000 to 999,999 people)
Greater metropolitan (1,000,000 or more people)

Which of the following best describes your informatics role?

Analyst
Consultant
Coordinator
Director
Educator/Staff instructor
Faculty
Informatics nurse
Manager
Project manager
Team leader
Other

To which division or department does your work unit report?

IT
Nursing
Other

Appendix C Summary Table

Summary Table

Task Statement	Performance Expectation				Consequence				Frequency				Initial Risk	Final Risk	Weight
	N	Median	Mean	Std	N	Median	Mean	Std	N	Median	Mean	Std			
1. Serves on interdisciplinary committees (e.g., Information Technology, Clinical, Quality, Financial, Strategic Planning) to represent nursing informatics as it relates to clinical practice and technology.	556	3	2.63	0.52	555	2	2.35	0.94	555	4	3.86	0.87	9.07	9.07	0.019
2. Collaborates with leaders regarding the management of technology project charter, scope, budget, resources, and go-live strategies.	557	2	2.40	0.56	552	3	2.71	0.98	556	4	3.64	0.87	9.86	9.86	0.021
3. Evaluates clinical information systems for selection (e.g., needs assessment, vendor rankings, piloting components, vendor demonstrations, RFI/RFP).	555	2	2.37	0.58	550	3	2.74	1.05	553	3	3.22	0.93	8.81	0.00	0.000
4. Supports (e.g., plans, designs, builds, tests, implements, monitors, evaluates) all phases of the clinical information system life cycle as a member of an interdisciplinary team.	555	3	2.70	0.49	553	3	3.02	1.02	554	4	4.24	0.77	12.78	12.78	0.027
5. Advocates for patient safety within clinical information systems.	555	3	2.89	0.33	555	4	3.61	1.20	554	5	4.43	0.72	15.98	15.98	0.033
6. Assesses project resource needs with leaders during all phases of the system life cycle (e.g., staffing, subject matter experts, external consultants, facilities, equipment).	545	2	2.35	0.56	543	3	2.58	0.90	549	4	3.50	0.91	9.05	0.00	0.000
7. Demonstrates the ethical behaviors essential to nursing informatics practice (e.g., Code of Ethics for Nurses with Interpretive Statements, ANA, 2001).	551	3	2.88	0.38	547	3	3.11	1.14	551	5	4.41	0.88	13.71	13.71	0.029
8. Promotes the use of evidence-based clinical informatics education and training.	544	3	2.79	0.45	543	3	2.75	1.06	543	4	4.18	0.87	11.51	11.51	0.024
9. Networks (e.g., shares, collaborates, consults) with other informatics professionals (e.g., HIMSS, ANIA) for process and product information and issues.	549	3	2.67	0.51	543	2	1.84	0.85	550	4	3.58	0.90	6.57	6.57	0.014

Performance expectation response options: 1 = Not at all, 2 = After the first 6 months, 3 = Within the first 6 months

Consequence response options: 1 = No harm, 2 = Minimal harm, 3 = Moderate harm, 4 = Substantial harm, 5 = Extreme harm

Frequency response options: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Repeatedly

Appendix C – Summary Table

2013 Role Delineation Study: Nursing Informatics – National Survey Results

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Summary Table

Task Statement	Performance Expectation				Consequence				Frequency				Initial Risk	Final Risk	Weight
	N	Median	Mean	Std	N	Median	Mean	Std	N	Median	Mean	Std			
10. Collaborates with business leaders to manage the clinical systems and technology adoption process.	548	2	2.37	0.60	544	3	2.57	0.95	548	3	3.45	1.00	8.88	0.00	0.000
11. Implements system enhancements and optimization.	549	3	2.62	0.53	551	3	2.98	0.94	551	4	3.92	0.86	11.68	11.68	0.024
12. Serves as project lead.	550	2	2.15	0.48	550	3	2.98	1.07	551	3	3.33	0.92	9.92	0.00	0.000
13. Serves as a consultant on clinical informatics.	548	2	2.36	0.54	547	3	2.75	0.98	549	4	3.64	0.96	10.03	0.00	0.000
14. Presents clinical information systems recommendations to committees (e.g., steering, clinical, quality, financial).	547	2	2.28	0.53	546	3	2.73	1.02	546	3	3.42	0.94	9.33	0.00	0.000
15. Provides clinical informatics guidance for clinicians, patients, vendors, organizations, and others.	548	3	2.56	0.54	543	3	2.77	0.95	548	4	3.80	0.92	10.54	10.54	0.022
16. Validates current workflow to provide baseline for future state design.	539	3	2.77	0.44	538	3	2.90	0.98	541	4	3.85	0.87	11.16	11.16	0.023
17. Performs gap analysis to identify the impact on workflows.	537	3	2.64	0.51	533	3	2.90	0.95	537	4	3.66	0.90	10.61	10.61	0.022
18. Conducts a clinical information systems needs assessment.	537	2	2.35	0.58	530	3	2.68	0.95	536	3	3.17	0.92	8.52	0.00	0.000
19. Collaborates in the design of data collection methods to improve outcomes.	536	3	2.55	0.54	537	3	2.66	0.94	539	3	3.44	0.88	9.14	9.14	0.019
20. Designs the clinical information systems to enable the collection of reportable data.	536	2	2.31	0.61	535	3	2.90	1.04	541	3	3.29	1.02	9.53	0.00	0.000
21. Identifies and resolves issues in clinical information systems.	534	3	2.70	0.50	526	3	3.17	0.98	527	4	4.06	0.88	12.87	12.87	0.027
22. Validates that clinical information systems and devices are compliant with national and international technical standards (e.g., HL7, CCOW, ANSI, ISO).	538	2	1.97	0.70	526	3	2.71	1.16	534	2	2.51	1.13	6.82	0.00	0.000
23. Identifies the impact of clinical information systems changes, updates, and enhancements on workflow, resources, and training.	534	3	2.63	0.52	533	3	3.09	0.93	538	4	3.91	0.87	12.07	12.07	0.025

Performance expectation response options: 1 = Not at all, 2 = After the first 6 months, 3 = Within the first 6 months

Consequence response options: 1 = No harm, 2 = Minimal harm, 3 = Moderate harm, 4 = Substantial harm, 5 = Extreme harm

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Appendix C – Summary Table

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Summary Table

Task Statement	Performance Expectation				Consequence				Frequency				Initial Risk	Final Risk	Weight
	N	Median	Mean	Std	N	Median	Mean	Std	N	Median	Mean	Std			
24. Evaluates the device needs for the end-user (e.g., computers, laptops, mobile devices).	539	3	2.71	0.52	536	3	2.59	0.96	537	3	3.42	0.88	8.86	8.86	0.018
25. Identifies security and privacy issues related to clinical information systems (e.g., non-compliance issues within and outside of the organization).	526	3	2.56	0.60	525	4	3.61	1.09	529	3	3.36	1.09	12.14	12.14	0.025
26. Collaborates with security and privacy officer to implement informatics solutions (e.g., physical security, device access control, unauthorized access).	529	3	2.44	0.64	526	3	3.33	1.08	527	3	3.13	1.01	10.43	10.43	0.022
27. Contributes to the definition of role-based access.	531	3	2.63	0.56	527	3	2.98	1.00	525	3	3.35	0.96	9.98	9.98	0.021
28. Reviews documentation and workflow processes for compliance with regulatory and accreditation standards (e.g., HITECH, HIPAA, The Joint Commission, Centers for Medicaid and Medicare Services (CMS), State Department of Public Health).	530	3	2.50	0.58	524	3	3.19	1.04	529	4	3.49	0.98	11.13	11.13	0.023
29. Incorporates changes to clinical information systems based on regulatory and accreditation standards (e.g., HITECH, HIPAA, The Joint Commission, Centers for Medicaid and Medicare Services (CMS), State Department of Public Health).	529	3	2.47	0.56	528	3	3.21	1.01	532	3	3.49	0.97	11.19	11.19	0.023
30. Facilitates initiatives for standardization of interdisciplinary documentation.	530	3	2.52	0.56	526	3	2.71	0.88	527	4	3.53	0.92	9.56	9.56	0.020
31. Implements plan for downtime and data re-entry processes.	530	3	2.58	0.56	528	3	3.27	1.01	532	3	3.30	0.91	10.78	10.78	0.022
32. Validates the clinical information systems functionality and data integrity after disaster recovery.	531	2	2.38	0.63	529	3	3.45	1.09	531	3	2.82	1.05	9.71	0.00	0.000

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Summary Table

Task Statement	Performance Expectation				Consequence				Frequency				Initial Risk	Final Risk	Weight
	N	Median	Mean	Std	N	Median	Mean	Std	N	Median	Mean	Std			
33. Promotes the use of standardized nomenclatures in applications (e.g., NIC, NOC, NANDA, SNOMED CT, OMAHA, CCC, CPT, ICD).	529	3	2.47	0.62	522	2	2.39	0.90	526	3	3.04	1.02	7.26	7.26	0.015
34. Validates data integration across disparate information systems.	529	2	2.43	0.60	521	3	3.19	1.00	526	3	3.21	0.99	10.23	10.23	0.021
35. Advises on biomedical device selection that enables system integration.	530	2	2.20	0.66	523	3	2.95	1.05	527	3	2.67	0.92	7.87	0.00	0.000
36. Advises on interface implementations that promote data availability for clinical decision making.	526	2	2.22	0.61	519	3	3.06	1.01	522	3	2.90	0.97	8.87	0.00	0.000
37. Assesses requests for changes to system functionality for adherence to policies and procedures.	527	3	2.69	0.49	525	3	2.95	0.94	524	4	3.78	0.89	11.15	11.15	0.023
38. Translates user requests and requirements into informatics solutions to support clinical practice.	523	3	2.69	0.48	517	3	2.96	0.92	520	4	4.07	0.82	12.02	12.02	0.025
39. Develops plans (e.g., project, communication, risk management, quality).	526	2	2.39	0.55	519	3	2.80	0.92	523	3	3.47	0.94	9.70	0.00	0.000
40. Develops and documents build-specifications for clinical information system components.	523	2	2.28	0.64	516	3	2.61	1.02	524	3	3.23	1.15	8.40	0.00	0.000
41. Builds clinical information system components (e.g., order sets, templates, reports).	525	3	3.78	0.59	519	3	2.93	1.03	523	4	3.19	1.09	9.37	9.37	0.020
42. Develops and executes test scripts (e.g. integration, regression, functionality).	524	3	2.61	0.61	520	3	3.23	1.03	525	4	3.78	1.05	12.18	12.18	0.025
43. Optimizes electronic documentation to support nursing workflows (e.g., data entry redundancies).	524	3	2.53	0.48	522	3	2.97	0.94	526	4	3.47	0.90	10.33	10.33	0.022
44. Recommends clinical information systems enhancements or design changes to improve system functionality and adoption.	525	3	2.72	0.51	518	3	2.84	0.91	523	4	3.94	0.87	11.19	11.19	0.023

Performance expectation response options: 1 = Not at all, 2 = After the first 6 months, 3 = Within the first 6 months

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Summary Table

Task Statement	Performance Expectation				Consequence				Frequency				Initial Risk	Final Risk	Weight
	N	Median	Mean	Std	N	Median	Mean	Std	N	Median	Mean	Std			
45. Proposes options to improve human factors (e.g., human computer interaction, usability, ergonomics, Americans with Disabilities Act).	526	3	2.64	0.60	521	3	2.73	0.93	523	3	3.81	0.98	10.42	10.42	0.022
46. Aligns education with informatics competencies (e.g., Technology Informatics Guiding Education Reform (TIGER), Quality and Safety Education for Nurses (QSEN)).	516	2	2.60	0.67	514	2	2.61	0.90	519	3	3.16	1.05	8.26	8.26	0.017
47. Assesses learning needs of the end-user (e.g., technical skills, barriers to adoption, application to practice) in order to develop goals and objectives.	519	3	2.37	0.44	517	3	2.23	0.95	520	4	2.99	0.92	6.67	6.67	0.014
48. Designs teaching plans, including goals, objectives, and delivery strategies that adhere to adult learning theory principles.	517	3	2.77	0.55	515	2	2.62	0.91	519	4	2.65	0.99	6.96	6.96	0.014
49. Communicates clinical information system changes across the organization.	515	3	3.76	0.52	510	3	2.65	1.01	519	4	3.76	0.94	9.96	9.96	0.021
50. Develops evidence-based clinical informatics education and training materials (e.g. classroom, reference guides, computer-based training, individual support).	515	3	2.65	0.56	515	3	2.49	0.95	518	4	3.57	1.00	8.90	8.90	0.019
51. Conducts training sessions.	519	3	2.70	0.46	518	3	2.87	0.96	517	4	3.98	0.95	11.43	11.43	0.024
52. Evaluates teaching effectiveness based on learning objectives.	521	3	2.58	0.51	514	2	2.64	0.91	524	4	3.67	1.00	9.70	9.70	0.020
53. Modifies teaching plans based on evaluation results.	518	3	2.77	0.55	514	2	2.68	0.92	519	4	3.83	1.01	10.24	10.24	0.021
54. Records completion of end-user training (e.g., attendance, competency assessment)	515	3	2.69	0.57	513	2	2.43	0.96	518	4	3.65	1.10	8.86	8.86	0.018
55. Mentors other nurses in nursing informatics.	523	2	2.64	0.54	520	2	2.43	0.97	517	3	3.59	1.01	8.72	0.00	0.000
56. Precepts other nurses in nursing informatics.	523	2	2.74	0.52	516	2	2.22	0.98	522	3	3.68	1.02	8.17	0.00	0.000

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Summary Table

Task Statement	Performance Expectation				Consequence				Frequency				Initial Risk	Final Risk	Weight
	N	Median	Mean	Std	N	Median	Mean	Std	N	Median	Mean	Std			
57. Performs ongoing assessment of informatics educational needs.	519	2	2.27	0.58	512	2	2.32	0.92	523	3	3.44	1.00	7.97	7.97	0.017
58. Participates in local, regional, state or national nursing and nursing informatics organizations (e.g., volunteer, appointed position to committee).	523	3	2.14	0.63	519	2	2.34	0.82	524	3	3.06	0.96	7.18	7.18	0.015
59. Serves on policy committees to provide clinical informatics recommendations for policy development and revision.	520	2	2.44	0.58	517	2	2.31	0.91	517	3	3.38	0.95	7.81	0.00	0.000
60. Provides input or feedback in the development of local, state, or national policies.	518	2	2.47	0.59	517	2	1.76	0.95	515	2	3.08	0.87	5.40	0.00	0.000
61. Facilitates patient access to personal health information.	522	3	2.18	0.71	512	3	2.39	1.07	516	3	2.89	1.01	6.89	6.89	0.014
62. Advocates for the inclusion of structured design, data, and the nursing process into clinical information systems.	520	3	1.95	0.56	521	3	2.15	0.98	522	3	2.33	1.00	5.00	5.00	0.010
63. Advocates for applying evidence-based practices into the development of clinical orders and decision support systems.	517	3	2.44	0.51	517	3	2.57	1.02	522	4	2.80	0.96	7.19	7.19	0.015
64. Contributes in the development of policy related to the release of patient information.	521	2	2.60	0.72	509	3	2.59	1.14	514	3	3.46	1.04	8.98	0.00	0.000
65. Creates policies and procedures related to downtime and data re-entry.	522	2	2.64	0.57	518	3	2.86	1.03	522	3	3.64	0.90	10.43	10.43	0.022
66. Collaborates in the development of policies and procedures for information system disaster preparedness (e.g., natural and man-made threats, data recovery and reconciliation of downtime process).	516	2	2.10	0.59	513	3	2.81	1.10	518	3	2.55	0.93	7.15	0.00	0.000
67. Recommends updates to policies and procedures based on changes in system functionality.	519	3	2.42	0.55	513	3	3.09	0.92	518	3	3.06	0.89	9.45	9.45	0.020
68. Conducts literature search and incorporates evidence-based findings into clinical informatics practice.	521	3	2.28	0.59	518	2	3.17	0.94	521	3	2.80	1.00	8.88	8.88	0.019

Performance expectation response options: 1 = Not at all, 2 = After the first 6 months, 3 = Within the first 6 months

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Summary Table

Task Statement	Performance Expectation				Consequence				Frequency				Initial Risk	Final Risk	Weight
	N	Median	Mean	Std	N	Median	Mean	Std	N	Median	Mean	Std			
69. Collaborates with investigators in research projects.	522	2	2.54	0.71	515	2	2.77	0.88	521	2	3.27	0.90	9.06	0.00	0.000
70. Reports clinical data in accordance with organizational research policies.	516	2	2.57	0.72	512	2	2.32	1.02	516	3	3.16	1.01	7.33	0.00	0.000
71. Disseminates informatics-related research findings to interdisciplinary clinicians.	522	2	2.24	0.67	516	2	2.09	0.94	519	3	2.50	1.00	5.22	0.00	0.000
72. Collaborates on the publication of informatics-related research findings.	521	2	2.30	0.63	513	2	2.35	0.90	520	2	2.62	0.85	6.17	0.00	0.000
Total														479.71	1.000

Performance expectation response options: 1 = Not at all, 2 = After the first 6 months, 3 = Within the first 6 months

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Appendix D

Characteristics of Survey Respondents

Characteristics of the survey respondents

Survey respondents were asked to provide information on different demographic variables. The following tables provide the demographic breakdown of the survey respondents.

Table 1. What is your gender?

	Count	Percent
Female	457	87.5
Male	65	12.5
Total	522	100.0
Missing	96	

Table 2. What is your race/ethnicity?

	Count	Percent
Black or African American	17	3.3
American Indian or Alaska Native	0	0.0
Asian	19	3.6
Native Hawaiian or Other Pacific Islander	6	1.2
Hispanic / Latino of any race	5	1.0
White	462	88.7
Two or more races	10	1.9
Other	2	0.4
Total	521	100.1*
Missing	97	

*Percent sum equals 100.1 due to rounding

Table 3. What is the highest degree in nursing you have been awarded?

	Count	Percent
Diploma	13	2.5
Associate degree	24	4.6
Bachelor's degree	170	32.5
Master's degree	271	51.8
Doctor of Nursing Practice	14	2.7
Doctorate degree [DSN, DNSc, PhD]	23	4.4
Other (please specify)	8	1.5
Total	523	100.0
Missing	95	

Table 4. Do you have a degree outside of nursing?

	Count	Percent
Yes	232	44.4
No	291	55.6
Total	523	100.0
Missing	95	

Table 5. What is the highest degree outside of nursing you have been awarded?

	Count	Percent
Diploma	0	0.0
Associate	15	6.3
Bachelor's	70	29.2
Master's	129	53.8
Doctorate	18	7.5
Other (please specify)	8	3.3
Total	240	100.1
Missing	378	

*Percent sum equals 100.1 due to rounding

Table 6. Do you hold other nursing certifications?

	Count	Percent
Yes	175	33.7
No	344	66.3
Total	519	100.0
Missing	99	

Table 7. Which other certifications do you hold?

	Count	Percent
Certified Associate in Healthcare Information and Management Systems [CAHIMS]	0	0.0
Certified Nurse Educator [CNE]	6	3.4
Certified Professional in Healthcare Information and Management Systems [CPHIMS]	46	26.3
Certified Professional in Healthcare Quality [CPHQ]	6	3.4
Fellow of the American College of Healthcare Executives [FACHE]	4	2.3
Nurse Executive [NE-BC]	13	7.4
Nurse Executive, Advanced [NEA-BC]	9	5.1
Nursing Professional Development [NPD-BC]	3	1.7
Project Management Professional [PMP]	19	10.9
Other (please specify)	106	60.6
Answered question	175	
Skipped question	443	

Table 8. What is your age group?

	Count	Percent
Less than 20 years	0	0.0
20 to 29 years	3	0.6
30 to 39 years	48	9.2
40 to 49 years	118	22.6
50 to 59 years	270	51.7
60 to 69 years	76	14.6
More than 69 years	7	1.3
<hr/>		
Total	522	100.0
Missing	96	

Table 9. How many years have you been practicing as an RN?

Mean	27.04
St. Dev.	9.88
N	523
Minimum	2
Maximum	59

Table 10. How many years have you worked in nursing informatics?

Mean	12.00
St. Dev.	6.70
N	517
Minimum	1
Maximum	35

Table 11. How many years have you been certified in nursing informatics?

Mean	5.81
St. Dev.	4.84
N	513
Minimum	0
Maximum	30

Table 12. How do you describe your work status?

	Count	Percent
Full-time (36 or more hours per week)	491	93.9
Part-time (35 or fewer hours per week)	28	5.4
Not currently working	4	0.8
<hr/>		
Total	523	100.1
Missing	95	

*Percent sum equals 100.1 due to rounding

Table 13. How many hours per week do you spend practicing in nursing informatics?

	Count	Percent
0 to 10	13	2.5
11 to 20	39	7.5
21 to 30	40	7.7
31 to 40	138	26.5
More than 40	290	55.8
<hr/>		
Total	520	100.0
Missing	98	

Table 14. What percent of your work time is spent in the following areas? (Please enter whole numbers only. Values must add to 100%)

	Count	Average Percent
Administration and Leadership	464	27.37
System Analysis	442	19.68
Security and Compliance	395	6.99
Interoperability	397	9.49
System Design and Development	438	20.32
Professional Development and Education	427	15.17
Advocacy and Policy Development	382	6.68
Evidence-based Practice and Research	382	8.23
Other	166	16.88
<hr/>		
Answered question	518	
Skipped question	100	

Table 15. Which of the following best describes your practice setting?

	Count	Percent
Ambulatory care	27	5.2
Health system	178	34.1
Long-term care	2	0.4
Multi-hospital	97	18.6
Outpatient	9	1.7
Payor	1	0.2
Single hospital	107	20.5
Vendor	36	6.9
Other (please specify)	65	12.5
Total	522	100.1
Missing	96	

*Percent sum equals 100.1 due to rounding

Table 16. Which of the following best characterizes your current practice location?

	Count	Percent
Rural (less the 2,500 people)	7	1.4
Town (2,500 to 49,999 people)	62	12.0
City (50,000 to 249,999 people)	175	33.8
Metropolitan (250,000 to 999,999 people)	129	25.0
Greater metropolitan (1,000,000 or more people)	144	27.9
Total	517	100.1
Missing	101	

*Percent sum equals 100.1 due to rounding

Table 17. Which of the following best describes your nursing informatics role?

	Count	Percent
Analyst	82	15.6
Consultant	60	11.5
Coordinator	25	4.8
Director	75	14.3
Educator/staff instructor	29	5.5
Faculty	15	2.9
Informatics nurse	97	18.5
Manager	49	9.4
Project manager	31	5.9
Team leader	15	2.9
Other (please specify)	46	8.8
Total	524	100.1
Missing	94	

*Percent sum equals 100.1 due to rounding

Table 18. To which division or department does your work unit report?

	Count	Percent
IT	218	41.8
Nursing	172	33.0
Other (please specify)	131	25.1
Total	521	99.9
Missing	97	

*Percent sum equals 99.9 due to rounding

Appendix E
Task Statements Sorted by Initial Values of Risk

Domain	Task	Domain and Task	Perform. Expect.	Conseq.	Freq.	Initial Risk	Final Risk
1	5	Advocates for patient safety within clinical information systems.	2.89	3.61	4.43	15.98	15.98
1	7	Demonstrates the ethical behaviors essential to nursing informatics practice (e.g., Code of Ethics for Nurses with Interpretive Statements, ANA, 2001).	2.88	3.11	4.41	13.71	13.71
2	21	Identifies and resolves issues in clinical information systems.	2.70	3.17	4.06	12.87	12.87
1	4	Supports (e.g., plans, designs, builds, tests, implements, monitors, evaluates) all phases of the clinical information system life cycle as a member of an interdisciplinary team.	2.70	3.02	4.24	12.78	12.78
5	42	Develops and executes test scripts (e.g. integration, regression, functionality).	2.61	3.23	3.78	12.18	12.18
3	25	Identifies security and privacy issues related to clinical information systems (e.g., non-compliance issues within and outside of the organization).	2.56	3.61	3.36	12.14	12.14
2	23	Identifies the impact of clinical information systems changes, updates, and enhancements on workflow, resources, and training.	2.63	3.09	3.91	12.07	12.07
5	38	Translates user requests and requirements into informatics solutions to support clinical practice.	2.69	2.96	4.07	12.02	12.02
1	11	Implements system enhancements and optimization.	2.62	2.98	3.92	11.68	11.68
1	8	Promotes the use of evidence-based clinical informatics education and training.	2.79	2.75	4.18	11.51	11.51
6	51	Conducts training sessions.	2.70	2.87	3.98	11.43	11.43
5	44	Recommends clinical information systems enhancements or design changes to improve system functionality and adoption.	2.72	2.84	3.94	11.19	11.19
3	29	Incorporates changes to clinical information systems based on regulatory and accreditation standards (e.g., HITECH, HIPAA, The Joint Commission, Centers for Medicaid and Medicare Services (CMS), State Department of Public Health).	2.47	3.21	3.49	11.19	11.19
2	16	Validates current workflow to provide baseline for future state design.	2.77	2.90	3.85	11.16	11.16
5	37	Assesses requests for changes to system functionality for adherence to policies and procedures.	2.69	2.95	3.78	11.15	11.15
3	28	Reviews documentation and workflow processes for compliance with regulatory and accreditation standards (e.g., HITECH, HIPAA, The Joint Commission, Centers for Medicaid and Medicare Services (CMS), State Department of Public Health).	2.50	3.19	3.49	11.13	11.13
3	31	Implements plan for downtime and data re-entry processes.	2.58	3.27	3.30	10.78	10.78
2	17	Performs gap analysis to identify the impact on workflows.	2.64	2.90	3.66	10.61	10.61
1	15	Provides clinical informatics guidance for clinicians, patients, vendors, organizations, and others.	2.56	2.77	3.80	10.54	10.54
7	65	Creates policies and procedures related to downtime and data re-entry.	2.64	2.86	3.64	10.43	10.43
3	26	Collaborates with security and privacy officer to implement informatics solutions (e.g., physical security, device access control, unauthorized access).	2.44	3.33	3.13	10.43	10.43
5	45	Proposes options to improve human factors (e.g., human computer interaction, usability, ergonomics, Americans with Disabilities Act).	2.64	2.73	3.81	10.42	10.42
5	43	Optimizes electronic documentation to support nursing workflows (e.g., data entry redundancies).	2.53	2.97	3.47	10.33	10.33

Domain	Task	Domain and Task	Perform. Expect.	Conseq.	Freq.	Initial Risk	Final Risk
6	53	Modifies teaching plans based on evaluation results.	2.77	2.68	3.83	10.24	10.24
4	34	Validates data integration across disparate information systems.	2.43	3.19	3.21	10.23	10.23
1	13	Serves as a consultant on clinical informatics.	2.36	2.75	3.64	10.03	0.00
3	27	Contributes to the definition of role-based access.	2.63	2.98	3.35	9.98	9.98
6	49	Communicates clinical information system changes across the organization.	3.76	2.65	3.76	9.96	9.96
1	12	Serves as project lead.	2.15	2.98	3.33	9.92	0.00
1	2	Collaborates with leaders regarding the management of technology project charter, scope, budget, resources, and go-live strategies.	2.40	2.71	3.64	9.86	9.86
3	32	Validates the clinical information systems functionality and data integrity after disaster recovery.	2.38	3.45	2.82	9.71	0.00
6	52	Evaluates teaching effectiveness based on learning objectives.	2.58	2.64	3.67	9.70	9.70
5	39	Develops plans (e.g., project, communication, risk management, quality).	2.39	2.80	3.47	9.70	0.00
3	30	Facilitates initiatives for standardization of interdisciplinary documentation.	2.52	2.71	3.53	9.56	9.56
2	20	Designs the clinical information systems to enable the collection of reportable data.	2.31	2.90	3.29	9.53	0.00
7	67	Recommends updates to policies and procedures based on changes in system functionality.	2.42	3.09	3.06	9.45	9.45
5	41	Builds clinical information system components (e.g., order sets, templates, reports).	3.78	2.93	3.19	9.37	9.37
1	14	Presents clinical information systems recommendations to committees (e.g., steering, clinical, quality, financial).	2.28	2.73	3.42	9.33	0.00
2	19	Collaborates in the design of data collection methods to improve outcomes.	2.55	2.66	3.44	9.14	9.14
1	1	Serves on interdisciplinary committees (e.g., Information Technology, Clinical, Quality, Financial, Strategic Planning) to represent nursing informatics as it relates to clinical practice and technology.	2.63	2.35	3.86	9.07	9.07
8	69	Collaborates with investigators in research projects.	2.54	2.77	3.27	9.06	0.00
1	6	Assesses project resource needs with leaders during all phases of the system life cycle (e.g., staffing, subject matter experts, external consultants, facilities, equipment).	2.35	2.58	3.50	9.05	0.00
7	64	Contributes in the development of policy related to the release of patient information.	2.60	2.59	3.46	8.98	0.00
6	50	Develops evidence-based clinical informatics education and training materials (e.g. classroom, reference guides, computer-based training, individual support).	2.65	2.49	3.57	8.90	8.90
1	10	Collaborates with business leaders to manage the clinical systems and technology adoption process.	2.37	2.57	3.45	8.88	0.00
8	68	Conducts literature search and incorporates evidence-based findings into clinical informatics practice.	2.28	3.17	2.80	8.88	8.88
4	36	Advises on interface implementations that promote data availability for clinical decision making.	2.22	3.06	2.90	8.87	0.00
2	24	Evaluates the device needs for the end-user (e.g., computers, laptops, mobile devices).	2.71	2.59	3.42	8.86	8.86
6	54	Records completion of end-user training (e.g., attendance, competency assessment)	2.69	2.43	3.65	8.86	8.86
1	3	Evaluates clinical information systems for selection (e.g., needs assessment, vendor rankings, piloting components,	2.37	2.74	3.22	8.81	0.00

Domain	Task	Domain and Task	Perform. Expect.	Conseq.	Freq.	Initial Risk	Final Risk
		vendor demonstrations, RFI/RFP).					
6	55	Mentors other nurses in nursing informatics.	2.64	2.43	3.59	8.72	0.00
2	18	Conducts a clinical information systems needs assessment.	2.35	2.68	3.17	8.52	0.00
5	40	Develops and documents build-specifications for clinical information system components.	2.28	2.61	3.23	8.40	0.00
6	46	Aligns education with informatics competencies (e.g., Technology Informatics Guiding Education Reform (TIGER), Quality and Safety Education for Nurses (QSEN)).	2.60	2.61	3.16	8.26	8.26
6	56	Precepts other nurses in nursing informatics.	2.74	2.22	3.68	8.17	0.00
6	57	Performs ongoing assessment of informatics educational needs.	2.27	2.32	3.44	7.97	7.97
4	35	Advises on biomedical device selection that enables system integration.	2.20	2.95	2.67	7.87	0.00
7	59	Serves on policy committees to provide clinical informatics recommendations for policy development and revision.	2.44	2.31	3.38	7.81	0.00
8	70	Reports clinical data in accordance with organizational research policies.	2.57	2.32	3.16	7.33	0.00
4	33	Promotes the use of standardized nomenclatures in applications (e.g., NIC, NOC, NANDA, SNOMED CT, OMAHA, CCC, CPT, ICD).	2.47	2.39	3.04	7.26	7.26
7	63	Advocates for applying evidence-based practices into the development of clinical orders and decision support systems.	2.44	2.57	2.80	7.19	7.19
6	58	Participates in local, regional, state or national nursing and nursing informatics organizations (e.g., volunteer, appointed position to committee).	2.14	2.34	3.06	7.18	7.18
7	66	Collaborates in the development of policies and procedures for information system disaster preparedness (e.g., natural and man-made threats, data recovery and reconciliation of downtime process).	2.10	2.81	2.55	7.15	0.00
6	48	Designs teaching plans, including goals, objectives, and delivery strategies that adhere to adult learning theory principles.	2.77	2.62	2.65	6.96	6.96
7	61	Facilitates patient access to personal health information.	2.18	2.39	2.89	6.89	6.89
2	22	Validates that clinical information systems and devices are compliant with national and international technical standards (e.g., HL7, CCOW, ANSI, ISO).	1.97	2.71	2.51	6.82	0.00
6	47	Assesses learning needs of the end-user (e.g., technical skills, barriers to adoption, application to practice) in order to develop goals and objectives.	2.37	2.23	2.99	6.67	6.67
1	9	Networks (e.g., shares, collaborates, consults) with other informatics professionals (e.g., HIMSS, ANIA) for process and product information and issues.	2.67	1.84	3.58	6.57	6.57
8	72	Collaborates on the publication of informatics-related research findings.	2.30	2.35	2.62	6.17	0.00
7	60	Provides input or feedback in the development of local, state, or national policies.	2.47	1.76	3.08	5.40	0.00
8	71	Disseminates informatics-related research findings to interdisciplinary clinicians.	2.24	2.09	2.50	5.22	0.00
7	62	Advocates for the inclusion of structured design, data, and the nursing process into clinical information systems.	1.95	2.15	2.33	5.00	5.00

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