

2010 Role Delineation Study: Informatics Nurse

National Survey Results



MARCH 2011

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About this Report

This report pertaining to the practice of informatics nurses was based on the results of a 2010 national study of practice of informatics nurses.

Table of Contents

ABOUT THIS REPORT	2
ACKNOWLEDGEMENTS.....	4
BACKGROUND	5
ROLE DELINEATION STUDY OVERVIEW	5
UPDATED TEST CONTENT OUTLINE FOR INFORMATICS NURSE.....	5
ROLE OF THE CONTENT EXPERT PANELS.....	5
SURVEY METHODOLOGY.....	6
SURVEY CHRONOLOGY	6
SURVEY DEVELOPMENT AND MEASURES	6
SAMPLE SELECTION.....	7
DATA COLLECTION	8
DATA ANALYSIS	8
SURVEY RESULTS.....	10
DEMOGRAPHIC INFORMATION	10
PRACTICE DESCRIPTIONS.....	11
APPENDICIES	
WORK ACTIVITIES STATEMENTS	APPENDIX A
DEMOGRAPHIC DATA SUMMARY	APPENDIX B
WORK ACTIVITIES DESCRIPTIVE STATISTICS	APPENDIX C
WORK ACTIVITIES MEAN OVERALL CRITICALITY -- RANK ORDER.....	APPENDIX D

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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 nurse credentialing organization in the United States. Its vision is to be a galvanizing force for quality healthcare through credentialing excellence. Currently, ANCC offers 25 examinations at various levels including diploma and associate degree, baccalaureate, and advanced practice. More than 12,000 candidates take an ANCC certification examination each year. 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 in order 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 examination.

The 2010 Informatics Nurse 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 actually 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 outline for the ANCC Informatics Nurse examination.

Updated Test Content Outline for Informatics Nurse

The test content outline for the Informatics Nurse examination was updated using the results of this role delineation study. Examination forms will be produced based on this updated test content outline. A copy of the test content outline will be available on the American Nurses Credentialing Center website approximately six months prior to the release of the new examination form.

Role of the Content Expert Panels

The American Nurses Credentialing Center invited professionals in practice and educators who teach courses relevant to informatics nursing to serve on a panel of content experts for this study. They 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 outline. All of the content experts serving on the panel were certified by ANCC in informatics nursing and were invited to serve on the panel based upon 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 actually perform in practice. The role delineation study panel met for three days in March 2010 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:

March - May 2010

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

June - July 2010

- The final survey was administered on the web.

July - September 2010

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

Survey Development and Measures

On March 24-26, 2010, the role delineation study panel met in Silver Spring, MD in order to draft the national Informatics Nurse Role Delineation Study survey for the 2010 role delineation study. During the meeting, the group reviewed American Nurses Association's *Nursing Informatics: Scope and Standards of Practice* (2008) and discussed any additions, deletions, and changes they would make to convert the measurement criteria to work activities to be used on the survey. These deliberations resulted in a list of 95 work activities to be used in the 2010 pilot survey. The workgroup also identified and finalized a set of demographic items for inclusion as part of the survey.

During the same meeting, the workgroup 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 2.

Table 2. Survey Questions for Rating Work Activity Statements

Please respond to each activity with three separate responses, one response in each category. When considering a response for one category, do not consider the other categories. For example: When considering the consequences of incorrect performance of an activity, do not worry about whether you perform or are expected to perform the activity; the possibility exists that an activity has severe consequences, even if you never perform it.

Performance Expectation: When is a newly certified informatics nurse first expected to perform this activity?

- Within the first 6 months of working within the specialty.
- After the first 6 months of working within the specialty.
- Never expected to perform this activity within the specialty

Frequency: How often does a newly certified informatics nurse perform this activity (consider within a one year period)?

- Frequently
- Often
- Occasionally
- Seldom
- Never

Consequences: Does incorrect performance of this activity cause:

- Little or no harm
- Moderate harm
- Severe harm

The study design included combining each respondent's responses to each of the three rating scales in a hierarchical manner into one overall ranking of criticality. To select a procedure for combining the three scales, the role delineation study panel discussed the importance of each scale to the performance of the work activity. The panel determined that the performance expectation scale should be regarded as more critical than the other two scales for representing entry-level practice. The consequence scale was then regarded as more critical than the frequency scale. Therefore the panel agreed to combine the scales so that a particular value on the performance expectation scale would outweigh or outrank all values on the consequence and frequency scales. This hierarchical scheme emphasized the work activities that are required of new practitioners immediately on the job and have the greatest impact on public health or safety. Thus this scheme was selected as the organizing mechanism for combining the responses from the three survey scales into an overall measure of criticality.

Sample Selection

On March 8, 2010, there were a total of 779 actively certified ANCC informatics nurses. Fifty were randomly selected to participate in the pilot survey and the remaining 729 were invited to participate in the national survey. Table 1 presents the number of ANCC-certified informatics nurses invited to participate in the national survey per region.

Table 1. Number of ANCC-certified Informatics Nurses Invited per Geographic Region

Geographic Region	Number certified (percent of total pop.) Invited
Northeast – NY, CT, MA, NJ, ME, PA, NH, VT, RI	148 (20.30%)
South – TN, MS, TX, FL, LA, AL, GA, AR, OK, VA, MD, SC, DC, NC, WV, DE, KY	292 (40.05%)
Midwest – IA, NE, KS, OH, MO, MN, SD, ND, MI, IL, IN, WI	176 (24.14%)
West – WA, AZ, CA, OR, CO, AK, ID, NM, UT, HI, NV, WY, MT	112 (15.36%)
Other	1 (0.14%)
Total	729 (100%)

Data Collection

Pilot Testing. Using the same procedures intended for administering the national data collection, the survey was piloted in April and May 2010. Fifty ANCC-certified informatics nurses randomly selected from across the nation were invited to take the pilot survey. Twenty five (50 percent) of the informatics nurses invited to take the pilot survey responded. The panel members revised the survey based on the results of the pilot survey and finalized 98 work activities to be used in the final survey. The complete text of the work activities are presented in **Appendix A**.

National Survey. In June and July 2010, the 729 ANCC-certified informatics nurses who were selected to take the national survey were sent three notifications via the United States Postal Service: an alert letter, and two follow-up reminders. The alert letter explained the purpose and importance of the study, the eligibility criteria of the study, and stated how to access the survey via the internet. The letter indicated that the participant’s responses would be kept confidential. The letter also notified that respondents completing the survey would receive a 5 hour reduction of their continuing education requirement for their ANCC recertification.

The first follow-up reminder letter was sent approximately two-weeks after the alert letter. It thanked recipients if they had already submitted their completed survey and encouraged them to do so if they had not already.

The final follow-up reminder letter was sent out only to those who had not yet responded to the survey and was sent out approximately two-weeks prior to the end of the survey.

Data Analysis

The three rating scales were combined into a single measure of overall criticality using a hierarchical method. As agreed by the initial study workgroup, the three rating scales were combined into a single measure in such a manner that a particular value on the performance expectation scale would outweigh or outrank all values on the consequence and frequency scales, and that a particular value on the consequence scale would outweigh or outrank all values on the frequency scale.

Table 3 displays how the values of the overall criticality rating were constructed according to all the possible survey response patterns that might be given to rate an individual work activity by its frequency, performance expectation, and consequence. For example, if a respondent

indicated that a particular work activity was expected to be performed within the first six months of assuming the role of an informatics nurse, could cause severe harm to the patient if it was performed incorrectly, and is performed occasionally, the overall criticality rating for that response pattern would be 29. A score of 22 suggests that a work activity is generally expected to be performed within the first six months of assuming the role of an informatics nurses and have moderate consequences if incorrectly performed. Therefore, work activities with scores of 22 or higher on the overall criticality variable may be considered as highly critical. When a work activity was rated as *never expected* on the performance expectation scale, it would receive an overall criticality score of 1 as the bottom row in Table 3 indicates.

Table 3. Construction of the Overall Criticality Variable

Survey Response Options			Overall Criticality Score
Performance Expectation	Consequence	Frequency	
Within first 6 months	Severe	Frequently	31
		Often	30
		Occasionally	29
		Seldom	28
		Never	27
	Moderate	Frequently	26
		Often	25
		Occasionally	24
		Seldom	23
		Never	22
	Little or no	Frequently	21
		Often	20
		Occasionally	19
		Seldom	18
		Never	17
After first 6 months	Severe	Frequently	16
		Often	15
		Occasionally	14
		Seldom	13
		Never	12
	Moderate	Frequently	11
		Often	10
		Occasionally	9
		Seldom	8
		Never	7
	Little or no	Frequently	6
		Often	5
		Occasionally	4
		Seldom	3
		Never	2
Never expected	All options	All options	1

Survey Results

The initial, total sample size included 729 ANCC-certified informatics nurses. A total of 412 valid surveys were returned for an overall response rate of 57 percent.

Table 4 shows the percent of surveys returned in each geographic region compared to the number of ANCC-certified informatics nurses invited to participate within the region.

Table 4. Number of Surveys Returned per Geographic Region for Informatics Nurse

Geographic Region	Number Invited to Participate (percent of total pop.)	Number Responded (percent of total pop.)
Northeast – NY, CT, MA, NJ, ME, PA, NH, VT, RI	148 (20.30%)	87 (21.12%)
South – TN, MS, TX, FL, LA, AL, GA, AR, OK, VA, MD, SC, DC, NC, WV, DE, KY	292 (40.05%)	163 (39.56%)
Midwest – IA, NE, KS, OH, MO, MN, SD, ND, MI, IL, IN, WI	176 (24.14%)	98 (23.79%)
West – WA, AZ, CA, OR, CO, AK, ID, NM, UT, HI, NV, WY, MT	112 (15.36%)	64 (15.53%)
Other	1 (0.14%)	0 (0.00%)
Total	729	412

Demographic Information

Appendix B details the survey responses to the demographic questions which included inquiry on the practitioner’s background and practice setting.

Demographic Background

Approximately 89 percent of the respondents were female and approximately 90 percent reported to be white. Approximately 82 percent of the respondents fell into the age group of 45 - 64 years of age.

Approximately 40 percent of respondents indicated that they held a Masters in Nursing as one of their highest degree. Approximately 35 percent of the respondents had a Baccalaureate in Nursing as one of their highest degrees.

The average number of years of experience the respondents had as an RN was 26.99 years. The respondents also reported on average almost 5.81 years of experience working within the specialty.

Practice Settings

Approximately 26 percent of the respondents indicated that they practiced in cities (population between 50,000 - 249,999). Both metropolitan (population between 250,000 and 999,999) and greater methopolitan (population greater than 999,999) areas came in second with approximately 22 percent of respondents each.

In terms of practice setting, the highest percentage of respondents indicated they practice in a hospital, in patient setting (62 percent). Hospital based ambulatory care settings came in second with 17 percent.

Practice Descriptions

Descriptive statistics (means, standard deviations, and medians) for the three rating scales of all 98 work activities—performance expectation, consequence, and frequency—and overall criticality are listed in **Appendix C**. The scales were highly reliable. Cronbach's coefficient alpha estimates for the performance expectation, consequence, and frequency scales when applied to all the data were 0.96, 0.97, and 0.96, respectively. (Cronbach's coefficient alpha, a measure of internal stability, ranges in value between 0 and 1.)

In **Appendix D**, the mean overall criticality statistics are presented in rank order of criticality. As indicated in Table 5, 24 work activity statements were rated by the respondents as being highly critical (with a mean overall criticality rank of 22 or above).

Table 5. Number of Work Activities by Mean Overall Criticality for Informatics Nurse

	Mean Overall Criticality Score						Total number above 22
	27 and above	Between 22 and 26	Between 17 and 21	Between 12 and 16	Between 7 and 11	6 and below	
Number of Work Activities	3	21	22	15	34	3	24

Table 6 and 7 displays the 20 highest-ranking and the 20 lowest-ranking work activities by overall criticality.

Table 6. Top 20 Work Activities Ranked by Overall Criticality for Informatics Nurse

Work Activity Number and Name	Overall Criticality
9 Models ethical behavior in use of systems and data.	31
31 Promotes adherence to confidentiality across the organization, health exchanges, or state/national registries.	30
30 Identifies issues related to privacy.	29
2 Serves on clinical committees.	25
13 Observes process flows.	25
14 Documents process flows.	25
23 Analyzes existing system problems which impact nursing workflow.	25
38 Serves as a liaison between clinical, administrative, educational and IT groups within the organization.	25
39 Serves as a system or technical resource to client.. (Definition of client: consumers, patients, nurses, other health care providers, vendors, and other organizations)	25
54 Serves on a go-live implementation team.	25
56 Serves on project teams.	25
American Nurses Credentialing Center	11

**2010 Role Delineation Study: Informatics Nurse—
National Survey Results**

Work Activity Number and Name	Overall Criticality
57 Serves as a super user (e.g., end user support, one on one support)	25
86 Promotes the inclusion of nursing processes/workflow into the development of the system.	25
32 Determines role based access.	24
33 Reviews documentation and work processes for adherence to national accreditation standards such as The Joint Commission.	24
42 Assesses existing processes to identify enhancements or improvements.	24
46 Provides remote end-user support (e.g., telephone, remote access, email)	24
60 Builds system data elements and applications using vendor build tools.	24
64 Executes testing scripts.	24
74 Designs tools for delivering instruction (e.g. handouts, web-based-training, computer-based training, emails, lectures, over-the-shoulder support).	24

Table 7. Bottom 20 Work Activities Ranked by Overall Criticality for Informatics Nurse

Work Activity Number and Name	Overall Criticality
92 Modifies clinical informatics practice based on evidence.	10
93 Assesses the client use of technology through audit trails or other innovative technique.	10
11 Leads initiatives that embed/promote simulation-based training.	9
19 Develops quality performance measures.	9
27 Analyzes new or existing systems for compliance with national and international technical standards (e.g., HL7, CCOW).	9
35 Provides input to policy development related to the release of patient information.	9
41 Identifies required components for return on investment (ROI), request for information (RFI) or request for proposals (RFP).	9
52 Participates in biomedical device selection.	9
53 Participates in interface prioritization.	9
81 Serves on organization's policy development committees.	9
83 Provides recommendations for policy development and revision.	9
89 Volunteers in state or national nursing organizations.	9
91 Conducts comparative analysis in the selection of an appropriate application/system.	9
95 Disseminates informatics-related research findings.	9
97 Conducts studies to evaluate return on investment (ROI) (e.g, time studies, medication error studies).	9
98 Conducts usability studies.	9
3 Provides input into project budget.	8
8 Identifies need for external consultants.	5
82 Participates in the development of state or national policies.	4
90 Defines research questions in healthcare informatics.	4

Appendix A Work Activities Statements

Work Activity No. and Statement

- 1 Serves on information technology committees.
- 2 Serves on clinical committees.
- 3 Provides input into project budget.
- 4 Participates in information system selection.
- 5 Leads go-live implementation.
- 6 Advocates for the clinical areas' informatics needs during strategic planning.
- 7 Manages resources through different phases of the systems' life cycle.
- 8 Identifies need for external consultants.
- 9 Models ethical behavior in use of systems and data.
- 10 Participates in resolving ethical dilemmas related to clinical informatics.
- 11 Leads initiatives that embed/promote simulation-based training.
- 12 Networks with other informatics nurses related to process and products information/issues.
- 13 Observes process flows.
- 14 Documents process flows.
- 15 Analyzes aggregate quality data.
- 16 Analyzes workload data.
- 17 Identifies patterns within data.
- 18 Promotes evidence-based practice changes through data analysis.
- 19 Develops quality performance measures.
- 20 Analyzes system performance and effectiveness.
- 21 Identifies discrepancies between current and optimal systems.
- 22 Analyzes end-user acceptance of systems using human-computer interface (HCI) principles/methods and/or validated tools.
- 23 Analyzes existing system problems which impact nursing workflow.
- 24 Reviews potential functionalities of new or existing systems.
- 25 Conducts a needs analysis.
- 26 Facilitates requirement gathering.
- 27 Analyzes new or existing systems for compliance with national and international technical standards (e.g., HL7, CCOW).
- 28 Identifies impact of system changes on training, cost, and workflow. Determines availability of required quality data elements needed for clinical documentation or decision making (e.g., patient care, supporting clinical practice).
- 29 Identifies issues related to privacy.
- 30 Promotes adherence to confidentiality across the organization, health exchanges, or state/national registries.
- 31 Determines role based access.
- 32 Reviews documentation and work processes for adherence to national

Work Activity No. and Statement

- accreditation standards such as The Joint Commission.
- 34 Drives standardization of documentation.
- 35 Provides input to policy development related to the release of patient information.
- 36 Makes recommendations related to data redundancy and backup for outage/disaster management.
- 37 Develops policy and procedure for data recovery and reconciliation of downtime information.
- 38 Serves as a liaison between clinical, administrative, educational and IT groups within the organization.
- 39 Serves as a system or technical resource to client.. (Definition of client: consumers, patients, nurses, other health care providers, vendors, and other organizations)
- 40 Recommends implementation strategies.
- 41 Identifies required components for return on investment (ROI), request for information (RFI) or request for proposals (RFP).
- 42 Assesses existing processes to identify enhancements or improvements.
- 43 Makes recommendations for ergonomic designs.
- 44 Makes recommendations to optimize system design/redesign based on identified problems.
- 45 Consults with experts to validate interpretation of regulations.
- 46 Provides remote end-user support (e.g., telephone, remote access, email)
- 47 Facilitates change management.
- 48 Manages change control.
- 49 Communicates impact of system changes across disciplines or organizations.
- 50 Promotes the integration of nursing vocabularies and standardized nomenclatures in applications.
- 51 Validates data integration across disparate systems.
- 52 Participates in biomedical device selection.
- 53 Participates in interface prioritization.
- 54 Serves on a go-live implementation team.
- 55 Directs project teams.
- 56 Serves on project teams.
- 57 Serves as a super user (e.g., end user support, one on one support)
- 58 Facilitates changes in system functionality based on updates to policies and procedures.
- 59 Translates user requirements into informatics solutions to support clinical practice.

Work Activity No. and Statement

- 60 Builds system data elements and applications using vendor build tools. Incorporates changes to systems based on current state, national and international standards.
- 61
- 62 Recommends software programming changes to vendor/programmer.
- 63 Develops testing scripts.
- 64 Executes testing scripts.
- 65 Recommends updates to policies and procedures based on changes in system functionality.
- 66 Configures system design to assure data availability for reporting.
- 67 Minimizes data entry redundancies within or across systems.
- 68 Develops build-specifications based on end-user requirements.
- 69 Specifies informatics competencies for initial training. Assesses learning needs of the end-user, including literacy, informatics skills and knowledge, barriers, adaptations.
- 70
- 71 Prepares teaching plans including training goals and objectives.
- 72 Identifies teaching strategies for delivering instruction.
- 73 Designs training documentation and learning tools. Designs tools for delivering instruction (e.g. handouts, web-based-training, computer-based training, emails, lectures, over-the-shoulder support).
- 74
- 75 Conducts training sessions (New system roll-out, regular training).
- 76 Evaluates training effectiveness.
- 77 Performs ongoing monitoring for educational needs.
- 78 Modifies training based on evaluations and feedback. Maintains records that support evidence of end-user's informatics competencies.
- 79
- 80 Mentors others in nursing informatics.
- 81 Serves on organization's policy development committees.
- 82 Participates in the development of state or national policies.
- 83 Provides recommendations for policy development and revision.
- 84 Advocates for consumer access to healthcare technology. Promotes the inclusion of nursing focused data elements into the development of the system.
- 85 Promotes the inclusion of nursing processes/workflow into the development of the system.
- 86 Promotes the inclusion of nursing informatics representation in decision making
- 87 Advocates for integrating evidence-based practices into the development of clinical decision support systems at the point of care.
- 88
- 89 Volunteers in state or national nursing organizations.
- 90 Defines research questions in healthcare informatics. Conducts comparative analysis in the selection of an appropriate application/system.
- 91

Work Activity No. and Statement

- 92 Modifies clinical informatics practice based on evidence.
Assesses the client use of technology through audit trails or other
- 93 innovative technique.
- 94 Evaluates whether technology meets client's expectations.
- 95 Disseminates informatics-related research findings.
- 96 Aggregates data.
Conducts studies to evaluate return on investment (ROI) (e.g, time
- 97 studies, medication error studies).
- 98 Conducts usability studies.

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Appendix B Demographic Data Summary

1. Primary place of work

	Recruitment		Respondents	
	Count	Percent	Count	Percent
Northeast	148	20.30%	87	21.12%
South	292	40.05%	163	39.56%
Midwest	176	24.14%	98	23.79%
West	112	15.36%	64	15.53%
Other	1	0.14%	0	0.00%
Total	729	100.00%	412	100.00%

2. What is your gender

	Count	Percent
Male	46	11.25%
Female	363	88.75%
Total	409	100.00%
(Not Answered)	3	

3. What is your racial/ethnic background? (Mark all that apply)

	Count	Percent
White	372	90.29%
Black or African American	14	3.40%
American Indian and Alaska Native	5	1.21%
Asian	15	3.64%
Native Hawaiian and other Pacific Islander	2	0.49%
Hispanic or Latino	6	1.46%
Middle Eastern	2	0.49%
Other	4	0.97%
(Not Answered)	9	

The percentage is computed using "Total = 412"

4. What is your age?

	Count	Percent
25 - 34 years old	12	2.94%
35 - 44 years old	53	12.99%
45 - 54 years old	196	48.04%
55 - 64 years old	138	33.82%
65 and older	9	2.21%
Total	408	100.00%
(Not Answered)	4	

5a. Indicate the highest completed degree in nursing

	Count	Percent
Diploma in Nursing	16	3.91%
Associate Degree in Nursing	20	4.89%
Baccalaureate in Nursing	173	42.30%
Master's in Nursing	174	42.54%
Ph.D. in Nursing	8	1.96%
DNS/DSN/DSNsc	1	0.24%
ND	0	0.00%
DNP	6	1.47%
Other	11	2.69%
	409	100.00%
(Not Answered)	3	

5b. Indicate your highest completed educational level*

	Count	Percent
Diploma in Nursing	24	5.83%
Associate Degree in Nursing	23	5.58%
Baccalaureate in Nursing	146	35.44%
Master's in Nursing	166	40.29%
Ph.D. in Nursing	6	1.46%
DNS/DSN/DSNsc	1	0.24%
ND	0	0.00%
DNP	6	1.46%
Associate Degree in Program other than Nursing	12	2.91%
Baccalaureate in Program other than Nursing	44	10.68%
Master's in Program other than Nursing	122	29.61%
Ph.D. in Program other than Nursing	14	3.40%
ED.D.	6	1.46%
PsyD	0	0.00%
Other	31	7.52%
	2	
(Not Answered)	2	

*The percentage is computed using "Total = 412"

6. Are you currently working in an informatics role?

	Count	Percent
Yes	351	92.86%
No	27	7.14%
	378	100.00%
(Not Answered)	34	

7. How many years have you been:

a. a Registered Nurse?

A Registered Nurse?		
	Count	Percent
0 to 9	10	2.43%
10 to 19	84	20.39%
20 to 29	129	31.31%
30 to 39	161	39.08%
40 to 49	27	6.55%
50 to 59	1	0.24%
Total (Invalid Response)	412	100.00%

A Registered Nurse?	
Mean	26.99
Median	29.00

b. certified as an Informatics nurse?

Certified as an informatics nurse?		
	Count	Percent
0 to 4	195	47.45%
5 to 9	120	29.20%
10 to 14	87	21.17%
15 to 19	9	2.19%
20 to 29	0	0.00%
30 to 39	0	0.00%
40 to 49	0	0.00%
50 to 59	0	0.00%
Total (Invalid Response)	411	100.00%

Certified as an informatics nurse?	
Mean	5.81
Median	5.00

c. practicing in an informatics role?

Practicing in an informatics role?		
	Count	Percent
0 to 4	43	10.44%
5 to 9	112	27.18%
10 to 14	132	32.04%
15 to 19	79	19.17%
20 to 29	43	10.44%
30 to 39	3	0.73%
40 to 49	0	0.00%
50 to 59	0	0.00%
Total	412	100.00%

Practicing in an informatics role?	
Mean	11.49
Median	11.00

8a. Were you required to have clinical experience prior to entering your informatics role?

	Count	Percent
Yes	278	67.97%
No	131	32.03%
Total	409	100.00%
(Not Answered)	3	

8b. How many years were required?

Number of Years	Count	Percent
0	2	0.80%
1	17	6.77%
2	42	16.73%
3	49	19.52%
4	5	1.99%
5	123	49.00%
6	2	0.80%
7	2	0.80%
8	0	0.00%
9	0	0.00%
10	7	2.79%
11	0	0.00%
12	1	0.40%
13	0	0.00%
14	1	0.40%
	251	100.00%
(Not Answered)	161	

9. Which one best characterizes your current practice location? (Mark only one)

	Count	Percent
Rural (population less than 2,500)	4	0.98%
Town (population between 2,500 - 49,999)	59	14.39%
City (population between 50,000 - 249,999)	108	26.34%
Metropolitan (population between 250,000 - 999,999)	89	21.71%
Greater Metropolitan (population greater than 999,999)	90	21.95%
Regionally	22	5.37%
National	28	6.83%
Internationally	10	2.44%
	410	100.00%
Total	410	%
(Not Answered)	2	

10. Which of the following best describes your current primary employment setting?*(
 (You may mark more than one)

	Count	Percent
Ambulatory Care Setting - Hospital Based	70	16.99%
Ambulatory Care Setting -- Private Practice	15	3.64%
Ambulatory Care Setting -- Surgical Center	20	4.85%
Community/Public Health (city/county/state/ federal agency)	14	3.40%
Consulting Firm	37	8.98%
Correctional Nursing	0	0.00%
Day Treatment Center	7	1.70%
Home Health Center	13	3.16%
Hospice/ Palliative Care	17	4.13%
Hospital, In patient	254	61.65%
Managed Care (HMO, Blue Cross/Blue Shield)	4	0.97%
Medical school	9	2.18%
Not-for-profit clinic	9	2.18%
Skilled Nursing/Subacute/Long-term care	16	3.88%
Occupational health	6	1.46%
Rural health clinic	7	1.70%
School or college health	8	1.94%
School/College of Nursing	33	8.01%
VA/Armed forces	16	3.88%
Vendor	39	9.47%
Other	44	10.68%
(Not Answered)	2	

*The percentage is computed using "Total = 412"

11. What department do you report to?

	Count	Percent
Information Technology (IT)	128	31.30%
Clinical Informatics	47	11.49%
Clinical Nursing Department	51	12.47%
Academic Nursing Department	22	5.38%
Education	15	3.67%
Chief of Staff/Executive Office (VP, CFO, CEO, etc.)	50	12.22%
Quality	14	3.42%
Other	82	20.05%
Total	409	100.00%
(Not Answered)	3	

12. What is your primary informatics role?

	Count	Percent
Informatics Nurse	114	27.80%
Faculty	19	4.63%
Educator/Staff Instructor	16	3.90%
Director	56	13.66%
Manager	27	6.59%
Analyst	65	15.85%
Team Leader	9	2.20%
Coordinator	15	3.66%
Project Manager	45	10.98%
Other	44	10.73%
<hr/>		
Total	410	67.56%
(Not Answered)	2	

14. Approximately what percentage of your work time (during an average week) is spent in the following areas?

	Administration, Leadership, and Management		Analysis		Compliance and Integrity Management		Consultation		Coordination, Facilitation, and Integration	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0%	52	13.20%	18	4.63%	71	19.24%	47	12.08%	21	5.48%
1% to 19%	154	39.09%	224	57.58%	285	77.24%	253	65.04%	197	51.44%
20% to 39%	113	28.68%	107	27.51%	11	2.98%	67	17.22%	136	35.51%
40% to 59%	48	12.18%	26	6.68%	0	0.00%	11	2.83%	22	5.74%
60% to 79%	20	5.08%	8	2.06%	0	0.00%	4	1.03%	3	0.78%
80% to 100%	7	1.78%	6	1.54%	2	0.54%	7	1.80%	4	1.04%
		100.00		100.00		100.00				
Valid Responses	394	%	389	%	369	%	389	100.00%	383	100.00%
(Not Answered)	18		23		43		23		29	
Mean percent spent within each area		20.99%		17.16%		6.41%		12.99%		17.19%

14. Approximately what percentage of your work time (during an average week) is spent in the following areas? (Continued)

	Development		Educational and Professional Development		Policy Development and Advocacy		Research and Evaluation		Other	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
0%	66	17.65%	33	8.64%	104	28.34%	113	30.96%	93	52.25%
1% to 19%	216	57.75%	279	73.04%	256	69.75%	237	64.93%	71	39.89%
20% to 39%	73	19.52%	46	12.04%	5	1.36%	10	2.74%	9	5.06%
40% to 59%	13	3.48%	14	3.66%	1	0.27%	4	1.10%	2	1.12%
60% to 79%	5	1.34%	5	1.31%	1	0.27%	1	0.27%	0	0.00%
80% to 100%	1	0.27%	5	1.31%	0	0.00%	0	0.00%	3	1.69%
Valid Responses	374	100.00%	382	100.00%	367	100.00%	365	100.00%	178	100.00%
(Not Answered)	38		30		45		47		234	
Mean percent spent within each area		11.76%		11.24%		4.43%		5.02%		6.01%

Appendix C

Work Activities Descriptive Statistics

**Informatics Nurse(N=351)
Survey Order**

Survey Order		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
1	Serves on information technology committees.	1.71	0.49	2	0.7	0.62	1	2.97	0.79	3	19.31	8.02	21
2	Serves on clinical committees.	1.77	0.51	2	0.76	0.64	1	2.93	0.82	3	20.71	7.83	25
3	Provides input into project budget.	0.96	0.65	1	0.65	0.68	1	1.73	1.12	2	9.15	8.23	8
4	Participates in information system selection.	1.46	0.6	2	1.09	0.72	1	2.53	1.11	3	17.42	9.48	18
5	Leads go-live implementation.	1.15	0.51	1	1.45	0.65	2	2.55	1.05	3	14.74	7.9	14
6	Advocates for the clinical areas' informatics needs during strategic planning.	1.46	0.56	1	1.17	0.67	1	3	1.01	3	18.09	9.53	16
7	Manages resources through different phases of the systems' life cycle.	1.2	0.58	1	1	0.58	1	2.44	1.04	3	13.5	8.69	10
8	Identifies need for external consultants.	0.9	0.59	1	0.57	0.62	1	1.56	1.04	2	7.65	7.03	5
9	Models ethical behavior in use of systems and data.	1.86	0.39	2	1.5	0.64	2	3.68	0.74	4	26.29	7.4	31
10	Participates in resolving ethical dilemmas related to clinical informatics.	1.45	0.62	2	1.23	0.7	1	2.37	1.16	2	17.97	9.87	19
11	Leads initiatives that embed/promote simulation-based training.	1.09	0.62	1	0.64	0.6	1	1.92	1.09	2	10.38	8.1	9

Performance expectation response options: 0 = never, 1 = after first 6 months, 2 = within the first 6 months; Consequences response option: 0 = little or none, 1 = moderate, 2 = severe; Frequency response options: 0 = never, 1 = seldom, 2 = occasionally, 3 = often, 4 = frequently

**Informatics Nurse(N=351)
Survey Order**

Survey Order		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
12	Networks with other informatics nurses related to process and products information/issues.	1.82	0.43	2	0.54	0.59	0	3.03	0.82	3	20.31	6.92	21
13	Observes process flows.	1.93	0.27	2	1.05	0.71	1	3.23	0.7	3	24.54	5.35	25
14	Documents process flows.	1.82	0.41	2	1.13	0.6	1	3.02	0.76	3	23.02	6.88	25
15	Analyzes aggregate quality data.	1.35	0.59	1	0.98	0.62	1	2.32	0.97	2	15.1	9.05	13
16	Analyzes workload data.	1.28	0.62	1	0.81	0.6	1	2.17	1	2	13.6	9.02	10
17	Identifies patterns within data.	1.37	0.57	1	0.89	0.56	1	2.4	0.93	2	14.98	8.58	10
18	Promotes evidence-based practice changes through data analysis.	1.27	0.54	1	0.99	0.61	1	2.5	0.99	3	14.12	8.38	10
19	Develops quality performance measures.	1.06	0.59	1	0.87	0.61	1	2.05	1.07	2	10.96	8.03	9
20	Analyzes system performance and effectiveness.	1.32	0.59	1	1.08	0.64	1	2.61	1.05	3	15.58	9.04	14
21	Identifies discrepancies between current and optimal systems.	1.3	0.55	1	0.93	0.6	1	2.47	0.99	3	14.19	8.81	10

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**Informatics Nurse(N=351)
Survey Order**

		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
22	Analyzes end-user acceptance of systems using human-computer interface (HCI) principles/methods and/or validated tools.	1.33	0.6	1	0.94	0.64	1	2.44	1.06	3	15.02	9.48	10
23	Analyzes existing system problems which impact nursing workflow.	1.67	0.48	2	1.26	0.6	1	3.15	0.73	3	21.53	8.32	25
24	Reviews potential functionalities of new or existing systems.	1.57	0.53	2	0.93	0.6	1	2.75	0.83	3	18.09	8.69	20
25	Conducts a needs analysis.	1.31	0.59	1	0.87	0.6	1	2.16	0.97	2	14.05	8.83	10
26	Facilitates requirement gathering.	1.42	0.6	1	0.93	0.64	1	2.29	0.93	2	16.02	9.08	15
27	Analyzes new or existing systems for compliance with national and international technical standards (e.g., HL7, CCOW).	0.96	0.65	1	0.96	0.72	1	1.67	1.21	2	10.44	8.69	9
28	Identifies impact of system changes on training, cost, and workflow.	1.16	0.54	1	1.13	0.63	1	2.23	1.03	2	13.15	7.99	10

Performance expectation response options: 0 = never, 1 = after first 6 months, 2 = within the first 6 months; Consequences response option: 0 = little or none, 1 = moderate, 2 = severe; Frequency response options: 0 = never, 1 = seldom, 2 = occasionally, 3 = often, 4 = frequently

**Informatics Nurse(N=351)
Survey Order**

		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
29	Determines availability of required quality data elements needed for clinical documentation or decision making (e.g., patient care, supporting clinical practice).	1.44	0.55	1	1.27	0.61	1	2.77	0.89	3	17.92	9.05	15
30	Identifies issues related to privacy.	1.81	0.45	2	1.62	0.59	2	2.98	1.01	3	25.39	7.47	29
31	Promotes adherence to confidentiality across the organization, health exchanges, or state/national registries.	1.82	0.44	2	1.62	0.62	2	3.34	0.97	4	25.84	7.89	30
32	Determines role based access.	1.6	0.57	2	1.25	0.62	1	2.75	0.97	3	20.45	8.97	24
33	Reviews documentation and work processes for adherence to national accreditation standards such as The Joint Commission.	1.53	0.57	2	1.32	0.64	1	2.72	0.98	3	19.69	9.28	24
34	Drives standardization of documentation.	1.47	0.56	2	1.04	0.54	1	3.02	0.93	3	17.63	9.19	19
35	Provides input to policy development related to the release of patient information.	1.12	0.7	1	0.99	0.76	1	1.74	1.14	2	12.7	9.7	9

Performance expectation response options: 0 = never, 1 = after first 6 months, 2 = within the first 6 months; Consequences response option: 0 = little or none, 1 = moderate, 2 = severe; Frequency response options: 0 = never, 1 = seldom, 2 = occasionally, 3 = often, 4 = frequently

**Informatics Nurse(N=351)
Survey Order**

		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
36	Makes recommendations related to data redundancy and backup for outage/disaster management.	0.98	0.62	1	1.21	0.8	1	1.61	1.06	2	11.47	8.71	10
37	Develops policy and procedure for data recovery and reconciliation of downtime information.	1.09	0.58	1	1.31	0.72	1	1.93	1.09	2	13.12	8.61	13
38	Serves as a liaison between clinical, administrative, educational and IT groups within the organization.	1.72	0.47	2	1.13	0.6	1	3.49	0.7	4	21.97	7.99	25
39	Serves as a system or technical resource to client.. (Definition of client: consumers, patients, nurses, other health care providers, vendors, and other organizations)	1.6	0.55	2	1.09	0.58	1	3.21	0.9	3	19.96	8.66	25
40	Recommends implementation strategies.	1.38	0.54	1	1.1	0.53	1	2.71	0.88	3	16.15	8.52	14

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**Informatics Nurse(N=351)
Survey Order**

		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
41	Identifies required components for return on investment (ROI), request for information (RFI) or request for proposals (RFP).	1.01	0.58	1	0.88	0.65	1	1.72	1.04	2	10.11	7.78	9
42	Assesses existing processes to identify enhancements or improvements.	1.62	0.52	2	0.96	0.55	1	2.95	0.77	3	19.17	8.27	24
43	Makes recommendations for ergonomic designs.	1.41	0.72	2	0.69	0.64	1	1.82	1.07	2	15.09	9.55	18
44	Makes recommendations to optimize system design/redesign based on identified problems.	1.48	0.51	1	1.06	0.56	1	2.76	0.82	3	17.26	8.49	16
45	Consults with experts to validate interpretation of regulations.	1.43	0.6	1	1.07	0.67	1	2.32	1.02	2	16.76	9.29	15
46	Provides remote end-user support (e.g., telephone, remote access, email)	1.6	0.63	2	0.97	0.62	1	2.81	1.14	3	19.59	9.35	24
47	Facilitates change management.	1.47	0.54	1	1.11	0.59	1	2.82	0.95	3	17.76	9.19	16
48	Manages change control.	1.2	0.63	1	1.13	0.64	1	2.36	1.15	2	14.34	9.47	10

Performance expectation response options: 0 = never, 1 = after first 6 months, 2 = within the first 6 months; Consequences response option: 0 = little or none, 1 = moderate, 2 = severe; Frequency response options: 0 = never, 1 = seldom, 2 = occasionally, 3 = often, 4 = frequently

**Informatics Nurse(N=351)
Survey Order**

		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
49	Communicates impact of system changes across disciplines or organizations.	1.5	0.55	2	1.18	0.59	1	2.86	0.89	3	18.52	8.93	20
50	Promotes the integration of nursing vocabularies and standardized nomenclatures in applications.	1.33	0.64	1	0.81	0.64	1	2.4	1.19	2	14.55	9.61	10
51	Validates data integration across disparate systems.	1.3	0.64	1	1.26	0.66	1	2.28	1.09	2	16.19	9.7	14
52	Participates in biomedical device selection.	1.16	0.76	1	0.68	0.64	1	1.53	1.09	2	12.13	9.5	9
53	Participates in interface prioritization.	0.99	0.65	1	0.77	0.64	1	1.57	1.07	2	9.93	8.2	9
54	Serves on a go-live implementation team.	1.84	0.4	2	1.13	0.6	1	3.12	0.84	3	23.44	6.47	25
55	Directs project teams.	1.06	0.49	1	1.3	0.64	1	2.32	1.04	2	12.77	7.36	10
56	Serves on project teams.	1.9	0.34	2	0.97	0.57	1	3.25	0.74	3	23.65	5.49	25
57	Serves as a super user (e.g., end user support, one on one support)	1.81	0.47	2	1.05	0.58	1	3.28	0.88	3	23.15	6.93	25
58	Facilitates changes in system functionality based on updates to policies and procedures.	1.48	0.55	2	1.1	0.59	1	2.6	0.85	3	17.53	8.74	18

Performance expectation response options: 0 = never, 1 = after first 6 months, 2 = within the first 6 months; Consequences response option: 0 = little or none, 1 = moderate, 2 = severe; Frequency response options: 0 = never, 1 = seldom, 2 = occasionally, 3 = often, 4 = frequently

**Informatics Nurse(N=351)
Survey Order**

		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
59	Translates user requirements into informatics solutions to support clinical practice.	1.5	0.52	2	1.2	0.55	1	2.96	0.79	3	18.52	8.58	20
60	Builds system data elements and applications using vendor build tools.	1.46	0.7	2	1.14	0.66	1	2.56	1.19	3	18.52	9.96	24
61	Incorporates changes to systems based on current state, national and international standards.	1.36	0.59	1	1.17	0.6	1	2.49	0.99	3	16.4	8.97	14
62	Recommends software programming changes to vendor/programmer.	1.4	0.57	1	0.82	0.61	1	2.43	0.96	2	14.92	8.86	10
63	Develops testing scripts.	1.42	0.6	1	1.09	0.65	1	2.4	0.99	2	16.81	8.94	15
64	Executes testing scripts.	1.7	0.51	2	1.11	0.63	1	2.66	0.87	3	20.84	8.1	24
65	Recommends updates to policies and procedures based on changes in system functionality.	1.49	0.57	2	0.96	0.58	1	2.4	0.91	2	16.98	9.04	19
66	Configures system design to assure data availability for reporting.	1.19	0.6	1	1.07	0.61	1	2.32	1.09	2	13.56	8.68	10
67	Minimizes data entry redundancies within or across systems.	1.47	0.58	2	0.93	0.61	1	2.66	1.03	3	16.75	9.03	19
68	Develops build-specifications based on end-user requirements.	1.35	0.59	1	1.11	0.57	1	2.58	1.02	3	15.92	9.05	14

Performance expectation response options: 0 = never, 1 = after first 6 months, 2 = within the first 6 months; Consequences response option: 0 = little or none, 1 = moderate, 2 = severe; Frequency response options: 0 = never, 1 = seldom, 2 = occasionally, 3 = often, 4 = frequently

**Informatics Nurse(N=351)
Survey Order**

		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
69	Specifies informatics competencies for initial training.	1.28	0.61	1	0.81	0.6	1	2.27	1.08	2	13.59	9.01	10
70	Assesses learning needs of the end-user, including literacy, informatics skills and knowledge, barriers, adaptations.	1.58	0.56	2	0.97	0.61	1	2.69	0.96	3	18.72	8.57	23
71	Prepares teaching plans including training goals and objectives.	1.46	0.6	2	0.93	0.57	1	2.52	0.98	3	16.81	8.99	19
72	Identifies teaching strategies for delivering instruction.	1.52	0.58	2	0.86	0.56	1	2.57	0.95	3	17.3	8.76	20
73	Designs training documentation and learning tools.	1.54	0.57	2	0.95	0.56	1	2.64	0.92	3	17.99	8.77	21
74	Designs tools for delivering instruction (e.g. handouts, web-based-training, computer-based training, emails, lectures, over-the-shoulder support).	1.59	0.56	2	0.96	0.53	1	2.67	0.91	3	18.77	8.59	24
75	Conducts training sessions (New system roll-out, regular training).	1.63	0.59	2	1.06	0.58	1	2.71	0.99	3	20.02	8.69	24
76	Evaluates training effectiveness.	1.57	0.57	2	0.89	0.59	1	2.68	1	3	18.26	8.82	21

Performance expectation response options: 0 = never, 1 = after first 6 months, 2 = within the first 6 months; Consequences response option: 0 = little or none, 1 = moderate, 2 = severe; Frequency response options: 0 = never, 1 = seldom, 2 = occasionally, 3 = often, 4 = frequently

**Informatics Nurse(N=351)
Survey Order**

		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
77	Performs ongoing monitoring for educational needs.	1.5	0.59	2	0.79	0.55	1	2.64	1.04	3	16.67	8.82	19
78	Modifies training based on evaluations and feedback.	1.51	0.59	2	0.87	0.56	1	2.64	1.04	3	17.17	8.91	19
79	Maintains records that support evidence of end-user's informatics competencies.	1.41	0.77	2	0.68	0.62	1	2.32	1.35	3	16.05	10.01	19
80	Mentors others in nursing informatics.	1.21	0.52	1	0.79	0.63	1	2.67	1.08	3	12.39	8.5	10
81	Serves on organization's policy development committees.	1.22	0.6	1	0.71	0.6	1	2.06	1.02	2	12.14	8.51	9
82	Participates in the development of state or national policies.	0.68	0.54	1	0.67	0.7	1	1.02	0.91	1	5.83	5.41	4
83	Provides recommendations for policy development and revision.	1.22	0.58	1	0.75	0.6	1	1.96	0.88	2	12.01	8.56	9
84	Advocates for consumer access to healthcare technology.	1.26	0.73	1	0.51	0.59	0	1.89	1.21	2	12.5	9.18	10
85	Promotes the inclusion of nursing focused data elements into the development of the system.	1.54	0.58	2	0.98	0.63	1	2.74	1.05	3	18.28	9.31	22

Performance expectation response options: 0 = never, 1 = after first 6 months, 2 = within the first 6 months; Consequences response option: 0 = little or none, 1 = moderate, 2 = severe; Frequency response options: 0 = never, 1 = seldom, 2 = occasionally, 3 = often, 4 = frequently

**Informatics Nurse(N=351)
Survey Order**

		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
86	Promotes the inclusion of nursing processes/workflow into the development of the system.	1.66	0.5	2	1.23	0.62	1	3.1	0.87	3	21.31	8.57	25
87	Promotes the inclusion of nursing informatics representation in decision making	1.57	0.54	2	1.1	0.66	1	3	1	3	19.29	9.24	23
88	Advocates for integrating evidence-based practices into the development of clinical decision support systems at the point of care.	1.49	0.54	2	1.1	0.64	1	2.95	0.98	3	18.12	9.25	19
89	Volunteers in state or national nursing organizations.	1.25	0.69	1	0.47	0.56	0	1.82	1.1	2	11.77	9.22	9
90	Defines research questions in healthcare informatics.	0.79	0.53	1	0.46	0.56	0	1.21	0.94	1	5.87	5.25	4
91	Conducts comparative analysis in the selection of an appropriate application/system.	1.05	0.54	1	0.93	0.66	1	1.67	0.94	2	10.53	7.54	9
92	Modifies clinical informatics practice based on evidence.	1.2	0.58	1	0.92	0.6	1	2.12	1.09	2	12.75	8.66	10

Performance expectation response options: 0 = never, 1 = after first 6 months, 2 = within the first 6 months; Consequences response option: 0 = little or none, 1 = moderate, 2 = severe; Frequency response options: 0 = never, 1 = seldom, 2 = occasionally, 3 = often, 4 = frequently

**Informatics Nurse(N=351)
Survey Order**

		Performance Expectation			Consequence			Frequency			Overall Rank		
		Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median	Mean	Std Dev	Median
93	Assesses the client use of technology through audit trails or other innovative technique.	1.33	0.6	1	0.79	0.6	1	2.23	1.02	2	13.96	9.17	10
94	Evaluates whether technology meets client's expectations.	1.54	0.54	2	0.96	0.61	1	2.66	0.91	3	17.81	9.16	20
95	Disseminates informatics-related research findings.	1.19	0.63	1	0.56	0.59	1	1.84	1.06	2	11.05	8.67	9
96	Aggregates data.	1.45	0.6	2	0.94	0.59	1	2.27	0.99	2	16.34	9.26	18.5
97	Conducts studies to evaluate return on investment (ROI) (e.g, time studies, medication error studies).	1.06	0.61	1	0.91	0.62	1	1.68	1.02	2	10.91	8.13	9
98	Conducts usability studies.	1.17	0.63	1	0.81	0.6	1	1.75	0.98	2	11.89	8.89	9

Performance expectation response options: 0 = never, 1 = after first 6 months, 2 = within the first 6 months; Consequences response option: 0 = little or none, 1 = moderate, 2 = severe; Frequency response options: 0 = never, 1 = seldom, 2 = occasionally, 3 = often, 4 = frequently

Appendix D
Work Activities Overall Criticality – Rank Order

Work Activity No. and Statement	Overall Criticality			
	N	Mean	Std Dev	Median
9 Models ethical behavior in use of systems and data.	351	26.29	7.4	31
31 Promotes adherence to confidentiality across the organization, health exchanges, or state/national registries.	351	25.84	7.89	30
30 Identifies issues related to privacy.	351	25.39	7.47	29
2 Serves on clinical committees.	351	20.71	7.83	25
13 Observes process flows.	351	24.54	5.35	25
14 Documents process flows.	351	23.02	6.88	25
23 Analyzes existing system problems which impact nursing workflow.	351	21.53	8.32	25
38 Serves as a liaison between clinical, administrative, educational and IT groups within the organization.	351	21.97	7.99	25
39 Serves as a system or technical resource to client.. (Definition of client: consumers, patients, nurses, other health care providers, vendors, and other organizations)	351	19.96	8.66	25
54 Serves on a go-live implementation team.	351	23.44	6.47	25
56 Serves on project teams.	351	23.65	5.49	25
57 Serves as a super user (e.g., end user support, one on one support)	351	23.15	6.93	25
86 Promotes the inclusion of nursing processes/workflow into the development of the system.	350	21.31	8.57	25
32 Determines role based access.	351	20.45	8.97	24
33 Reviews documentation and work processes for adherence to national accreditation standards such as The Joint Commission.	351	19.69	9.28	24
42 Assesses existing processes to identify enhancements or improvements.	351	19.17	8.27	24
46 Provides remote end-user support (e.g., telephone, remote access, email)	351	19.59	9.35	24
60 Builds system data elements and applications using vendor build tools.	351	18.52	9.96	24
64 Executes testing scripts.	351	20.84	8.1	24
74 Designs tools for delivering instruction (e.g. handouts, web-based-training, computer-based training, emails, lectures, over-the-shoulder support).	350	18.77	8.59	24
75 Conducts training sessions (New system roll-out, regular training).	350	20.02	8.69	24

Work Activity No. and Statement	Overall Criticality			
	N	Mean	Std Dev	Median
70 Assesses learning needs of the end-user, including literacy, informatics skills and knowledge, barriers, adaptations.	350	18.72	8.57	23
87 Promotes the inclusion of nursing informatics representation in decision making	350	19.29	9.24	23
85 Promotes the inclusion of nursing focused data elements into the development of the system.	350	18.28	9.31	22
1 Serves on information technology committees.	351	19.31	8.02	21
12 Networks with other informatics nurses related to process and products information/issues.	351	20.31	6.92	21
73 Designs training documentation and learning tools.	350	17.99	8.77	21
76 Evaluates training effectiveness.	350	18.26	8.82	21
24 Reviews potential functionalities of new or existing systems.	351	18.09	8.69	20
49 Communicates impact of system changes across disciplines or organizations.	351	18.52	8.93	20
59 Translates user requirements into informatics solutions to support clinical practice.	351	18.52	8.58	20
72 Identifies teaching strategies for delivering instruction.	350	17.3	8.76	20
94 Evaluates whether technology meets client's expectations.	350	17.81	9.16	20
10 Participates in resolving ethical dilemmas related to clinical informatics.	351	17.97	9.87	19
34 Drives standardization of documentation.	351	17.63	9.19	19
65 Recommends updates to policies and procedures based on changes in system functionality.	351	16.98	9.04	19
67 Minimizes data entry redundancies within or across systems.	351	16.75	9.03	19
71 Prepares teaching plans including training goals and objectives.	350	16.81	8.99	19
77 Performs ongoing monitoring for educational needs.	350	16.67	8.82	19
78 Modifies training based on evaluations and feedback.	350	17.17	8.91	19
79 Maintains records that support evidence of end-user's informatics competencies.	350	16.05	10.01	19
88 Advocates for integrating evidence-based practices into the development of clinical decision support systems at the point of care.	350	18.12	9.25	19
96 Aggregates data.	350	16.34	9.26	18.5
4 Participates in information system selection.	351	17.42	9.48	18
43 Makes recommendations for ergonomic designs.	351	15.09	9.55	18
58 Facilitates changes in system functionality based on	351	17.53	8.74	18

Work Activity No. and Statement	Overall Criticality			
	N	Mean	Std Dev	Median
updates to policies and procedures.				
6 Advocates for the clinical areas' informatics needs during strategic planning.	351	18.09	9.53	16
44 Makes recommendations to optimize system design/redesign based on identified problems.	351	17.26	8.49	16
47 Facilitates change management.	351	17.76	9.19	16
26 Facilitates requirement gathering.	351	16.02	9.08	15
29 Determines availability of required quality data elements needed for clinical documentation or decision making (e.g., patient care, supporting clinical practice).	351	17.92	9.05	15
45 Consults with experts to validate interpretation of regulations.	351	16.76	9.29	15
63 Develops testing scripts.	351	16.81	8.94	15
5 Leads go-live implementation.	351	14.74	7.9	14
20 Analyzes system performance and effectiveness.	351	15.58	9.04	14
40 Recommends implementation strategies.	351	16.15	8.52	14
51 Validates data integration across disparate systems.	351	16.19	9.7	14
61 Incorporates changes to systems based on current state, national and international standards.	351	16.4	8.97	14
68 Develops build-specifications based on end-user requirements.	351	15.92	9.05	14
15 Analyzes aggregate quality data.	351	15.1	9.05	13
37 Develops policy and procedure for data recovery and reconciliation of downtime information.	351	13.12	8.61	13
7 Manages resources through different phases of the systems' life cycle.	351	13.5	8.69	10
16 Analyzes workload data.	351	13.6	9.02	10
17 Identifies patterns within data.	351	14.98	8.58	10
18 Promotes evidence-based practice changes through data analysis.	351	14.12	8.38	10
21 Identifies discrepancies between current and optimal systems.	351	14.19	8.81	10
22 Analyzes end-user acceptance of systems using human-computer interface (HCI) principles/methods and/or validated tools.	351	15.02	9.48	10
25 Conducts a needs analysis.	351	14.05	8.83	10
28 Identifies impact of system changes on training, cost, and workflow.	351	13.15	7.99	10

Work Activity No. and Statement	Overall Criticality			
	N	Mean	Std Dev	Median
36 Makes recommendations related to data redundancy and backup for outage/disaster management.	351	11.47	8.71	10
48 Manages change control.	351	14.34	9.47	10
50 Promotes the integration of nursing vocabularies and standardized nomenclatures in applications.	348	14.55	9.61	10
55 Directs project teams.	351	12.77	7.36	10
62 Recommends software programming changes to vendor/programmer.	351	14.92	8.86	10
66 Configures system design to assure data availability for reporting.	351	13.56	8.68	10
69 Specifies informatics competencies for initial training.	350	13.59	9.01	10
80 Mentors others in nursing informatics.	350	12.39	8.5	10
84 Advocates for consumer access to healthcare technology.	350	12.5	9.18	10
92 Modifies clinical informatics practice based on evidence.	350	12.75	8.66	10
93 Assesses the client use of technology through audit trails or other innovative technique.	350	13.96	9.17	10
11 Leads initiatives that embed/promote simulation-based training.	351	10.38	8.1	9
19 Develops quality performance measures.	351	10.96	8.03	9
27 Analyzes new or existing systems for compliance with national and international technical standards (e.g., HL7, CCOW).	351	10.44	8.69	9
35 Provides input to policy development related to the release of patient information.	351	12.7	9.7	9
41 Identifies required components for return on investment (ROI), request for information (RFI) or request for proposals (RFP).	351	10.11	7.78	9
52 Participates in biomedical device selection.	351	12.13	9.5	9
53 Participates in interface prioritization.	351	9.93	8.2	9
81 Serves on organization's policy development committees.	350	12.14	8.51	9
83 Provides recommendations for policy development and revision.	350	12.01	8.56	9
89 Volunteers in state or national nursing organizations.	350	11.77	9.22	9
91 Conducts comparative analysis in the selection of an appropriate application/system.	350	10.53	7.54	9

Work Activity No. and Statement	Overall Criticality			
	N	Mean	Std Dev	Median
95 Disseminates informatics-related research findings.	350	11.05	8.67	9
97 Conducts studies to evaluate return on investment (ROI) (e.g, time studies, medication error studies).	350	10.91	8.13	9
98 Conducts usability studies.	350	11.89	8.89	9
3 Provides input into project budget.	351	9.15	8.23	8
8 Identifies need for external consultants.	351	7.65	7.03	5
82 Participates in the development of state or national policies.	350	5.83	5.41	4
90 Defines research questions in healthcare informatics.	350	5.87	5.25	4

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