NATIONAL QUALITY FORUM
Driving measurable health improvements together

Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to sub criterion 1b).

Brief Measure Information

NQF #: 3450

Corresponding Measures:

Measure Title: Practice Environment Scale - Nursing Work Index (PES-NWI) (composite and five subscales) (previously NQF#0206 - Undergoing Maintenance)

Measure Steward:

sp.02. Brief Description of Measure: Practice Environment Scale-Nursing Work Index (PES-NWI) is a survey-based measure of the nursing practice environment completed by staff registered nurses; includes mean scores on index subscales and a composite mean of all subscale scores.

1b.01. Developer Rationale: The dissemination of the PES-NWI nationally and internationally assures that nurses' practice environments will be measured in consistent fashion across different health systems to develop evidence guiding policy and management decisions. The benefit of using the PES-NWI measure for health care organizations is that organizations provide better quality patient care through improved work environments.

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sp.12. Numerator Statement: Continuous Variable Statement: For surveys completed by Registered Nurses (RN):
12a) Mean score on a composite of all subscale scores
12b) Mean score on Nurse Participation in Hospital Affairs (survey item numbers 5, 6, 11, 15, 17, 21, 23, 27, 28)
12c) Mean score on Nursing Foundations for Quality of Care (survey item numbers 4, 14, 18, 19, 22, 25, 26, 29, 30, 31)
12d) Mean score on Nurse Manager Ability, Leadership, and Support of Nurses (survey item numbers 3, 7, 10, 13, 20)
12e) Mean score on Staffing and Resource Adequacy (survey item numbers 1, 8, 9, 12)
12f) Mean score on Collegial Nurse-Physician Relations (survey item numbers 2, 16, 24)
12g) Three category variable indicating favorable, mixed, or unfavorable practice environments: favorable = four or more subscale means exceed 2.5; mixed = two or three subscale means exceed 2.5; unfavorable = zero or one subscales exceed 2.5.

sp.14. Denominator Statement: Staff RNs

sp.16. Denominator Exclusions: Not applicable

Measure Type: Structure

sp.28. Data Source:

Instrument-Based Data

sp.07. Level of Analysis:

Facility

IF Endorsement Maintenance – Original Endorsement Date: 2019-06-11 10:15 AM

Most Recent Endorsement Date: 12/12/2022 5:00:00 AM

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

sp.03. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results?:

1. Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria

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1ma.01. Indicate whether there is new evidence about the measure since the most recent maintenance evaluation. If yes, please briefly summarize the new evidence, and ensure you have updated entries in the Evidence section as needed.

[Response Begins]

Yes

[Yes Please Explain]

Since the prior endorsement in Nov 2018 there are 35 new empirical publications reporting evidence from the instrument. These papers substantiate and expand the prior literature demonstrating the significant association of this work environment instrument with safety outcomes.

[Response Ends]

Please separate added or updated information from the most recent measure evaluation within each question response in the Importance to Measure and Report: Evidence section. For example:

2021 Submission:

Updated evidence information here.

2018 Submission:

Evidence from the previous submission here.

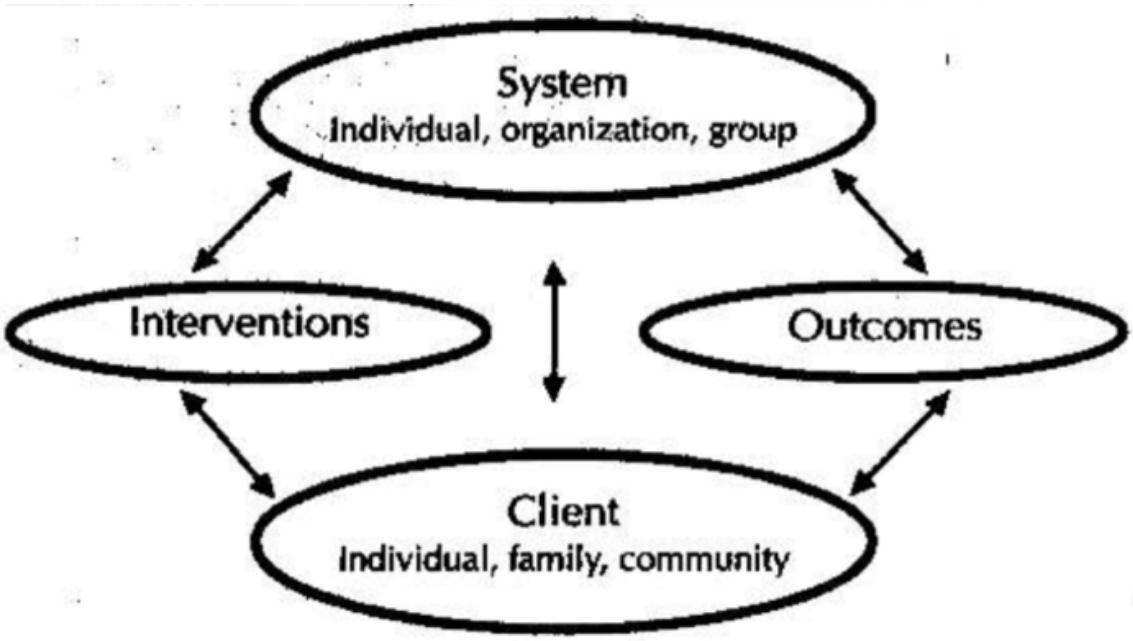
1a.01. Provide a logic model.

Briefly describe the steps between the healthcare structures and processes (e.g., interventions, or services) and the patient's health outcome(s). The relationships in the diagram should be easily understood by general, non-technical audiences. Indicate the structure, process or outcome being measured.

[Response Begins]

We place the nursing practice environment in the system characteristics within the Quality Health Outcomes Model (Mitchell et al. 1998), which postulates that interventions are mediated by system and client characteristics in influencing health outcomes.

The image below, with the title "The Quality Health Outcomes Model," displays four concept ovals: system, interventions, outcomes, and client. System encompasses individual, organization, and group. Client encompasses individual, family, and community. The ovals are connected with arrows, indicating that interventions do not influence outcomes directly, but rather through their association with system and client characteristics. Furthermore, system and client factors do exhibit a direct association.



This image displays four concept ovals: system, interventions, outcomes, and client. System encompasses individual, organization, and group. Client encompasses individual, family, and community. The ovals are connected with arrows, indicating that interventions do not influence outcomes directly, but rather through their association with system and client characteristics. Furthermore, system and client factors do exhibit a direct association.

Mitchell, P. H., Ferketich, S., Jennings, B. M., & American Academy of Nursing Expert Panel on Quality Health Care. (1998). Quality health outcomes model. Image: Journal of Nursing Scholarship, 30(1), 43-46.

[Response Ends]

1a.02. Select the type of source for the systematic review of the body of evidence that supports the performance measure.

A systematic review is a scientific investigation that focuses on a specific question and uses explicit, prespecified scientific methods to identify, select, assess, and summarize the findings of similar but separate studies. It may include a quantitative synthesis (meta-analysis), depending on the available data.

[Response Begins]

Other (specify)

[Other (specify) Please Explain]

Published systematic reviews, meta-analysis, and longitudinal panel studies.

[Response Ends]

If the evidence is not based on a systematic review, skip to the end of the section and do not complete the repeatable question group below. If you wish to include more than one systematic review, add additional tables by clicking “Add” after the final question in the group.

Evidence - Systematic Reviews Table (Repeatable)

Group 1 - Evidence - Systematic Reviews Table

1a.03. Provide the title, author, date, citation (including page number) and URL for the systematic review.

[Response Begins]

Spring 2022 information:

Wei, H., et al. (2018). "The state of the science of nurse work environments in the United States: A systematic review." International Journal of Nursing Sciences 5(3): 287-300.

[Response Ends]

1a.04. Quote the guideline or recommendation verbatim about the process, structure or intermediate outcome being measured. If not a guideline, summarize the conclusions from the systematic review.

[Response Begins]

The systematic review concluded that "Healthier work environments lead to more satisfied nurses who will result in better job performance and higher quality of patient care, which will subsequently improve healthcare organizations' financial viability."

[Response Ends]

1a.05. Provide the grade assigned to the evidence associated with the recommendation, and include the definition of the grade.

[Response Begins]

Level 4 - case-control or cohort study

[Response Ends]

1a.06. Provide all other grades and definitions from the evidence grading system.

[Response Begins]

Levels of Evidence

Level 1 - Systematic review & meta-analysis of randomized controlled trials; clinical guidelines based on systematic reviews or meta-analyses

Level 2 - One or more randomized controlled trials

Level 3 - Controlled trial (no randomization)

Level 4 - Case-control or cohort study

Level 5 - Systematic review of descriptive & qualitative studies

Level 6 - Single descriptive or qualitative study

Level 7 - Expert opinion

Source: Melnyk, B.M. & Fineout-Overholt, E. (2011). *Evidence-based practice in nursing and healthcare: A guide to best practice.* Philadelphia: Lippincott, Williams & Wilkins.

[Response Ends]

1a.07. Provide the grade assigned to the recommendation, with definition of the grade.

[Response Begins]

Level 4 - case-control or cohort study

[Response Ends]

1a.08. Provide all other grades and definitions from the recommendation grading system.

[Response Begins]

Levels of Evidence

Level 1 - Systematic review & meta-analysis of randomized controlled trials; clinical guidelines based on systematic reviews or meta-analyses

Level 2 - One or more randomized controlled trials

Level 3 - Controlled trial (no randomization)

Level 4 - Case-control or cohort study

Level 5 - Systematic review of descriptive & qualitative studies

Level 6 - Single descriptive or qualitative study

Level 7 - Expert opinion

Source: Melnyk, B.M. & Fineout-Overholt, E. (2011). *Evidence-based practice in nursing and healthcare: A guide to best practice.* Philadelphia: Lippincott, Williams & Wilkins.

[Response Ends]

1a.09. Detail the quantity (how many studies) and quality (the type of studies) of the evidence.

[Response Begins]

54 studies. Descriptive correlational studies.

[Response Ends]

1a.10. Provide the estimates of benefit, and consistency across studies.

[Response Begins]

Quotation from Discussion: "This review shows that a healthy work environment plays a significant role in healthcare delivery and is fundamental in providing high quality

patient care."

An example study result of the benefit is "Patients who were taken care of in hospitals with poor work environments had 16% less chance of surviving in-hospital cardiac arrests than those in hospitals with respectable work environments. (McHugh et al 2016."

[Response Ends]

1a.11. Indicate what, if any, harms were identified in the study.

[Response Begins]

There have been no harms reported related to nurse work environments as measured by this instrument.

[Response Ends]

1a.12. Identify any new studies conducted since the systematic review, and indicate whether the new studies change the conclusions from the systematic review.

[Response Begins]

Since the end date of the systematic review was Dec 2017, there have been 197 additional studies. These studies do not change the conclusions of the systematic review.

[Response Ends]

1a.13. If source of evidence is NOT from a clinical practice guideline, USPSTF, or systematic review, describe the evidence on which you are basing the performance measure.

[Response Begins]

2021 evidence:

Sloane, D. M., et al. (2018). "Effect of Changes in Hospital Nursing Resources on Improvements in Patient Safety and Quality of Care: A Panel Study." Med Care **56**(12): 1001-1008.

Lake E.T., Sanders J., Duan, R., Riman K., Schoenauer K, & Chen Y. (2019). A meta-analysis of the associations between the nurse work environment in hospitals and four sets of outcomes. Medical Care 57(5):353-361.

Lake ET, Riman KA, Sloane DM. (2020). Improved work environments and staffing lead to less missed nursing care: A panel study. Journal of Nursing Management DOI: 10.1111/jonm.12970 Epub 2020 March 12

2018 evidence:

Wei, H., et al. (2018). "The state of the science of nurse work environments in the United States: A systematic review." International Journal of Nursing Sciences 5(3): 287-300.

[Response Ends]

1a.14. Briefly synthesize the evidence that supports the measure.

[Response Begins]

2021 evidence:

Sloane et al 2018:

After taking into account cross-sectional differences between hospitals, differences among nurses within hospitals, and potential confounding variables, changes within hospitals in nursing resources were associated with significant changes in quality of care and patient safety. Improvements in work environment of 1 SD decrease odds of unfavorable quality care and patient safety by factors ranging from 0.82 to 0.97. Improvements within hospitals in work environments, nurse staffing, and educational composition of nurses coincide with improvements in quality of care and patient safety.

Lake et al 2019:

Consistent, significant associations between the work environment

and all outcome classes were identified. Better work environments were associated with lower odds of negative nurse outcomes (average OR of 0.71), poor safety or quality ratings (average OR of 0.65), and negative patient outcomes (average OR of 0.93), but higher odds of patient satisfaction (OR of 1.16). The nurse work environment warrants attention to promote health care quality, safety, and patient and clinician wellbeing.

Lake et al 2020:

Over the 10-year period, most hospitals exhibited improved work environments, better nurse staffing and more missed care. In hospitals with improved work environments or nurse staffing, the prevalence and frequency of missed care decreased significantly. The effect on missed care of changes in the work environment was greater

than that of nurse staffing. Changes in the hospital work environment and staffing influence missed care. Implications for Nursing Management: Modifications in the work environment and staffing are strategies to mitigate care compromise. Nurse managers should investigate work settings in order to identify weaknesses.

2018 evidence:

Wei, et al 2018:

This systematic review synthesized evidence from 54 studies published from January 2005 through December 2017. The researchers concluded that: "Healthier work environments lead to more satisfied nurses who will result in better job performance and higher quality of patient care, which will subsequently improve healthcare organizations' financial viability."

[Response Ends]

1a.15. Detail the process used to identify the evidence.

[Response Begins]

A literature search following the PRISMA guideline of five databases: MEDLINE via PubMed, CINAHL, PsycINFO, Nursing and Allied Health, and the Cochrane Library.

[Response Ends]

1a.16. Provide the citation(s) for the evidence.

[Response Begins]

2021 evidence:

Sloane, D. M., et al. (2018). "Effect of Changes in Hospital Nursing Resources on Improvements in Patient Safety and Quality of Care: A Panel Study." Med Care **56**(12): 1001-1008.

Lake E.T., Sanders J., Duan, R., Riman K., Schoenauer K, & Chen Y. (2019). A meta-analysis of the associations between the nurse work environment in hospitals and four sets of outcomes. Medical Care 57(5):353-361.

Lake ET, Riman KA, Sloane DM. (2020). Improved work environments and staffing lead to less missed nursing care: A panel study. Journal of Nursing Management DOI: 10.1111/jonm.12970 Epub 2020 March 12

2018 evidence:

Wei, H., et al. (2018). "The state of the science of nurse work environments in the United States: A systematic review." International Journal of Nursing Sciences 5(3): 287-300.

[Response Ends]

1b.01. Briefly explain the rationale for this measure.

Explain how the measure will improve the quality of care, and list the benefits or improvements in quality envisioned by use of this measure.

[Response Begins]

The dissemination of the PES-NWI nationally and internationally assures that nurses' practice environments will be measured in consistent fashion across different health systems to develop evidence guiding policy and management decisions. The benefit of using the PES-NWI measure for health care organizations is that organizations provide better quality patient care through improved work environments.

[Response Ends]

1b.02. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis.

Include mean, std dev, min, max, interquartile range, and scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include. This information also will be used to address the sub-criterion on improvement (4b) under Usability and Use.

[Response Begins]

October 2021 Maintenance

These 16 studies, published since the previous maintenance cycle of October 2018, demonstrate a continuing gap in performance since the last time this was endorsed. They are listed in chronological order. A reference list is included.

- Knupp, A. M., Patterson, E. S., Ford, J. L., Zurmehly, J., & Patrick, T. (2018). Associations among nurse fatigue, individual nurse factors, and aspects of the nursing practice environment. *JONA: The Journal of Nursing Administration*, *48*(12), 642-648.

This is Table 2, from the above publication, which reports descriptive statistics (mean, SD, minimum, maximum) for PES-NWI subscales, demonstrating variation or gap in care in this sample.

TABLE 2 Descriptive Statistics for Three PES-NWI Subscales				
	Mean	**SD**	**Min**	**Max**
Nurse manager ability, leadership, and support	2.84	0.72	1	4
Staffing and resource adequacy	2.64	0.84	1	4
Collegial nurse-physician relations	2.80	0.84	1	4
Abbreviations: Min = minimum value; max = maximum value. Scale is 1 (strongly disagree) to 4 (strongly agree).				

- Hallowell, S. G., Rogowski, J. A., & Lake, E. T. (2019). How nurse work environments relate to the presence of parents in neonatal intensive care. *Advances in neonatal care: official journal of the National Association of Neonatal Nurses*, *19*(1), 65

The practice environment was highly rated in the NICU sample, where the average PES-NWI composite score was more than 3.0 (mean = 3.06), with a range of 2.42 to 3.97.

- Smith, J. G., Plover, C. M., McChesney, M. C., & Lake, E. T. (2019). Isolated, small, and large hospitals have fewer nursing resources than urban hospitals: Implications for rural health policy. Public Health Nursing, 36(4), 469-477.

This is Table 5, from the above publication, which reports descriptive statistics for PES-NWI subscales in hospitals across more urban or rural settings, demonstrating statistically significant variation or gap in care in this sample.

TABLE 5 PES-NWI: rural versus urban (hospital-level) (n = 642 hospitals)						
	Overall n = 642	**Urban n = 566**	**Large n = 49**	**Small n = 18**	**Isolated n = 9**	**p-value within and between groups**

TABLE 5 PES-NWI: rural versus urban (hospital-level) (n = 642 hospitals)						
Participation in hospital affairs	2.53	2.53	2.45	2.55	**2.36**	0.09
Nursing foundations for quality care	2.92	2.93	2.83	2.89	**2.75**	0.00**
Nurse manager ability, leadership, and support of nurses	2.59	2.59	**2.56**	2.72	2.60	0.29
Staffing and resource adequacy	2.51	**2.50**	**2.50**	2.82	2.67	0.00**
Collegial nurse-physician relations	2.91	2.91	2.85	3.00	**2.84**	0.08
Composite PES-NWI score	2.69	2.69	**2.64**	2.80	**2.64**	0.10
Note: Bolded numbers indicate the lowest value compared across rurality.						

- Smith, J. G., Plover, C. M., McChesney, M. C., & Lake, E. T. (2019). Rural hospital nursing skill mix and work environment associated with frequency of adverse events. *SAGE open nursing*, *5*, 2377960819848246.

This is Table 3, from the above publication, which reports descriptive statistics for PES-NWI subscales in a sample of 76 rural hospitals, demonstrating variation or gap in care in this sample.

TABLE 3 Rural Hospital Nurse Work Environment (n=76 Hospitals)[†]				
Independent Variable	**Mean**	**SD**	**Min**	**Max**
Nurse participation in hospital affairs	2.46	.31	1.65	3.15
Nursing foundations for quality care	2.84	.23	2.27	3.35
Nurse manager ability, leadership, and support of nurses	2.60	.37	1.75	3.50
Staffing and resource adequacy	2.60e	.38	1.80	3.60
Collegial nurse-physician relations	2.89	.26	2.20	3.67
Nurse work environment composite	2.68	.26	2.15	3.35
Note: minimum values refer to hospitals with the lowest PES_NWI subscale and composite scores in sample. Maximum values refer to hospitals with the highest PES-NWI subscale and composite scores in sample.				

- Campbell, C. M., Prapanjaroensin, A., Anusiewicz, C. V., Baernholdt, M., Jones, T., & Patrician, P. A. (2020). Variables associated with missed nursing care in Alabama: A cross-sectional analysis. *Journal of Nursing Management*, *28*(8), 2174-2184.

This is Table 3, from the above publication, which reports descriptive statistics for PES-NWI subscales in 950 nurses in the state of Alabama, demonstrating variation or gap in care in this sample.

TABLE 3 Descriptive statistics for subscales and composite scores of PES-NWI (N=950)					
Factors	**Mean**	**SD**	**Min**	**Max**	
Collegial Nurse-Physician Relations	3.07	0.69	1	4	
Nurse Foundations for Quality of Care	3.07	0.60	1	4	
Nurse Manager Ability, Leadership, and Support of Nurses	2.82	0.85	1	4	
Nurse Participation in Hospital Affairs	2.71	0.73	1	4	
Staffing and Resource Adequacy	2.51	0.88	1	4	
Composite Score	2.83	0.62	1	4	

- Lake, E. T., French, R., O'Rourke, K., Sanders, J., & Srinivas, S. K. (2020). Linking the work environment to missed nursing care in labour and delivery. *Journal of Nursing Management*, *28*(8), 1901-1908.

This is Table 2, from the above publication, which reports descriptive statistics for PES-NWI subscales in 1,297 maternity nurses, demonstrating variation or gap in care in this sample.

TABLE 2 Descriptive and psychometric statistics for the Practice Environment Scale of the Nursing Work Index[†]				
Subscale	**Mean**	**SD**	**Alpha**	**ICC**
Staffing and resource adequacy	2.74	0.74	0.83	0.68
Nurse manager ability, leadership, and support of nurses	2.64	0.84	0.82	0.73
Nursing foundations for quality of care	3.06	0.52	0.81	0.58
Nurse participation in hospital affairs	2.62	0.65	0.80	0.64
Collegial nurse-physician relations	3.03	0.70	0.86	0.54
Composite	2.84	0.56	0.85	0.65
Abbreviations: ICC, intraclass correlation coefficient; SD, standard deviation; n = 1,297 nurses.				

- Lake, E. T., Staiger, D. O., Cramer, E., Hatfield, L. A., Smith, J. G., Kalisch, B. J., & Rogowski, J. A. (2020). Association of patient acuity and missed nursing care in US neonatal intensive care units. *Medical care research and review*, *77*(5), 451-460.

This is Table 2, from the above publication, which reports descriptive statistics for PES-NWI composite in 320 neonatal intensive care units, demonstrating variation or gap in care in this sample.

TABLE 2 Descriptive Statistics for the Work Environment.†						
	N	**M**	**SD**	**Min**	**Max**	
Nurse work environment composite score	303	2.94	0.25	2.07	3.63	

- Karakachian, A., Colbert, A., Hupp, D., & Berger, R. (2021). Caring for victims of child maltreatment: Pediatric nurses' moral distress and burnout. *Nursing ethics*, *28*(5), 687-703.

The overall mean for the five subscales were (1) adequate staffing, 2.91; (2) manager leadership, 3.12; (3) foundation of quality of care, 3.17; (4) hospital affairs participation, 3.08; and (5) nurse–physician relationship, 3.99.

- Lasater, K. B., McHugh, M., Rosenbaum, P. R., Aiken, L. H., Smith, H., Reiter, J. G., ... & Silber, J. H. (2021). Valuing Hospital investments in nursing: multistate matched-cohort study of surgical patients. *BMJ quality & safety*, *30*(1), 46-55.

This table from the above publication, reports descriptive statistics for the PES-NWI composite in hospitals classified as having better or worse nursing resources, demonstrating variation or gap in care in this sample.

Nurse work environment	Mean (SD)
Better nursing resources	3.01 (0.19)
Worse nursing resources	2.68 (0.22)

Montgomery, A. P., Azuero, A., & Patrician, P. A. (2021). Psychometric properties of Copenhagen Burnout Inventory among nurses. *Research in nursing & health*, *44*(2), 308-318.

This table from the above publication reports descriptive statistics for PES-NWI subscales and composite, demonstrating variation or gap in care in this sample.

PES-NWI	Mean	SD
Nurse Participation in Hospital Affairs	2.73	0.72
Nursing Foundations for Quality of Care	3.08	0.60
Nurse Manager, Ability, Leadership, and Support of Nurses	2.82	0.86
Staffing and Resource Adequacy	2.50	0.87
Collegial Nurse-Physician Relations	3.07	0.70
PES-NWI Composite Score	2.84	0.62

Sano, R., Schiffman, R. F., Shoji, K., & Sawin, K. J. (2018). Negative consequences of providing nursing care in the neonatal intensive care unit. *Nursing Outlook*, *66*(6), 576-585.

Nurse-physician collegiality: Mean (SD): 3.34 (0.57)

Smith, J. G., Rogowski, J. A., & Lake, E. T. (2020). Missed care relates to nurse job enjoyment and intention to leave in neonatal intensive care. *Journal of Nursing Management*, *28*(8), 1940-1947.

Nurse work environment: Mean (SD): 2.95 (0.27)

Baernholdt, M., Jones, T. L., Anusiewicz, C. V., Campbell, C. M., Montgomery, A., & Patrician, P. A. (2022). Development and Testing of the Quality Improvement Self-efficacy Inventory. *Western Journal of Nursing Research*, *44*(2), 159-168.

This is Table 1, from the above publication, which reports descriptive statistics for PES-NWI subscales and composite in 886 nurses, demonstrating variation or gap in care in this sample.

Table 1. Scores on the Practice Environment Scale of the Nursing Work Index and QISEI Instrument Ratings (N=886).			
Variable	**n**	**Mean**	**SD**
Practice environment scale of the nursing work index (range: 1-4)			
Nurse participation in hospital affairs (9 items)	885	2.72	0.72
Nursing foundations for quality of care (10 items)	885	3.08	0.60
Nurse manager ability, leadership, and support of nurses	885	2.82	0.86
Staffing and resource adequacy (4 items)	885	2.50	0.87
Collegial nurse-physician relations (3 items)	885	3.07	0.69
Composite Score	885	2.84	

Brom, H., Carthon, M. B., Sloane, D., McHugh, M., & Aiken, L. (2021). Fewer Readmissions and Shorter Length of Stay Among Adults with Ischemic Stroke When Cared for in Hospitals with Better Nurse Work Environments. *Research in nursing & health*, *44 https://doi.org/10.1002/nur.22121*

This is Table 2, from the above publication, which reports descriptive statistics for PES-NWI composite in 543 hospitals, demonstrating variation or gap in care in this sample.

TABLE 2 Hospital characteristics where ischemic stroke patients receive care[†]								
Characteristic	**Hospitals (n=543)**		**Poor (n=213, 39.2%)**		**Mixed (n=126, 23.2%)**		**Best (n=204, 37.6%)**	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Work environment	2.7	0.2	2.5	0.1	2.7	0.1	3.0	0.1

Djukic, M., Jun, J., & Fletcher, J. (2021). An Examination of the Factors Associated With Implementation of Evidence-Based Management Practices for Improving Nurse Work Environments. *Worldviews on Evidence-Based Nursing*, *18*(2), 129-137.

This table from the above publication which reports descriptive statistics for PES-NWI subscales and composite, demonstrating variation or gap in care in this sample.

Variable	n	M	SD
Staff nurses participation in hospital affairs	166	3.57	.68
Providing strong foundation for nursing care quality	164	3.94	.64

Variable	n	M	SD
Nurse manager ability, leadership	170	4.42	.56
Staffing and resource adequacy	167	4.10	.76
Promoting nurse-physician relations	171	4.32	.71

Farag, A., Moon, C., & Xiao, Q. (2021). Work and Personal Characteristics Associated with Sleep Behavior Among Acute Care Nurses. *Journal of Nursing Regulation*, *12*(1), 40-51.

This table from the above publication reports the percent of nurses who agree that organizational attributes are present for PES-NWI subscales, demonstrating variation or gap in care in this sample.

Work environment (n = 1,134). Percent who agree or strongly agree		
Good leadership support	744	65.6
Good nurse-physician relationship	908	80.7
Good staffing and resources adequacy	688	60.7

References:

References[1-17]

1. Baernholdt M, Jones TL, Anusiewicz CV, Campbell CM, Montgomery A, Patrician PA. Development and Testing of the Quality Improvement Self-efficacy Inventory. *Western Journal of Nursing Research.* 2022;44(2):159-168.

2. Brom H, Brooks Carthon JM, Sloane D, McHugh M, Aiken L. Better nurse work environments associated with fewer readmissions and shorter length of stay among adults with ischemic stroke: A cross-sectional analysis of United States hospitals. *Res Nurs Health.* 2021;44(3):525-533.

3. Campbell CM, Prapanjaroensin A, Anusiewicz CV, Baernholdt M, Jones T, Patrician PA. Variables associated with missed nursing care in Alabama: A cross-sectional analysis. *Journal of Nursing Management.* 2020;28(8):2174-2184.

4. Djukic M, Jun J, Fletcher J. An Examination of the Factors Associated With Implementation of Evidence-Based Management Practices for Improving Nurse Work Environments. *Worldviews on Evidence-Based Nursing.* 2021;18(2):129-137.

5. Farag A, Moon C, Xiao Q. Work and Personal Characteristics Associated With Sleep Behavior Among Acute Care Nurses. *Journal of Nursing Regulation.* 2021;12(1):40-51.

6. Hallowell SG, Rogowski JA, Lake ET. How nurse work environments relate to the presence of parents in neonatal intensive care. *Adv Neonatal Care.* 2017.

7. Karakachian A, Colbert A, Hupp D, Berger R. Caring for victims of child maltreatment: Pediatric nurses' moral distress and burnout. *Nursing ethics.* 2021;28(5):687-703.

8. Knupp AM, Patterson ES, Ford JL, Zurmehly J, Patrick T. Associations among nurse fatigue, individual nurse factors, and aspects of the nursing practice environment. *JONA: The Journal of Nursing Administration.* 2018;48(12):642-648.

9. Lake ET, Staiger DO, Cramer E, et al. Association of patient acuity and missed nursing care in US neonatal intensive care units. *Med Care Res Rev.* 2020;77(5):451-460.

10. Lake ET, French R, O'Rourke K, Sanders J, Srinivas SK. Linking the work environment to missed nursing care in labour and delivery. *Journal of Nursing Management.* 2020;28(8):1901-1908.

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16. Smith JG, Plover CM, McChesney MC, Lake ET. Rural hospital nursing skill mix and work environment associated with frequency of adverse events. *SAGE open nursing.* 2019;5:2377960819848246.

[Response Ends]

1b.03. If no or limited performance data on the measure as specified is reported above, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement. Include citations.

[Response Begins]

Maintenance of Endorsement (October 2021):

Aiken et al (2018) demonstrated that over a one-decade period in a sample of 535 hospitals, the work environment, as measured by the PES-NWI, improved in 21% of hospitals, remained stable in 71%, and worsened in 8%, signifying variability across hospitals and time and ability for the instrument to detect changes, both positive and negative.

Maintenance of Endorsement (October 2018):

Add three systematic reviews and meta-analysis since 2012.

Since 2012 there have been two new systematic reviews: Swiger et al. (2017) and Lee & Scott (2018). Here are summaries demonstrating opportunity for improvement.

Swiger, P. A., Patrician, P. A., Miltner, R. S. S., Raju, D., Breckenridge-Sproat, S., & Loan, L. A. (2017). The Practice Environment Scale of the Nursing Work Index: an updated review and recommendations for use. International journal of nursing studies, 74, 76-84. Retrieved from https://www.sciencedirect.com/science/article/pii/S0020748917301281

The literature review aimed to provide an updated review and usage recommendations for the Practice Environment Scale of the Nursing Work Index. Researchers included 46 articles from 28 countries between 2010 and 2016 that focused on the relationships between the Practice Environment Scale of the Nursing Work Index and patient, nurse, or organizational outcomes. Most studies indicated significant findings between effects of nurse practice environments on outcomes. The instrument has remained largely unchanged since its development and frequency of usage continues to be high.

This excerpt from Swiger et al. page 79 notes a performance gap in the literature:

“2.6.1. Reported PES-NWI scores

Sixteen articles (35%) reported composite PES-NWI scores, based on the 4-point Likert scale, which ranged from 2.30 to 3.07. The lowest composite score came from a study with a relatively low sample size (n =301) investigating turnover intention of registered nurses in the Eastern Caribbean who worked on medical, surgical, medical-surgical, or obstetric units (Lansiquot et al., 2012). The highest score came from a hospital in Australia that was in the process of seeking Magnet recognition (Walker et al., 2010). In studies where a sample was identified as having been collected from nurses working in Magnet facilities, the reported composite score ranged from 2.92 to 3.00 (Kutney-Lee et al., 2015; Ma and Park, 2015). Collective subscale and composite score ranges from 3 studies reporting scores from Magnet, emerging or aspiring Magnet, and non-Magnet facilities can be found in Table 1; the Staffing and Resource adequacy remains the lowest subscale for all three groups, confirming the finding from the Warshawsky and Havens

(2011) review.

This Table 1 from Swiger et al. presents score ranges from three articles demonstrating lower scores in non-Magnet hospitals, middling scores in Emerging Magnet Hospitals, and higher scores in Magnet Hospitals

Table 1 Reported Score Ranges (n = 3 articles).

PES-NWI Measure Reported Mean Score Range (SD)

Subscale

Non-Magnet Scores Emerging/Aspiring Magnet Scores Magnet Hospital Scores

1 Nurse Participation in Hospital Affairs 2.34 - 2.87 2.49 - 3.06 2.76 - 3.01

2 Nursing Foundations for Quality of Care 2.82 - 3.11 2.98 - 3.19 3.09 - 3.20

3 Nurse Manager Ability,Leadership,& Support of Nurses 2.41 - 3.00 2.48 - 3.17 2.72 - 3.07

4 Staffing and Resource Adequacy 2.07 - 2.62 2.31 - 2.88 2.65 - 2.88

5 Collegial Nurse-Physician Relations 2.78 - 2.99 2.85 - 3.06 2.99 - 3.07

Composite 2.51 - 2.92 2.62– 3.07 2.92 - 3.00

Lee, S. E., & Scott, L. D. (2018). Hospital nurses' work environment characteristics and patient safety outcomes: A literature review. Western journal of nursing research, 40(1), 121-145. Retrieved from http://journals.sagepub.com/doi/full/10.1177/0193945916666071

The literature review conducted by Lee and Scott evaluated associations between hospital nurses' work environment characteristics and patient safety outcomes. Researchers searched five databases and reviewed 18 studies published in English between 1999 and 2016. Most studies did not include a definition for work environment, and patient outcomes were measured using different variables and instruments. The relationship between nurses' work environment characteristics and patient safety outcomes were inconsistent between studies. These 18 studies, some of which overlap with the earlier Warshawsky & Havens (2011) study, demonstrate a performance gap which was linked to patient safety outcomes

Maintenance of Endorsement (October 2012)

Warshawsky, N. E., & Havens, D. S. (2011). Global use of the practice environment scale of the nursing work index. Nursing Research, 60(1), 17. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3021172/

[Response Ends]

1b.04. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability.

Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included. Include mean, std dev, min, max, interquartile range, and scores by decile. For measures that show high levels of performance, i.e., "topped out", disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b) under Usability and Use.

[Response Begins]

Disparities not applicable to this measure.

[Response Ends]

1b.05. If no or limited data on disparities from the measure as specified is reported above, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in above.

[Response Begins]

Disparities not applicable to this measure.

[Response Ends]

2. Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. Measures must be judged to meet the sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.

---

spma.01. Indicate whether there are changes to the specifications since the last updates/submission. If yes, update the specifications in the Measure Specifications section of the Measure Submission Form, and explain your reasoning for the changes below.

[Response Begins]

No

[Response Ends]

spma.02. Briefly describe any important changes to the measure specifications since the last measure update and provide a rationale.

For annual updates, please explain how the change in specifications affects the measure results. If a material change in specification is identified, data from re-testing of the measure with the new specifications is required for early maintenance review.

For example, specifications may have been updated based on suggestions from a previous NQF CDP review.

[Response Begins]

Maintenance of Endorsement (Oct 2021): There have been no changes.

[Response Ends]

sp.01. Provide the measure title.

Measure titles should be concise yet convey who and what is being measured (see What Good Looks Like).

[Response Begins]

Practice Environment Scale - Nursing Work Index (PES-NWI) (composite and five subscales) (previously NQF#0206 - Undergoing Maintenance)

[Response Ends]

sp.02. Provide a brief description of the measure.

Including type of score, measure focus, target population, timeframe, (e.g., Percentage of adult patients aged 18-75 years receiving one or more HbA1c tests per year).

[Response Begins]

Practice Environment Scale-Nursing Work Index (PES-NWI) is a survey-based measure of the nursing practice environment completed by staff registered nurses; includes mean scores on index subscales and a composite mean of all subscale scores.

[Response Ends]

sp.04. Check all the clinical condition/topic areas that apply to your measure, below.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- *Surgery: General*

[Response Begins]

Other (specify)

[Other (specify) Please Explain]

All acute care settings

[Response Ends]

sp.05. Check all the non-condition specific measure domain areas that apply to your measure, below.

[Response Begins]

Safety

[Response Ends]

sp.06. Select one or more target population categories.

Select only those target populations which can be stratified in the reporting of the measure's result.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- *Populations at Risk: Populations at Risk*

[Response Begins]

Adults (Age >= 18)

Children (Age < 18)

Populations at Risk: Veterans

[Response Ends]

sp.07. Select the levels of analysis that apply to your measure.

Check ONLY the levels of analysis for which the measure is SPECIFIED and TESTED.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- *Clinician: Clinician*
- *Population: Population*

[Response Begins]

Facility

[Response Ends]

sp.08. Indicate the care settings that apply to your measure.

Check ONLY the settings for which the measure is SPECIFIED and TESTED.

[Response Begins]

Inpatient/Hospital

[Response Ends]

sp.09. Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials.

Do not enter a URL linking to a home page or to general information. If no URL is available, indicate "none available".

[Response Begins]

none available

[Response Ends]

sp.11. Attach the data dictionary, code table, or value sets (and risk model codes and coefficients when applicable). Excel formats (.xlsx or .csv) are preferred.

Attach an excel or csv file; if this poses an issue, contact staff. Provide descriptors for any codes. Use one file with multiple worksheets, if needed.

[Response Begins]

No data dictionary/code table – all information provided in the submission form

[Response Ends]

sp.12. State the numerator.

Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome).

DO NOT include the rationale for the measure.

[Response Begins]

Continuous Variable Statement: For surveys completed by Registered Nurses (RN):
12a) Mean score on a composite of all subscale scores
12b) Mean score on Nurse Participation in Hospital Affairs (survey item numbers 5, 6, 11, 15, 17, 21, 23, 27, 28)
12c) Mean score on Nursing Foundations for Quality of Care (survey item numbers 4, 14, 18, 19, 22, 25, 26, 29, 30, 31)
12d) Mean score on Nurse Manager Ability, Leadership, and Support of Nurses (survey item numbers 3, 7, 10, 13, 20)
12e) Mean score on Staffing and Resource Adequacy (survey item numbers 1, 8, 9, 12)
12f) Mean score on Collegial Nurse-Physician Relations (survey item numbers 2, 16, 24)
12g) Three category variable indicating favorable, mixed, or unfavorable practice environments: favorable = four or more subscale means exceed 2.5; mixed = two or three subscale means exceed 2.5; unfavorable = zero or one subscales exceed 2.5.

[Response Ends]

sp.13. Provide details needed to calculate the numerator.

All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets.

Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at sp.11.

[Response Begins]

Included Populations:
•Registered Nurses with direct patient care responsibilities for 50% or greater of their shift
•All hospital units
•Full time, part time, and flex / pool RNs employed by the hospital

Excluded Populations
•New hires of less than 3 months
•Agency, traveler or contract nurses
•Nurses in management or supervisory roles with direct patient care responsibilities less than 50% of their shift, whose primary responsibility is administrative in nature

Data Elements by Subscale (with survey question/item number)

Nurse Participation in Hospital Affairs
PES-NWI Career Development (5)
PES-NWI Participation in Policy Decisions (6)
PES-NWI Chief Nursing Officer Visibility (11)
PES-NWI Chief Nursing Officer Authority (15)
PES-NWI Advancement Opportunities (17)
PES-NWI Administration Listens and Responds (21)
PES-NWI Staff Nurses Hospital Governance (23)
PES-NWI Nursing Committees (27)
PES-NWI Nursing Administrators Consult (28)

Nursing Foundations for Quality of Care
PES-NWI Continuing Education (4)
PES-NWI High Nursing Care Standards (14)
PES-NWI Philosophy of Nursing (18)
PES-NWI Nurses Are Competent (19)
PES-NWI Quality Assurance Program (22)
PES-NWI Preceptor Program (25)
PES-NWI Nursing Care Model (26)
PES-NWI Patient Care Plans (29)
PES-NWI Continuity of Patient Assignments (30)
PES-NWI Nursing Diagnosis (31)

Nurse Manager Ability, Leadership, and Support of Nurses
PES-NWI Supportive Supervisory Staff (3)
PES-NWI Supervisors Learning Experiences (7)

PES-NWI Nurse Manager and Leader (10)
PES-NWI Recognition (13)
PES-NWI Nurse Manager Backs up Staff (20)

Staffing and Resource Adequacy
PES-NWI Adequate Support Services (1)
PES-NWI Time to Discuss Patient Problems (8)
PES-NWI Enough Nurses for Quality Care (9)
PES-NWI Enough Staffing (12)

Collegial Nurse-Physician Relations
PES-NWI Nurse and Physician Relationships (2)
PES-NWI Nurse and Physician Teamwork (16)
PES-NWI Collaboration (24)

Composite Score
Mean of subscale scores

Three Category Variable
Favorable = four or more subscale means exceed 2.5
Mixed = two or three subscale means exceed 2.5
Unfavorable = zero or one subscales exceed 2.5

[Response Ends]

sp.14. State the denominator.

Brief, narrative description of the target population being measured.

[Response Begins]

Staff RNs

[Response Ends]

sp.15. Provide details needed to calculate the denominator.

All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets.

Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at sp.11.

[Response Begins]

The target population is staff registered nurses. The denominator is calculated as the number of eligible staff RNs in the facility. The time period is typically three or four weeks for an eligible nurse to complete the survey. Specific data collection items are answers to each of the 31 survey items.

To calculate a subscale score, the numerator is the sum of responses (values of 1 to 4 in Likert categories) for all items in a subscale. The denominator is the number of items in the subscale. The quotient is the subscale score, which is a simple average. Higher values indicate greater agreement that desirable organizational attributes are present in the current job, which yields higher scores for the instrument. The composite is calculated as the average value of all the subscales.

[Response Ends]

sp.16. Describe the denominator exclusions.

Brief narrative description of exclusions from the target population.

[Response Begins]

Not applicable

[Response Ends]

sp.17. Provide details needed to calculate the denominator exclusions.

All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at sp.11.

[Response Begins]

Not applicable

[Response Ends]

sp.18. Provide all information required to stratify the measure results, if necessary.

Include the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate. Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format in the Data Dictionary field.

[Response Begins]

12a) Mean score on a composite of all subscale scores
12b) Mean score on Nurse Participation in Hospital Affairs (survey item numbers 5, 6, 11, 15, 17, 21, 23, 27, 28)
12c) Mean score on Nursing Foundations for Quality of Care (survey item numbers 4, 14, 18, 19, 22, 25, 26, 29, 30, 31)
12d) Mean score on Nurse Manager Ability, Leadership, and Support of Nurses (survey item numbers 3, 7, 10, 13, 20)
12e) Mean score on Staffing and Resource Adequacy (survey item numbers 1, 8, 9, 12)
12f) Mean score on Collegial Nurse-Physician Relations (survey item numbers 2, 16, 24)
12g) Three category variable indicating favorable, mixed, or unfavorable practice environments: favorable = four or more subscale means exceed 2.5; mixed = two or three subscale means exceed 2.5; unfavorable = zero or one subscales exceed 2.5.

[Response Ends]

sp.19. Select the risk adjustment type.

Select type. Provide specifications for risk stratification and/or risk models in the Scientific Acceptability section.

[Response Begins]

No risk adjustment or risk stratification

[Response Ends]

sp.20. Select the most relevant type of score.

Attachment: If available, please provide a sample report.

[Response Begins]

Continuous variable, e.g. average

[Response Ends]

sp.21. Select the appropriate interpretation of the measure score.

Classifies interpretation of score according to whether better quality or resource use is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score

[Response Begins]

Better quality = Higher score

[Response Ends]

sp.22. Diagram or describe the calculation of the measure score as an ordered sequence of steps.

Identify the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period of data, aggregating data; risk adjustment; etc.

[Response Begins]

1. Start processing.

2. Check Survey Date
a. If the Survey Date is missing or invalid the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
b. If Survey Date is valid, continue and proceed to initialization.

3. Initialization. Initialize NurseParticipationScore to 0; NursingFoundationScore to 0; NurseMgrAbilityScore to 0; StaffingScore to 0; RelationsScore to 0; TotalScore to 0; ExceedCounter to 0. Continue and proceed to PES-NWI Career Development.

4. Check PES-NWI Career Development
a. If the PES-NWI Career Development is missing or zero, the case will proceed to PES-NWI Participation in Policy Decisions.
b. If the PES-NWI Career Development equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Career Development to the NurseParticipationScore and proceed to PES-NWI Participation in Policy Decisions.

5. Check PES-NWI Participation in Policy Decisions
a. If the PES-NWI-Participation in Policy Decisions is missing or zero, the case will proceed to PES-NWI Chief Nursing Officer Visibility.
b. If the PES-NWI Participation in Policy Decisions equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Participation in Policy Decisions to the NurseParticipationScore and proceed to PES-NWI Chief Nursing Officer Visibility.

6. Check PES-NWI Chief Nursing Officer Visibility
a. If the PES-NWI- Chief Nursing Officer Visibility is missing or zero, the case will proceed to PES-NWI Chief Nursing Officer Authority.

b. If the PES-NWI Chief Nursing Officer Visibility equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Chief Nursing Officer Visibility to the NurseParticipationScore and proceed to PES-NWI Chief Nursing Officer Authority.

7. Check PES-NWI Chief Nursing Officer Authority
a. If the PES-NWI- Chief Nursing Officer Authority is missing or zero, the case will proceed to PES-NWI Advancement Opportunities.
b. If the PES-NWI Chief Nursing Officer Authority equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Chief Nursing Officer Authority to the NurseParticipationScore and proceed to PES-NWI Advancement Opportunities.

8. Check PES-NWI Advancement Opportunities
a. If the PES-NWI- Advancement Opportunities is missing or zero, the case will proceed to PES-NWI Administration Listens and Responds.
b. If the PES-NWI Advancement Opportunities equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Advancement Opportunities to the NurseParticipationScore and proceed to PES-NWI Administration Listens and Responds.

9. Check PES-NWI Administration Listens and Responds
a. If the PES-NWI Administration Listens and Responds is missing or zero, the case will proceed to PES-NWI Staff Nurses Hospital Governance.
b. If the PES-NWI Administration Listens and Responds equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Administration Listens and Responds to the NurseParticipationScore and proceed to PES-NWI Staff Nurses Hospital Governance.

10. Check PES-NWI Staff Nurses Hospital Governance
a. If the PES-NWI- Staff Nurses Hospital Governance is missing or zero, the case will proceed to PES-NWI Nursing Committees.
b. If the PES-NWI Staff Nurses Hospital Governance equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Staff Nurses Hospital Governance to the NurseParticipationScore and proceed to PES-NWI Nursing Committees.

11. Check PES-NWI Nursing Committees
a. If the PES-NWI Nursing Committees is missing or zero, the case will proceed to PES-NWI Nursing Administrators Consult.
b. If the PES-NWI Nursing Committees equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nursing Committees to the NurseParticipationScore and proceed to PES-NWI Nursing Administrators Consult.

12. Check PES-NWI Nursing Administrators Consult
a. If the PES-NWI Nursing Administrators Consult is missing or zero, the case will proceed to calculate mean score on Nurse-Participation in Hospital Affairs.
b. If the PES-NWI Nursing Administrators Consult equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nursing Administrators Consult to the NurseParticipationScore and proceed to calculate mean score on Nurse-Participation in Hospital Affairs.

13. Calculate Mean Score on Nurse-Participation in Hospital Affairs. Mean Score of Nurse-Participation in Hospital Affairs equals mean of NurseParticipationScore. Assign the calculated mean score to NSC-12b. Continue and proceed to PES-NWI Continuing Education.

14. Check PES-NWI Continuing Education
a. If the PES-NWI Continuing Education is missing or zero, the case will proceed to PES-NWI High Nursing Care Standards.
b. If the PES-NWI Continuing Education equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Continuing Education to the NurseFoundationScore and proceed to PES-NWI High Nursing Care Standards.

15. Check PES-NWI High Nursing Care Standards
a. If the PES-NWI High Nursing Care Standards is missing or zero, the case will proceed to PES-NWI Philosophy of Nursing.
b. If the PES-NWI High Nursing Care Standards equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI High Nursing Care Standards to the NurseFoundationScore and proceed to PES-NWI Philosophy of Nursing.

16. Check PES-NWI Philosophy of Nursing
a. If the PES-NWI Philosophy of Nursing is missing or zero, the case will proceed to PES-NWI Nurses Are Competent.
b. If the PES-NWI Philosophy of Nursing equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Philosophy of Nursing to the NurseFoundationScore and proceed to PES-NWI Nurses Are Competent.

17. Check PES-NWI Nurses Are Competent
a. If the PES-NWI Nurses Are Competent is missing or zero, the case will proceed to PES-NWI Quality Assurance Program.

b. If the PES-NWI Nurses Are Competent equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nurses Are Competent to the NurseFoundationScore and proceed to PES-NWI Quality Assurance Program.

18. Check PES-NWI Quality Assurance Program
a. If the PES-NWI Quality Assurance Program is missing or zero, the case will proceed to PES-NWI Preceptor Program.
b. If the PES-NWI Quality Assurance Program equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Quality Assurance Program to the NurseFoundationScore and proceed to PES-NWI Preceptor Program.

19. Check PES-NWI Preceptor Program
a. If the PES-NWI Preceptor Program is missing or zero, the case will proceed to PES-NWI Nursing Care Model.
b. If the PES-NWI Preceptor Program equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Preceptor Program to the NurseFoundationScore and proceed to PES-NWI Nursing Care Model.

20. Check PES-NWI Nursing Care Model
a. If the PES-NWI Nursing Care Model is missing or zero, the case will proceed to PES-NWI Patient Care Plans.
b. If the PES-NWI Nursing Care Model equals 1, 2, 3, or 4, add the allowable value scored for Nursing Care Model to the NurseFoundationScore and proceed to PES-NWI Patient Care Plans.

21. Check PES-NWI Patient Care Plans
a. If the PES-NWI Patient Care Plans is missing or zero, the case will proceed to PES-NWI Continuity of Patient Assignments.
b. If the PES-NWI Patient Care Plans equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Patient Care Plans to the NurseFoundationScore and proceed to PES-NWI Continuity of Patient Assignments

22. Check PES-NWI Continuity of Patient Assignments
a. If the PES-NWI Continuity of Patient Assignments is missing or zero, the case will proceed to PES-NWI Nursing Diagnosis.
b. If the PES-NWI Continuity of Patient Assignments equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Continuity of Patient Assignments to the NurseFoundationScore and proceed to PES-NWI Nursing Diagnosis.

23. Check PES-NWI Nursing Diagnosis
a. If the PES-NWI Nursing Diagnosis is missing or zero, the case will proceed to calculate mean score on Nursing Foundations for Quality of Care.
b. If the PES-NWI Nursing Diagnosis equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nursing Diagnosis to theNurseFoundationScore and proceed to calculate mean score on Nursing Foundations for Quality of

Care.

24. Calculate Mean Score on Nursing Foundations for Quality of Care. Mean Score of Nursing Foundations for Quality of Care equals mean of NurseFoundationScore. Assign the calculated mean score to NSC-12c. Continue and proceed to PES-NWI Supportive Supervisory Staff.

25. Check PES-NWI Supportive Supervisory Staff
a. If the PES-NWI Supportive Supervisory Staff is missing or zero, the case will proceed to PES-NWI Supervisors Learning Experience.
b. If the PES-NWI Supportive Supervisory Staff equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Supportive Supervisory Staff to the NurseMgrAbilityScore and proceed to PES-NWI Supervisors Learning Experience.

26. Check PES-NWI Supervisors Learning Experience
a. If the PES-NWI Supervisors Learning Experience is missing or zero, the case will proceed to PES-NWI Nurse Manager and Leader.
b. If the PES-NWI Supervisors Learning Experience equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Supervisors Learning Experience to the NurseMgrAbilityScore and proceed to PES-NWI Nurse Manager and Leader.

27. Check PES-NWI Nurse Manager and Leader
a. If the PES-NWI Nurse Manager and Leader is missing or zero, the case will proceed to PES-NWI Recognition.
b. If the PES-NWI Nurse Manager and Leader equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nurse Manager and Leader to the NurseMgrAbilityScore and proceed to PES-NWI Recognition.

28. Check PES-NWI Recognition
a. If the PES-NWI Recognition is missing or zero, the case will proceed to PES-NWI Nurse Manager Backs up Staff
b. If the PES-NWI Recognition equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Recognition to the NurseMgrAbilityScore and proceed to PES-NWI Nurse Manager Backs up Staff.

29. Check PES-NWI Nurse Manager Backs up Staff
a. If the PES-NWI Nurse Manager Backs up Staff is missing or zero, the case will proceed to calculate mean score on Nurse Manager Ability, Leadership, and Support of Nurses.
b. If the PES-NWI Nurse Manager Backs up Staff equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nurse Manager Backs up Staff to the NurseMgrAbilityScore and proceed to calculate mean score on Nurse Manager Ability, Leadership, and Support of Nurses.
Calculate Mean Score on Nurse Manager Ability, Leadership, and Support of Nurses. Mean Score of Nurse Manager Ability, Leadership, and Support of Nurses equals mean of NurseMgrAbilityScore. Assign the calculated mean score to NSC-12d. Continue and proceed to PES-NWI Adequate Support Services.

30. Check PES-NWI Adequate Support Services
a. If the PES-NWI Adequate Support Services is missing or zero, the case will proceed to PES-NWI Time to Discuss Patient Problems.
b. If the PES-NWI Adequate Support Services equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Adequate Support Services to the StaffingScore and proceed to PES-NWI Time to Discuss Patient Problems.

31. Check PES-NWI Time to Discuss Patient Problems
a. If the PES-NWI Time to Discuss Patient Problems is missing or zero, the case will proceed to PES-NWI Enough Nurses for Quality Care.
b. If the PES-NWI Time to Discuss Patient Problems equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Time to Discuss Patient Problems to the StaffingScore and proceed to PES-NWI Enough Nurses for Quality Care.

32. Check PES-NWI Enough Nurses for Quality Care
a. If the PES-NWI Enough Nurses for Quality Care is missing or zero, the case will proceed to PES-NWI Enough

Staffing.
b. If the PES-NWI Enough Nurses for Quality Care equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Enough Nurses for Quality Care to the StaffingScore and proceed to PES-NWI Enough Staffing.

33. Check PES-NWI Enough Staffing
a. If the PES-NWI Enough Staffing is missing or zero, the case will proceed to calculate mean score on Staffing and Resource Adequacy.
b. If the PES-NWI Enough Staffing equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Enough Staffing to the StaffingScore and proceed to calculate mean score on Staffing and Resource Adequacy.

34. Calculate Mean Score on Staffing and Resource Adequacy. Mean Score of Staffing and Resource Adequacy equals mean of StaffingScore. Assign the calculated mean score to NSC-12e. Continue and proceed to PES-NWI Nurse and Physician Relationships.

35. Check PES-NWI Nurse and Physician Relationships
a. If the PES-NWI Nurse and Physician Relationships is missing or zero, the case will proceed to PES-NWI Nurse and Physician Teamwork.

b. If the PES-NWI Nurse and Physician Relationships equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nurse and Physician Relationships to the RelationsScore and proceed to PES-NWI Nurse and Physician Teamwork.

36. Check PES-NWI Nurse and Physician Teamwork
a. If the PES-NWI Nurse and Physician Teamwork is missing or zero, the case will proceed to PES-NWI Collaboration.
b. If the PES-NWI Nurse and Physician Teamwork equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Nurse and Physician Teamwork to the RelationsScore and proceed to PES-NWI Collaboration.

37. Check PES-NWI Collaboration
a. If the PES-NWI Collaboration is missing or zero, the case will proceed to calculate mean score on Collegial Nurse-Physician Relations.
b. If the PES-NWI Collaboration equals 1, 2, 3, or 4, add the allowable value scored for PES-NWI Collaboration to the RelationsScore and proceed to calculate mean score on Collegial Nurse-Physician Relations.

38. Calculate Mean Score on Collegial Nurse-Physician Relations. Mean Score of Collegial Nurse-Physician Relations equals mean of RelationsScore. Assign the calculated mean score to NSC-12f. Continue and proceed to calculate the Total Score on composite of all subscale scores.

39. Calculate Total Score on a composite of all subscale scores. Total Score of a composite of all subscale scores equals the sum of NurseParticipationScore, NursingFoundationScore, NurseMgrAbilityScore, StaffingScore, and RelationsScore. Continue and proceed to calculate Mean Score on a composite of all subscale scores.

40. Calculate Mean Score on a composite of all subscale scores. Mean Score of a composite of all subscale scores equals the mean of Total Score on a composite of all subscale scores. Assign the calculated mean score to NSC-12a. Continue and proceed to Mean Score on NurseParticipationScore.

41. Check Mean Score on NurseParticipationScore
a. If the score of Mean Score on NurseParticipationScore is less than or equal to 2.5, the case will proceed to Mean Score on NursingFoundationScore.
b. If the score of Mean Score on NurseParticipationScore is greater than 2.5, add 1 to ExceedCounter and proceed to Mean Score on NursingFoundationScore.

42. Check Mean Score on NursingFoundationScore

a. If the score of Mean Score on NursingFoundationScore is less than or equal to 2.5, the case will proceed to Mean Score on NurseMgrAbilityScore.
b. If the score of Mean Score on NursingFoundationScore is greater than 2.5, add 1 to ExceedCounter and proceed to Mean Score on NurseMgrAbilityScore.

43. Check Mean Score on NurseMgrAbilityScore
a. If the score of Mean Score on NurseMgrAbilityScore is less than or equal to 2.5, the case will proceed to Mean Score on StaffingScore.
b. If the score of Mean Score on NurseMgrAbilityScore is greater than 2.5, add 1 to ExceedCounter and proceed to Mean Score on StaffingScore.

44. Check Mean Score on StaffingScore
a. If the score of Mean Score on StaffingScore is less than or equal to 2.5, the case will proceed to Mean Score on RelationsScore.
b. If the score of Mean Score on StaffingScore is greater than 2.5, add 1 to ExceedCounter and proceed to Mean Score on RelationsScore.

45. Check Mean Score on RelationsScore
a. If the score of Mean Score on RelationsScore is less than or equal to 2.5, the case will proceed to ExceedCounter.
b. If the score of Mean Score on RelationsScore is greater than 2.5, add 1 to ExceedCounter and proceed to ExceedCounter.

46. Check ExceedCounter
a. If ExceedCounter is greater than or equal to 4, the case will proceed to a Measure Category Assignment of "Favorable". Stop processing.
b. If ExceedCounter is greater than or equal to 2 and less than 4, the case will proceed to a Measure Category Assignment of "Mixed". Stop processing.
c. If ExceedCounter is greater than or equal to 0 and less than 2, the case will proceed to a Measure Category Assignment of "Unfavorable". Stop processing.

[Response Ends]

sp.23. Attach a copy of the instrument (e.g. survey, tool, questionnaire, scale) used as a data source for your measure, if available.

[Response Begins]

Copy of instrument is attached.

[Response Ends]

sp.24. Indicate the responder for your instrument.

[Response Begins]

Clinician

[Response Ends]

sp.25. If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.

[Response Begins]

For public reporting, the specific sampling approach is a random sample of 50 direct care staff registered nurses. With an anticipated response rate of 60%, the publicly reported measure would be based on 30 or more responses. The minimum of 30 is based on The Joint Commission´s established minimum for comparative results to

be calculated to represent the hospital. Satisfactory estimates of PES hospital scores have been obtained with fewer than 30 responses (Lake & Friese, 2006). Nevertheless, a larger sample improves the precision of the results. While a random sample may be used at the hospital-level, it is recommended that hospitals survey all eligible nurses to allow all nurses the opportunity to complete the practice environment survey instrument.

[Response Ends]

sp.26. Identify whether and how proxy responses are allowed.

[Response Begins]

they are not allowed

[Response Ends]

sp.27. Survey/Patient-reported data.

Provide instructions for data collection and guidance on minimum response rate. Specify calculation of response rates to be reported with performance measure results.

[Response Begins]

According to Lake and Friese (2006) the minimum number of completed surveys per hospital for satisfactory estimates is 15, therefore considering a typical response rate of 60%, a random sample of at least 25 nurses needs to be surveyed annually. For purposes of public reporting the measure a minimum of 30 completed surveys is desired, therefore hospitals that choose to sample should sample a minimum of 50 nurses annually. While a random sample may be used at the hospital-level, it is recommended that hospitals survey all eligible nurses to allow all nurses the opportunity to complete the practice environment survey instrument.

[Response Ends]

sp.28. Select only the data sources for which the measure is specified.

[Response Begins]

Instrument-Based Data

[Response Ends]

sp.29. Identify the specific data source or data collection instrument.

For example, provide the name of the database, clinical registry, collection instrument, etc., and describe how data are collected.

[Response Begins]

Practice Environment Scale-Nursing Work Index (PES-NWI) Survey

[Response Ends]

sp.30. Provide the data collection instrument.

[Response Begins]

Available in attached appendix in Question 1 of the Additional Section

[Response Ends]

2ma.01. Indicate whether additional empirical reliability testing at the accountable entity level has been conducted. If yes, please provide results in the following section, Scientific Acceptability: Reliability - Testing. Include information on all testing conducted (prior testing as well as any new testing).

Please separate added or updated information from the most recent measure evaluation within each question response in the Scientific Acceptability sections. For example:

Current Submission:

Updated testing information here.

Previous Submission:

Testing from the previous submission here.

[Response Begins]

Yes

[Response Ends]

2ma.02. Indicate whether additional empirical validity testing at the accountable entity level has been conducted. If yes, please provide results in the following section, Scientific Acceptability: Validity - Testing. Include information on all testing conducted (prior testing as well as any new testing).

Please separate added or updated information from the most recent measure evaluation within each question response in the Scientific Acceptability sections. For example:

Current Submission:

Updated testing information here.

Previous Submission:

Testing from the previous submission here.

[Response Begins]

Yes

[Response Ends]

2ma.03. For outcome, patient-reported outcome, resource use, cost, and some process measures, risk adjustment/stratification may be conducted. Did you perform a risk adjustment or stratification analysis?

[Response Begins]

Yes

[Response Ends]

2ma.04. For maintenance measures in which risk adjustment/stratification has been performed, indicate whether additional risk adjustment testing has been conducted since the most recent maintenance evaluation. This may include updates to the risk adjustment analysis with additional clinical, demographic, and social risk factors.

Please update the Scientific Acceptability: Validity - Other Threats to Validity section.

Note: This section must be updated even if social risk factors are not included in the risk adjustment strategy.

[Response Begins]

No additional risk adjustment analysis included

[Response Ends]

Measure testing must demonstrate adequate reliability and validity in order to be recommended for endorsement. Testing may be conducted for data elements and/or the computed measure score. Testing information and results should be entered in the appropriate fields in the Scientific Acceptability sections of the Measure Submission Form.

Measures must be tested for all the data sources and levels of analyses that are specified. If there is more than one set of data specifications or more than one level of analysis, contact NQF staff about how to present all the testing information in one form.

All required sections must be completed.

For composites with outcome and resource use measures, Questions 2b.23-2b.37 (Risk Adjustment) also must be completed.

If specified for multiple data sources/sets of specifications (e.g., claims and EHRs), Questions 2b.11-2b.13 also must be completed.

An appendix for supplemental materials may be submitted (see Question 1 in the Additional section), but there is no guarantee it will be reviewed.

Contact NQF staff with any questions. Check for resources at the Submitting Standards webpage.

For information on the most updated guidance on how to address social risk factors variables and testing in this form refer to the release notes for the 2021 Measure Evaluation Criteria and Guidance.

Note: The information provided in this form is intended to aid the Standing Committee and other stakeholders in understanding to what degree the testing results for this measure meet NQF's evaluation criteria for testing.

2a. Reliability testing demonstrates the measure data elements are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period and/or that the measure score is precise. For instrument-based measures (including PRO-PMs) and composite performance measures, reliability should be demonstrated for the computed performance score.

2b1. Validity testing demonstrates that the measure data elements are correct and/or the measure score correctly reflects the quality of care provided, adequately identifying differences in quality. For instrument based measures (including PRO-PMs) and composite performance measures, validity should be demonstrated for the computed performance score.

2b2. Exclusions are supported by the clinical evidence and are of sufficient frequency to warrant inclusion in the specifications of the measure;

AND

If patient preference (e.g., informed decision-making) is a basis for exclusion, there must be evidence that the exclusion impacts performance on the measure; in such cases, the measure must be specified so that the information about patient preference and the effect on the measure is transparent (e.g., numerator category computed separately, denominator exclusion category computed separately).

2b3. For outcome measures and other measures when indicated (e.g., resource use):

an evidence-based risk-adjustment strategy (e.g., risk models, risk stratification) is specified; is based on patient factors (including clinical and social risk factors) that influence the measured outcome and are present at start of care; 14,15 and has demonstrated adequate discrimination and calibration

rationale/data support no risk adjustment/ stratification.

2b4. Data analysis of computed measure scores demonstrates that methods for scoring and analysis of the specified measure allow for identification of statistically significant and practically/clinically meaningful 16 differences in performance;

OR

there is evidence of overall less-than-optimal performance.

2b5. If multiple data sources/methods are specified, there is demonstration they produce comparable results.

2b6. Analyses identify the extent and distribution of missing data (or nonresponse) and demonstrate that performance results are not biased due to systematic missing data (or differences between responders and non-responders) and how the specified handling of missing data minimizes bias.

2c. For composite performance measures, empirical analyses support the composite construction approach and demonstrate that:

2c1. the component measures fit the quality construct and add value to the overall composite while achieving the related objective of parsimony to the extent possible; and

2c2. the aggregation and weighting rules are consistent with the quality construct and rationale while achieving the related objective of simplicity to the extent possible.

(if not conducted or results not adequate, justification must be submitted and accepted)

Definitions

Reliability testing applies to both the data elements and computed measure score. Examples of reliability testing for data elements include, but are not limited to: inter-rater/abstractor or intra-rater/abstractor studies; internal consistency for multi-item scales; test-retest for survey items. Reliability testing of the measure score addresses precision of measurement (e.g., signal-to-noise).

Validity testing applies to both the data elements and computed measure score. Validity testing of data elements typically analyzes agreement with another authoritative source of the same information. Examples of validity testing of the measure score include, but are not limited to: testing hypotheses that the measures scores indicate quality of care, e.g., measure scores are different for groups known to have differences in quality assessed by another valid quality measure or method; correlation of measure scores with another valid indicator of quality for the specific topic; or relationship to conceptually related measures (e.g., scores on process measures to scores on outcome measures). Face validity of the measure score as a quality indicator may be adequate if accomplished through a systematic and transparent process, by identified experts, and explicitly addresses whether performance scores resulting from the measure as specified can be used to distinguish good from poor quality. The degree of consensus and any areas of disagreement must be provided/discussed.

Examples of evidence that an exclusion distorts measure results include, but are not limited to: frequency of occurrence, variability of exclusions across providers, and sensitivity analyses with and without the exclusion.

Patient preference is not a clinical exception to eligibility and can be influenced by provider interventions.

Risk factors that influence outcomes should not be specified as exclusions.

With large enough sample sizes, small differences that are statistically significant may or may not be practically or clinically meaningful. The substantive question may be, for example, whether a statistically significant difference of one percentage point in the percentage of patients who

received smoking cessation counseling (e.g., 74 percent v. 75 percent) is clinically meaningful; or whether a statistically significant difference of $25 in cost for an episode of care (e.g., $5,000 v.$5,025) is practically meaningful. Measures with overall less-than-optimal performance may not demonstrate much variability across providers.

Please separate added or updated information from the most recent measure evaluation within each question response in the Importance to Scientific Acceptability sections. For example:

2021 Submission:

Updated testing information here.

2018 Submission:

Testing from the previous submission here.

2a.01. Select only the data sources for which the measure is tested.

[Response Begins]

Instrument-Based Data

[Response Ends]

2a.02. If an existing dataset was used, identify the specific dataset.

The dataset used for testing must be consistent with the measure specifications for target population and healthcare entities being measured; e.g., Medicare Part A claims, Medicaid claims, other commercial insurance, nursing home MDS, home health OASIS, clinical registry).

[Response Begins]

The reliability testing was conducted in empirical studies conducted by researchers.

[Response Ends]

2a.03. Provide the dates of the data used in testing.

Use the following format: "MM-DD-YYYY - MM-DD-YYYY"

[Response Begins]

The studies in the meta-analysis described below were published from 2002 to 2017.

[Response Ends]

2a.04. Select the levels of analysis for which the measure is tested.

Testing must be provided for all the levels specified and intended for measure implementation, e.g., individual clinician, hospital, health plan.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- *Clinician: Clinician*

- *Population: Population*

[Response Begins]

Facility

[Response Ends]

2a.05. List the measured entities included in the testing and analysis (by level of analysis and data source).

Identify the number and descriptive characteristics of measured entities included in the analysis (e.g., size, location, type); if a sample was used, describe how entities were selected for inclusion in the sample.

[Response Begins]

2021 submission

The most comprehensive source of instrument reliability data is from a 2019 publication, in which the authors conducted a meta-analysis to examine the reliability generalization of the PES-NWI. They conducted a meta-analysis of 51 studies representing 80,563 subjects. They estimated a mean reliability for U.S. samples of .946.

Reference: Zangaro, G. A. and K. Jones (2019). "Practice Environment Scale of the Nursing Work Index: A reliability generalization meta-analysis." Western Journal of Nursing Research 41(11): 1658-1684.

2018 submission

Twenty studies have evaluated the psychometric performance of the PES-NWI since its development.

[Response Ends]

2a.06. Identify the number and descriptive characteristics of patients included in the analysis (e.g., age, sex, race, diagnosis), separated by level of analysis and data source; if a sample was used, describe how patients were selected for inclusion in the sample.

If there is a minimum case count used for testing, that minimum must be reflected in the specifications.

[Response Begins]

2021 submission

In the Zangaro, et al. (2019, p. 1664) publication noted in 2a.05, the number and descriptive characteristics of the nurses were as follows:

"The average age across studies, based on 35 studies (n = 63,664) that reported the mean age of the sample was 39 years. Gender was reported in 41 studies and most of the participants were females (>90%). The average number of years of experience was 14.35 years, based on reports in 22 studies. Education was reported differently across studies; however, in 21 reports, >50% of the sample had a bachelor's degree or higher."

In addition, the 51 studies comprised 49 samples from hospitals, and one each from a long-term care facility and a hemodialysis facility.

[Response Ends]

2a.07. If there are differences in the data or sample used for different aspects of testing (e.g., reliability, validity, exclusions, risk adjustment), identify how the data or sample are different for each aspect of testing.

[Response Begins]

The differences in the samples used for different aspects of testing are that, in general, most empirical studies report reliability information. Fewer report validity information. However, those that report validity information are a subset of all that report reliability information.

[Response Ends]

2a.08. List the social risk factors that were available and analyzed.

For example, patient-reported data (e.g., income, education, language), proxy variables when social risk data are not collected from each patient (e.g. census tract), or patient community characteristics (e.g. percent vacant housing, crime rate) which do not have to be a proxy for patient-level data.

[Response Begins]

Social risk factors are not applicable to this instrument, which surveys nurses about their work conditions.

[Response Ends]

Note: If accuracy/correctness (validity) of data elements was empirically tested, separate reliability testing of data elements is not required – in 2a.07 check patient or encounter-level data; in 2a.08 enter “see validity testing section of data elements”; and enter “N/A” for 2a.09 and 2a.10.

2a.09. Select the level of reliability testing conducted.

Choose one or both levels.

[Response Begins]

Patient or Encounter-Level (e.g., inter-abstractor reliability; data element reliability must address ALL critical data elements)

[Response Ends]

2a.10. For each level of reliability testing checked above, describe the method of reliability testing and what it tests.

Describe the steps—do not just name a method; what type of error does it test; what statistical analysis was used.

[Response Begins]

The method of reliability testing is Cronbach's alpha, to examine the internal consistency of the 31 items in the instrument or the items in each of the five subscales. This method tests if the items are internally consistent. It is at the nurse-level.

[Response Ends]

2a.11. For each level of reliability testing checked above, what were the statistical results from reliability testing?

For example, provide the percent agreement and kappa for the critical data elements, or distribution of reliability statistics from a signal-to-noise analysis. For score-level reliability testing, when using a signal-to-noise analysis, more than just one overall statistic should be reported (i.e., to demonstrate variation in reliability across providers). If a particular method yields only one statistic, this should be explained. In addition, reporting of results stratified by sample size is preferred (pg. 18, NQF Measure Evaluation Criteria).

[Response Begins]

See results in 2a.05.

In addition, in total, 30 of the 51 studies reported a reliability coefficient for each individual subscale in the PES-NWI. The reliability coefficients for the subscales ranged as follows: Nurse Participation in Hospital Affairs (.71-.93); Nursing Foundations for Quality of Care (.56-.91); Nurse Manager Ability, Leadership, and Support of Nurses (.63-.92); Staffing and

Resource Adequacy (.65-.88); and Collegial Nurse–Physician Relations

(.62-.91).

[Response Ends]

2a.12. Interpret the results, in terms of how they demonstrate reliability.

(In other words, what do the results mean and what are the norms for the test conducted?)

[Response Begins]

The results indicate the instrument composite and subscales are highly reliable in terms of internal consistency reliability.

[Response Ends]

2b.01. Select the level of validity testing that was conducted.

[Response Begins]

Empirical validity testing

[Response Ends]

2b.02. For each level of testing checked above, describe the method of validity testing and what it tests.

Describe the steps—do not just name a method; what was tested, e.g., accuracy of data elements compared to authoritative source, relationship to another measure as expected; what statistical analysis was used.

[Response Begins]

October 2018 maintenance.

Title: Table reporting concurrent and predictive validity of the PES-NWI.

This table displays the hypothesized relationships of the instrument to patient health outcomes and quality and safety, the effect sizes and the significance levels.

Outcomes	**Hypothesized relationship with PES-NWI**	**Research study**	**Statistical evidence or associations**
Patient Record Outcomes			
Mortality	significant negative relationship		
		Aiken et al (2008)	30 day inpatient mortality (-, OR= 0.91)
		Aiken et al (2011) b	30 day inpatient mortality (-, OR= 0.93)
		Cho et al (2014)	30 day inpatient mortality (-, OR= 0.52)
		Friese et al (2008)	- Mortality
		Nicely et al (2013)	30 day inpatient mortality (-, OR= 0.89)

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
		Kelly (2014)	30 day inpatient mortality (-, OR= 0.97)
Hospital readmission	significant negative relationship		
		Gardner et al (2007)	— Hospitalizations
		Ma and Park (2015)	30 day readmission (-, OR= 0.97)
		McHugh et al (2016)	30 day readmission (-, OR= 0.84)
Complications	significant negative relationship		
		Friese et al (2008)	- Complications
Failure to rescue	significant negative relationship		
		Aiken et al (2008)	Failure to rescue (-, OR= 0.91)
		Aiken et al (2011) b	Failure to rescue (-, OR= 0.93)

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
		Friese et al (2008)	- Failure to rescue
		Nicely et al (2013)	Failure to rescue (-, OR= 0.90)
Discharged without breastmilk	significant negative (?) relationship		
		Hallowell et al (2016)	Discharge on human milk and composite (+, β = 0.04) = Adjusted *R2* = 0.37
		Lake (2016)	Discharged without breastmilk (-, OR= 0.92)
Nurse Reported Adverse Outcomes			
Total formal adverse event reports	significant positive relationship?		

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
		Kirwan et al (2013)	+ Total formal adverse event reports
NR nosocomial infection	significant negative relationship		
		Kutney-Lee, Lake, et al (2009)	- Nosocomial infections
		Lake (2015)	Nosocomial infections (-, OR= 0.85)
		Spence Laschinger and Leiter (2006)	- Nosocomial infections
NR falls	significant negative relationship		
		Cho et al (2016)	Falls with injury and composite (-, OR = 0.68)
		Kutney-Lee, Lake, et al (2009)	- Falls with injury

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
		Prezerakos et al (2015)	Patient falls and composite (-, OR= 0.02)
		Spence Laschinger and Leiter (2006)	- Falls
NR medication errors	significant negative relationship		
		Cho et al (2016)	Medication errors and composite (-, OR=0.55)
		Manojlovich and DeCicco (2007)	- Medication errors
		Spence Laschinger and Leiter (2006)	- Medication errors
NR catheter-associated sepsis	significant negative relationship		

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
		Manojlovich and DeCicco (2007)	- Catheter-associated sepsis
NR pressure ulcer	significant negative relationship		
		Cho et al (2016)	Pressure ulcers and composite (-, OR = 0.61)
		Choi and Staggs (2014)	Unit acquired pressure ulcers SRA (-, OR = 0.78)
		Flynn et al (2010)	Pressure ulcers and composite (-, β=0.37)
		Ma and Park (2015)	Hospital acquired pressure ulcers and composite (-, OR= 0.73)
NR UTI	significant negative relationship		

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
		Kelly (2013)	NR UTI (-, OR= 0.80)
NR bloodstream infection	significant negative relationship		
		Kelly (2013)	NR bloodstream infection (-, OR=0.77)
NR pneumonia	significant negative relationship		
		Kelly (2013)	NR pneumonia (-, OR= 0.80)
NR central line infection	significant negative relationship		
		Lake (2016)	NR central line infection (-, OR= 0.89)
Patient Satisfaction			
Patient safety climate	significant positive relationship		

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
		Armstrong and Laschinger (2006)	+ Patient safety climate
		Armstrong et al (2009)	+ Patient safety climate
Perceived quality of care	significant positive relationship		
		Gardner et al (2009)	+ Perceived quality of care
Nurses communicated well	significant positive relationship		
		Aiken et al (2012)	Nurses communicated well (+, OR=1.11)
		You et al (2013)	Nurses communicated well (+, OR= 1.30)
Patient rates hospital highly	significant positive relationship		

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
		Aiken et al (2012)	Patient rates hospital highly (+, OR= 1.16)
		Kutney-Lee et al (2015)	Patient rates hospital highly (+, OR= 1.17)
		You et al (2013)	Patient rates hospital highly (+, OR= 1.29)
Patient satisfaction	significant positive relationship		
		Boev (2012)	Patient satisfaction and Nurse Manager Ability and Support of Nurses (+, β= 0.424)
		Kutney-Lee, McHugh, et al (2009)	+ Patient satisfaction (HCAHPS)
		Tei-Tominaga and Sato (2016)	Patient satisfaction and NPR (+, OR= 0.144)

[Response Ends]

2b.03. Provide the statistical results from validity testing.

Examples may include correlations or t-test results.

[Response Begins]

October 2021 maintenance.

Title: Table of Validity Testing of the PES-NWI.

This table displays the hypothesized relationships of the instrument to patient health outcomes and quality and safety, the effect sizes and the significance levels. What is notable in the 2021 results is a larger set of outcomes that have been linked statistically to better work environments.

This table reports results from regression models estimating the effect of a better work environment, as measured by the PES-NWI, on the specified outcome variable.

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
Patient Record Outcomes			OR or β [95% CI]
Mortality	significant negative relationship		
		Schlack (2021)	30-day mortality (-, OR = 0.86 [0.81, 0.92] <0.001)
		Kang (2020)	30-day mortality (-, OR = .95 [0.94, 0.97]) *p* < .001

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
Failure to rescue	significant negative relationship		
		Schlack (2021)	(-,OR = 0.88 [0.83, 0.95] <0.001)
		Kang (2020)	(-, OR = .94 [0.93, 0.96]) p < .001
Catheter-associated urinary tract infections	significant negative relationship		
		Landerfelt (2020)	(-, β = -1.34 (SE = 0.54) *P* < .05
Restraint rate	significant negative relationship		
		Olds (2021)	(-, β = −0.088, [−0.178 – −0.014] *p* = 0.045
Length of stay	significant negative relationship		

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
			IRR = incident rate ratio
		Schlack (2021)	(-, IRR = 0.96 (0.94, 0.99) *p* = 0.003
		Brom (2021)	(-, IRR = 0.97 [0.95–0.99] *p* < .01.
Readmission within 7 days	significant negative relationship		
		Brom (2021)	(-, OR = 0.96 [0.93–0.99] p < .05.
Readmission within 30 days	significant negative relationship		
		Brom (2021)	(-, OR = 0.97 (0.94–0.99] p < .05.
Percent of long-stay nursing home residents with pressure ulcers	significant negative relationship		

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
		(White, 2020)	(-, β = 0.90 [1.64, 0.17] *p* = 0.02
Number of hospitalizations per nursing home resident year	significant negative relationship		
		(White, 2020)	(-, β = 0.08 [0.15,0.001] *p* = .05
Nurse Reported Adverse Outcomes			
NR fall with injury	significant negative relationship		
		Smith (2019)	(-, OR = 0.50 [0.41–0.61] *p*<.01
NR medication errors	significant negative relationship		
		Smith (2019)	(-, OR = 0.61 [0.52–0.73] *p*<.01

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
NR pressure ulcer	significant negative relationship		
		Smith (2019)	(-, OR = 0.54 [0.43–0.67] *p*<.01)
NR UTI	significant negative relationship		
		Smith (2019)	(-, OR = 0.61 [0.51–0.73] *p*<.01)
Patient Satisfaction			
Nurses communicated well	significant positive relationship		
		Brooks Carthon (2021)	β = 2.62 (2.10, 3.15), *P* <.001
Patient rates hospital highly	significant positive relationship		

Outcomes	Hypothesized relationship with PES-NWI	Research study	Statistical evidence or associations
		Brooks Carthon (2021)	β = 5.13 (4.17, 6.11), *P* <.001
Patient would definitely recommend	significant positive relationship		
		Brooks Carthon (2021)	β = 6.08 (4.98, 7.19), *P* <.001
Nurse Reported Measures			
Quality of End of Life Care (graded C, D, or F)	significant negative relationship		
		Lasater (2019)	(-, OR = 0.45 (0.40–0.52) *P* < .001)

References[1-9]

References

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3. Kang XL, Brom HM, Lasater KB, McHugh MD. The association of nurse–physician teamwork and mortality in surgical patients. *Western journal of nursing research.* 2020;42(4):245-253.

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6. Smith JG, Plover CM, McChesney MC, Lake ET. Rural hospital nursing skill mix and work environment associated with frequency of adverse events. *SAGE open nursing.* 2019;5:2377960819848246.

7. Schlak AE, Aiken LH, Chittams J, Poghosyan L, McHugh M. Leveraging the work environment to minimize the negative impact of nurse burnout on patient outcomes. *International Journal of Environmental Research and Public Health.* 2021;18(2):610.

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9. White EM, Aiken LH, Sloane DM, McHugh MD. Nursing home work environment, care quality, registered nurse burnout and job dissatisfaction. *Geriatric Nursing.* 2020;41(2):158-164.

3

[Response Ends]

2b.04. Provide your interpretation of the results in terms of demonstrating validity. (i.e., what do the results mean and what are the norms for the test conducted?)

[Response Begins]

The results demonstrate concurrent and predictive validity. There are no norms for these tests.

[Response Ends]

2b.05. Describe the method for determining if statistically significant and clinically/practically meaningful differences in performance measure scores among the measured entities can be identified.

Describe the steps—do not just name a method; what statistical analysis was used? Do not just repeat the information provided in Importance to Measure and Report: Gap in Care/Disparities.

[Response Begins]

The method for determining both statistically significant and clinically/practically meaningful differences in performance measure scores among measured entities is by using descriptive statistics and peer comparisons for benchmarking and descriptive and inferential statistical analyses in empirical studies.

Benchmarking

National Database of Nursing Quality Indicators (developed by the American Nurses Association in 1994; purchased by Press Ganey Inc. in 2015). The instrument is used in an annual survey of hospital registered nurses in approximately 600 hospitals throughout the United States. These hospitals voluntarily participate in the annual survey for the purpose of benchmarking their values against their peer hospitals, such as academic medical centers, community hospitals, or hospitals in certain regions of the country.

The Leapfrog Group is a national network of employers and purchasers. Leapfrog conducts a free annual survey of all U.S. hospitals to assesses hospital safety, quality, and efficiency based on national performance measures that are of specific interest to health care purchasers and consumers. Results are free to the public at www.leapfroggroup.org/compare-hospitals. In 2018, 2,021 hospitals submitted a Leapfrog Hospital Survey, representing 54% of eligible hospitals and about 69% of all acute care hospitals beds. Leapfrog is initiating the measurement of this instrument #3450 in their members. Dr. Lake, measure steward, is a member of the Nursing

Workforce expert panel for Leapfrog to advise on how to incorporate the PES-NWI into their annual survey. The panel has been meeting since September 2019. The expert panels can be viewed here: https://www.leapfroggroup.org/about/expert-panelists

Nursing Workforce is one of five NQF Safe practices that Leapfrog requires hospitals to report on. Leapfrog issues a Hospital Safety Grade that represents a hospital's performance on 28 different measures of patient safety. In addition, confidential benchmarking reports are used by hospitals to engage their leadership and staff and to guide quality improvement programs.

In addition, Leapfrog Hospital Survey data is used by payors and health plans in value-based purchasing programs.

The current plan as of Sept 2021 is to hold off on scoring and public reporting of the PES-NWI until the 2023 survey, given the current turmoil with COVID-19.

Empirical Research

The purpose of empirical research using this instrument is to determine how variation across hospitals in nurses' work environments relates to the quality and safety of patient care, to patient outcomes, and to nurses' job outcomes. A meta-analysis reporting these relationships was published in 2019 by the measure developer/steward Lake and colleagues:

Lake E.T., Sanders J., Duan, R., Riman K., Schoenauer K, & Chen Y. (2019). A meta-analysis of the associations between the nurse work environment in hospitals and four sets of outcomes. *Medical Care* 57(5):353-361.

This publication documents the statistically significant and clinically/practically meaningful differences in performance scores across 21 independent samples spanning the period from the instrument's publication in 2002 through September 2018. As reported in the abstract: "Consistent, significant associations between the work environment and all outcome classes were identified. Better work environments were associated with lower odds of negative nurse outcomes (average OR of 0.71), poor safety or quality ratings (average OR of 0.65), and negative patient outcomes (average OR of 0.93), but higher odds of patient satisfaction (OR of 1.16)."

In these studies variation across hospitals is linked to variation across patients or nurses within those hospitals.

In the three years since measure endorsement (2018) there have been an additional 34 publications reporting empirical data from this instrument. These studies have not yet been summarized.

[Response Ends]

2b.06. Describe the statistical results from testing the ability to identify statistically significant and/or clinically/practically meaningful differences in performance measure scores across measured entities.

Examples may include number and percentage of entities with scores that were statistically significantly different from mean or some benchmark, different from expected; how was meaningful difference defined.

[Response Begins]

The evidence provided in 2b.06 demonstrates differences in performance across measured entities (hospitals) as follows:

In hospitals with better work environments, as measured by higher scores on the PES-NWI, there are significantly lower odds of a patient experiencing 30-day mortality or failure to rescue (Schlak et al 2021, Kang et al 2020), catheter-associated urinary tract infections (Landerfelt et al 2020),

which are quality indicators, as well as restraint use (Olds, 2021), and length of stay (Schlak et al 2021, Brom et al 2021), hospital readmission within 7 or 30 days (Brom et al 2021), which are CMS pay-for-performance measures, and long stay nursing home residents suffering pressure ulcers or being hospitalized (White et al 2020).

In hospitals with better work environments, as measured by higher scores on the PES-NWI, we see a significant positive relationship to patient satisfaction as measured by HCAHPS measures: nurses communicated well, patient rates hospital highly and patient would definitely recommend the hospital (Brooks Carthon et al 2021).

Regarding nurse-reported measures, in better work environments, significantly fewer nurses report that falls with injury, medication errors, pressure ulcers, or urinary tract infections occur frequently (Smith et al 2019) or grade the quality of life care poorly (grade C, D, or F) (Lasater et al, 2019).

[Response Ends]

2b.07. Provide your interpretation of the results in terms of demonstrating the ability to identify statistically significant and/or clinically/practically meaningful differences in performance across measured entities.

In other words, what do the results mean in terms of statistical and meaningful differences?

[Response Begins]

The evidence from the meta-analysis (Lake et al 2019) shows differences in odds of patient mortality, readmission, satisfaction, as well as quality and safety of care and nurse burnout and intent-to-leave by a hospital's nurse work environment. The results regarding statistical and meaningful differences mean that the instrument detects performance differences across measured entities that can be addressed by hospital managers and leaders.

[Response Ends]

2b.08. Describe the method of testing conducted to identify the extent and distribution of missing data (or non-response) and demonstrate that performance results are not biased due to systematic missing data (or differences between responders and non-responders). Include how the specified handling of missing data minimizes bias.

Describe the steps—do not just name a method; what statistical analysis was used.

[Response Begins]

The method of testing to identify the extent and distribution of missing data (or non-response) depends on whether the testing was through benchmarking or empirical studies.

The National Database of Nursing Quality indicators reports the nursing-unit-level response rates for their annual RN survey as 68% overall. Hospitals offer incentives for nurses to complete the survey. The 68% response rate is considered high by today's standards, in which nurses are invited to do many surveys and response rates are typically poor.

The extent of missing data in empirical studies is reported on a study-by-study basis. The evidence from the many studies that have reported data from this instrument has not been compiled. In multiple studies conducted by the University of Pennsylvania Center for Health Outcomes and Policy Research, the differences between responders and non-responders to a survey including the PES-NWI were compared by conducting a "non-response" survey. A random

sample of non-responders were invited to complete the survey and offered a monetary incentive (a $20 bill was included with the mailed survey). Then the answers of the former non-responders were compared with the original responders to determine if there was response bias in the PES-NWI data. The analysis revealed no significant differences between the original responders and the non-responders.

These results were reported in this working paper:

Smith, H. L. (2009) A double sample to minimize bias due to nonresponse in a mail survey. Population Studies Center Working Papers.

These results were also noted in this publication:

Lasater, K. B., et al. (2019). "A Methodology For Studying Organizational Performance: A Multistate Survey of Front-line Providers." Med Care 57(9): 742-749.

[Response Ends]

2b.09. Provide the overall frequency of missing data, the distribution of missing data across providers, and the results from testing related to missing data.

For example, provide results of sensitivity analysis of the effect of various rules for missing data/non-response. If no empirical sensitivity analysis was conducted, identify the approaches for handling missing data that were considered and benefits and drawbacks of each).

[Response Begins]

From the Lasater, et al. (2019) paper noted in 2b.08, Table 2 reports "Comparison of Nurse Responses From the Main Survey and Nonrespondent Survey." They report results from the main survey (52,510 respondents) and the nonrespondent survey (1,168). The PES-NWI composite value for both groups had identical means and SDs: 2.2 (0.6). The test for significant difference was not significant (p = .501).

[Response Ends]

2b.10. Provide your interpretation of the results, in terms of demonstrating that performance results are not biased due to systematic missing data (or differences between responders and non-responders), and how the specified handling of missing data minimizes bias.

In other words, what do the results mean in terms of supporting the selected approach for missing data and what are the norms for the test conducted; if no empirical analysis was conducted, justify the selected approach for missing data.

[Response Begins]

The relatively high response rates obtained from surveys of nurses for benchmarking purposes combined with the evidence of no bias between responders and non-responders from the Lasater et al 2019 study (see 2b.08) support the interpretation that performance results are not biased due to differences between responders and non-responders.

[Response Ends]

Note: This item is directed to measures that are risk-adjusted (with or without social risk factors) OR to measures with more than one set of specifications/instructions (e.g., one set of

specifications for how to identify and compute the measure from medical record abstraction and a different set of specifications for claims or eCQMs). It does not apply to measures that use more than one source of data in one set of specifications/instructions (e.g., claims data to identify the denominator and medical record abstraction for the numerator). Comparability is not required when comparing performance scores with and without social risk factors in the risk adjustment model. However, if comparability is not demonstrated for measures with more than one set of specifications/instructions, the different specifications (e.g., for medical records vs. claims) should be submitted as separate measures.

2b.11. Indicate whether there is more than one set of specifications for this measure.

[Response Begins]

No, there is only one set of specifications for this measure

[Response Ends]

2b.12. Describe the method of testing conducted to compare performance scores for the same entities across the different data sources/specifications.

Describe the steps—do not just name a method. Indicate what statistical analysis was used.

[Response Begins]

[Response Ends]

2b.13. Provide the statistical results from testing comparability of performance scores for the same entities when using different data sources/specifications.

Examples may include correlation, and/or rank order.

[Response Begins]

[Response Ends]

2b.14. Provide your interpretation of the results in terms of the differences in performance measure scores for the same entities across the different data sources/specifications.

In other words, what do the results mean and what are the norms for the test conducted.

[Response Begins]

[Response Ends]

2b.15. Indicate whether the measure uses exclusions.

[Response Begins]

N/A or no exclusions

[Response Ends]

2b.16. Describe the method of testing exclusions and what was tested.

Describe the steps—do not just name a method; what was tested, e.g., whether exclusions affect overall performance scores; what statistical analysis was used?

[Response Begins]

There are no exclusions.

[Response Ends]

2b.17. Provide the statistical results from testing exclusions.

Include overall number and percentage of individuals excluded, frequency distribution of exclusions across measured entities, and impact on performance measure scores.

[Response Begins]

N/A. There are no exclusions.

[Response Ends]

2b.18. Provide your interpretation of the results, in terms of demonstrating that exclusions are needed to prevent unfair distortion of performance results.

In other words, the value outweighs the burden of increased data collection and analysis. Note: If patient preference is an exclusion, the measure must be specified so that the effect on the performance score is transparent, e.g., scores with and without exclusion.

[Response Begins]

N/A. There are no exclusions.

[Response Ends]

2b.19. Check all methods used to address risk factors.

[Response Begins]

No risk adjustment or stratification

[Response Ends]

2b.20. If using statistical risk models, provide detailed risk model specifications, including the risk model method, risk factors, risk factor data sources, coefficients, equations, codes with descriptors, and definitions.

[Response Begins]

[Response Ends]

2b.21. If an outcome or resource use measure is not risk-adjusted or stratified, provide rationale and analyses to demonstrate that controlling for differences in patient characteristics (i.e., case mix) is not needed to achieve fair comparisons across measured entities.

[Response Begins]

This instrument is a nurse survey. We believe that all permanent staff nurses are qualified to evaluate their work environment without accounting for differences in nurse characteristics to achieve fair comparisons across measured hospitals.

[Response Ends]

2b.22. Select all applicable resources and methods used to develop the conceptual model of how social risk impacts this outcome.

[Response Begins]

[Response Ends]

2b.23. Describe the conceptual and statistical methods and criteria used to test and select patient-level risk factors (e.g., clinical factors, social risk factors) used in the statistical risk model or for stratification by risk.

Please be sure to address the following: potential factors identified in the literature and/or expert panel; regression analysis; statistical significance of p<0.10 or other statistical tests; correlation of x or higher. Patient factors should be present at the start of care, if applicable. Also discuss any "ordering" of risk factor inclusion; note whether social risk factors are added after all clinical factors. Discuss any considerations regarding data sources (e.g., availability, specificity).

[Response Begins]

[Response Ends]

2b.24. Detail the statistical results of the analyses used to test and select risk factors for inclusion in or exclusion from the risk model/stratification.

[Response Begins]

[Response Ends]

2b.25. Describe the analyses and interpretation resulting in the decision to select or not select social risk factors.

Examples may include prevalence of the factor across measured entities, availability of the data source, empirical association with the outcome, contribution of unique variation in the outcome, or assessment of between-unit effects and within-unit effects. Also describe the impact of adjusting for risk (or making no adjustment) on providers at high or low extremes of risk.

[Response Begins]

[Response Ends]

2b.26. Describe the method of testing/analysis used to develop and validate the adequacy of the statistical model or stratification approach (describe the steps—do not just name a method; what statistical analysis was used). Provide the statistical results from testing the approach to control for differences in patient characteristics (i.e., case mix) below. If stratified ONLY, enter "N/A" for questions about the statistical risk model discrimination and calibration statistics.

Validation testing should be conducted in a data set that is separate from the one used to develop the model.

[Response Begins]

[Response Ends]

2b.27. Provide risk model discrimination statistics.

For example, provide c-statistics or R-squared values.

[Response Begins]

[Response Ends]

2b.28. Provide the statistical risk model calibration statistics (e.g., Hosmer-Lemeshow statistic).

[Response Begins]

not applicable.

[Response Ends]

2b.29. Provide the risk decile plots or calibration curves used in calibrating the statistical risk model.

The preferred file format is .png, but most image formats are acceptable.

[Response Begins]

[Response Ends]

2b.30. Provide the results of the risk stratification analysis.

[Response Begins]

[Response Ends]

2b.31. Provide your interpretation of the results, in terms of demonstrating adequacy of controlling for differences in patient characteristics (i.e., case mix).

In other words, what do the results mean and what are the norms for the test conducted?

[Response Begins]

[Response Ends]

2b.32. Describe any additional testing conducted to justify the risk adjustment approach used in specifying the measure.

Not required but would provide additional support of adequacy of the risk model, e.g., testing of risk model in another data set; sensitivity analysis for missing data; other methods that were assessed.

[Response Begins]

[Response Ends]

3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

3.01. Check all methods below that are used to generate the data elements needed to compute the measure score.

[Response Begins]

Other (Please describe)

[Other (Please describe) Please Explain]

Data elements are generated by survey of nurses.

[Response Ends]

3.02. Detail to what extent the specified data elements are available electronically in defined fields.

In other words, indicate whether data elements that are needed to compute the performance measure score are in defined, computer-readable fields.

[Response Begins]

Patient/family reported information (may be electronic or paper)

[Response Ends]

3.03. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using data elements not from electronic sources.

[Response Begins]

This is nurse reported information. This measure is an eMeasure in the National Database of Nursing Quality Indicators, a voluntary benchmarking hospital network.

2021 Submission:

As above, this measure continues to be nurse-reported in the National Database of Nursing Quality Indicators. In addition, the Leapfrog Group plans to require the PES-NWI as a reported survey beginning in 2024.

2018 Submission:

This measure is also an eMeasure in the Veterans Administration and the Military Hospital system.

Here we support feasibility by presenting the numbers of hospitals, nursing units, and nurses, and response rates across years.

NDNQI VA

response rate # hospitals # units #nurses response rate # hospitals #nurses

2012 0.43 139 23,831

2013 0.72 574 11,264 206,978 0.43 138 24,166

2014 0.68 395 7,557 131,619 0.47 141 28,930

2015 0.69 453 9,168 157,531 0.52 141 33,446

2016 0.72 349 8,236 132,764 0.53 141 35,700

2017 0.70 384 8,520 147,568 0.54 141 37,305

2018 0.56 141 38,967

[Response Ends]

3.04. Describe any efforts to develop an eCQM.

[Response Begins]

An eCQM is not applicable to this measure. Presently there are no efforts to develop an eCQM. Nurses may answer the survey electronically but that is a hospital-specific decision.

[Response Ends]

3.06. Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.

[Response Begins]

For hospitals in the NDNQI or the VA or in the state of Colorado that have decided to survey their nurses, they experience no difficulties with data collection, availability, sampling, confidentiality, time/cost of data collection or other feasibility /implementation issues. The amount of missing data is very small (less than 2%). The timing/frequency is typically annual.

[Response Ends]

Consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.

3.07. Detail any fees, licensing, or other requirements to use any aspect of the measure as specified (e.g., value/code set, risk model, programming code, algorithm),

Attach the fee schedule here, if applicable.

[Response Begins]

none

[Response Ends]

4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making.

NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement, in addition to demonstrating performance improvement.

4a.01. Check all current uses. For each current use checked, please provide:

Name of program and sponsor

URL

Purpose

Geographic area and number and percentage of accountable entities and patients included

Level of measurement and setting

[Response Begins]

Public Reporting

[Public Reporting Please Explain]

State of Colorado does annual reporting of PES-NWI from all hospitals with 100 or more beds:

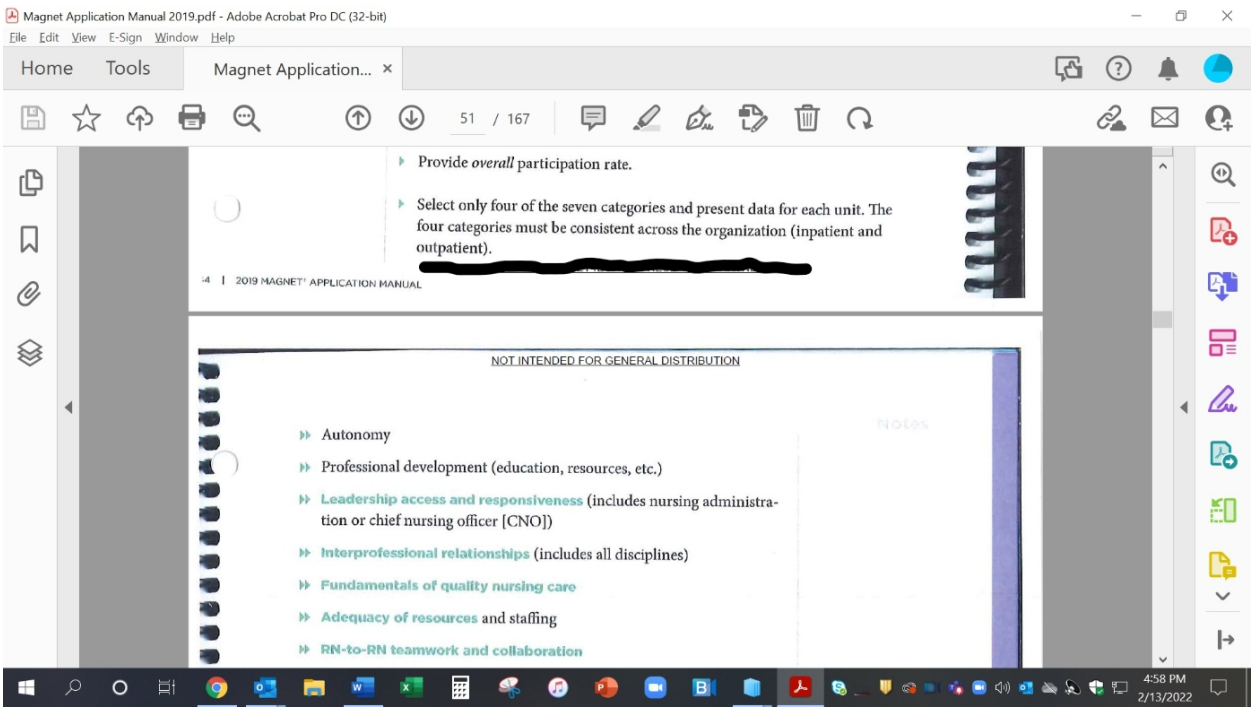
http://www.cohospitalquality.org:8080/corda/dashboards/COLORADO_REPORT_CARD_BY_HOSPITAL/main.dashxml

Professional Certification or Recognition Program

[Professional Certification or Recognition Program Please Explain]

The 2019 Magnet Hospital Accreditation program requires measurement of multiple domains in the PES-NWI. EP2E0 requires the reporting of four of seven categories with data presented for each nursing unit. These seven categories include four subscales of the PES-NWI: interprofessional relationships, fundamentals of quality nursing care, adequacy of resources and staffing, and leadership access and responsiveness. See attached excerpt from the 2019 accreditation manual.

This image, entitled "Magnet Application Manual 2019 Excerpt", displays an excerpt from the magnet handbook indicating that at least four of seven categories must be provided to fulfill this magnet requirement. The seven categories include four that align with PES-NWI subscales: leadership access and responsiveness, interprofessional relationships, fundamentals of quality nursing care, and adequacy of resources and staffing.



Title: Excerpt from the Magnet Hospital Accreditation Manual

Quality Improvement with Benchmarking (external benchmarking to multiple organizations)

[Quality Improvement with Benchmarking (external benchmarking to multiple organizations) Please Explain]

The National Database of Nursing Quality Indicators provides benchmarking reports to all participating hospitals to compare across peer groups, such as by hospital size, teaching status, or region.

Quality Improvement (Internal to the specific organization)

[Quality Improvement (Internal to the specific organization) Please Explain]

Specific hospitals may use the survey results to conduct quality improvement. For example, in this study below, a hospital identified the nurse managers rated most highly on that subscale and these nurse managers mentored other nurse managers to improve their abilities.

Anderson, B. J., et al. (2010). "Listening to nursing leaders: Using national database of nursing quality indicators data to study excellence in nursing leadership." Journal of Nursing Administration 40(4): 182-187.

[Response Ends]

4a.02. Check all planned uses.

[Response Begins]

Public reporting

Professional Certification or Recognition Program

Quality Improvement with Benchmarking (external benchmarking to multiple organizations)

Quality Improvement (internal to the specific organization)

[Response Ends]

4a.03. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing), explain why the measure is not in use.

For example, do policies or actions of the developer/steward or accountable entities restrict access to performance results or block implementation?

[Response Begins]

n/a

[Response Ends]

4a.04. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes: used in any accountability application within 3 years, and publicly reported within 6 years of initial endorsement.

A credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.

[Response Begins]

n/a

[Response Ends]

4a.05. Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.

Detail how many and which types of measured entities and/or others were included. If only a sample of measured entities were included, describe the full population and how the sample was selected.

[Response Begins]

In the NDNQI, the VA, and the military hospitals, the performance results are shared in reports and dashboards with hospital managers to identify and address weaknesses in the nursing practice environments in their facilities. The number of facilities equaled 384 NDNQI hospitals in 2017 as well as all 141 VA and all 13 army hospitals nationally. The NDNQI is a national voluntary benchmarking database to track nursing quality indicators. All VA and army hospitals collect the measure data. Interpretation is provided by NDNQI site coordinators in each hospital and at the VA and army hospitals by their quality and safety staff.

[Response Ends]

4a.06. Describe the process for providing measure results, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.

[Response Begins]

Measure results are reported annually to the facilities that complete the survey. The data provided are descriptive statistics as well as trends for the subscales and the composite score.

[Response Ends]

4a.07. Summarize the feedback on measure performance and implementation from the measured entities and others. Describe how feedback was obtained.

[Response Begins]

The NDNQI publishes monographs and holds conferences to provide exemplars of excellence to the facilities that collect, report, and evaluate the nursing-unit level data to assess the quality of nursing care and to transform the nursing units and improve outcomes. Press Ganey acquired NDNQI in 2015 and prepares annual strategic insight reports that are publicly available.

References to the monographs/reports:

Montalvo, I., & Dunton, N. (Eds.). (2007). Transforming nursing data into quality care: Profiles of quality improvement in US healthcare facilities. American Nurses Association.

Dunton, N., & Montalvo, I. (2009). Sustained improvement in nursing quality: Hospital performance on NDNQI indicators, 2007-2008. American Nurses Association.

Press Ganey Inc. 2017. Achieving Excellence: The Convergence of Safety, Quality, Experience and Caregiver Engagement http://healthcare.pressganey.com/2017-Strategic-Insights?s=White_Paper-PGPost

Example of a Conference:

Dunton, N., Staggs, V. & Potter, C. January 25, 2012. NDNQI Research Findings for the Advanced Site Coordinator. Preconference Workshop 002

[Response Ends]

4a.08. Summarize the feedback obtained from those being measured.

[Response Begins]

The increasing trend in completion of the measure in the NDNQI membership indicates that the measure is valued by the member facilities. The inclusion of the measure in hospital dashboards indicates the measure is valued for monitoring quality.

[Response Ends]

4a.09. Summarize the feedback obtained from other users.

[Response Begins]

The display of measure results in annual reports and manager dashboards demonstrates that the measure results are valuable to users.

[Response Ends]

4a.10. Describe how the feedback described has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.

[Response Begins]

Typical feedback about the measure is that a reduction in length and testing for use in non-hospital settings is desired.
The measure has not been modified to date although reduction in survey length is planned for a future endorsement period.

[Response Ends]

4b.01. You may refer to data provided in Importance to Measure and Report: Gap in Care/Disparities, but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included). If no improvement was demonstrated, provide an explanation. If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

[Response Begins]

Maintenance of Endorsement (October 2021):

As reported in 1b, the use of the instrument by the NDNQI, the VA, and the military hospitals is for benchmarking and performance improvement.

The evidence presented above by Swiger et al (2017), shows that hospitals that have achieved Magnet recognition for meeting standards of nursing excellence have improved performance by having better work environments as compared to non-Magnet hospitals.

Additionally, this publication reports use of the instrument to improve nursing leadership, one subscale of the instrument:

Anderson, B. J., Manno, M., O´Connor, P., & Gallagher, E. (2010). Listening to nursing leaders: Using national database of nursing quality indicators data to study excellence in nursing leadership. Journal of Nursing Administration, 40(4), 182-187.

The article aims to examine nurse leadership qualities that create healthy work environments conducive to delivery of quality bedside care. The PES-NWI was used to assess qualities of exemplary nurse managers chosen by their staff. Researchers concluded that effective nurse leaders emphasized visibility, communication, and valued respect and empathy. These leadership strategies help to create healthy work environments that support nurse job satisfaction, nurse retention, and quality patient care delivery.

[Response Ends]

4b.02. Explain any unexpected findings (positive or negative) during implementation of this measure, including unintended impacts on patients.

[Response Begins]

As noted by Warshawsky and Havens, 2011 it is important that scoring and reporting of the PES-NWI be done consistently. There was inconsistency in reporting of subscales and composites across the many studies. There has also been variation in the unit of analysis for reporting, specifically nurse, nursing unit and organizational levels.

Maintenance of Endorsement (October 2021):

There have been no unexpected findings except for some non-significant results in some studies in the new literature reviews. Nonsignificant results may be related to small sample sizes in some studies.

[Response Ends]

4b.03. Explain any unexpected benefits realized from implementation of this measure.

[Response Begins]

Maintenance of Endorsement (October 2021)

The unexpected benefits have been the worldwide use of the measure, generating comparable evidence to improve nursing work environments globally, and thereby improve patient safety and quality outcomes.

[Response Ends]

5. Comparison to Related or Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

If you are updating a maintenance measure submission for the first time in MIMS, please note that the previous related and competing data appearing in question 5.03 may need to be entered in to 5.01 and 5.02, if the measures are NQF endorsed. Please review and update questions 5.01, 5.02, and 5.03 accordingly.

5.01. Search and select all NQF-endorsed related measures (conceptually, either same measure focus or target population).

(Can search and select measures.)

[Response Begins]

0204: Skill mix (Registered Nurse [RN], Licensed Vocational/Practical Nurse [LVN/LPN], unlicensed assistive personnel [UAP], and contract)

0205: Nursing Hours per Patient Day

[Response Ends]

5.02. Search and select all NQF-endorsed competing measures (conceptually, the measures have both the same measure focus or target population).

(Can search and select measures.)

[Response Begins]

[Response Ends]

5.03. If there are related or competing measures to this measure, but they are not NQF-endorsed, please indicate the measure title and steward.

[Response Begins]

N/A

[Response Ends]

5.04. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s), indicate whether the measure specifications are harmonized to the extent possible.

[Response Begins]

Yes

[Response Ends]

5.05. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.

[Response Begins]

N/A

[Response Ends]

5.06. Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality). Alternatively, justify endorsing an additional measure.

Provide analyses when possible.

[Response Begins]

N/A

[Response Ends]

Appendix

Supplemental materials may be provided in an appendix.:

Available in attached file

Attachment: 3450_34 articles reference list.docx

Contact Information

Measure Steward (Intellectual Property Owner):

Measure Steward Point of Contact:

Measure Developer if different from Measure Steward: University of Pennsylvania, Center for Health Outcomes and Policy Research

Measure Developer Point(s) of Contact: Lake, Eileen, elake@nursing.upenn.edu

Additional Information

1. Provide any supplemental materials, if needed, as an appendix. All supplemental materials (such as data collection instrument or methodology reports) should be collated one file with a table of contents or bookmarks. If material pertains to a specific criterion, that should be indicated.

[Response Begins]

Available in attached file

[Response Ends]

Attachment: 3450_34 articles reference list.docx

2. List the workgroup/panel members' names and organizations.

Describe the members' role in measure development.

[Response Begins]

Eileen Lake, University of Pennsylvania.

[Response Ends]

3. Indicate the year the measure was first released.

[Response Begins]

2002

[Response Ends]

4. Indicate the month and year of the most recent revision.

[Response Begins]

2002

[Response Ends]

5. Indicate the frequency of review, or an update schedule, for this measure.

[Response Begins]

Every three years

[Response Ends]

6. Indicate the next scheduled update or review of this measure.

[Response Begins]

2024

[Response Ends]

7. Provide a copyright statement, if applicable. Otherwise, indicate "N/A".

[Response Begins]

Practice Environment Scale of the Nursing Work Index (Lake, 2002). This document can be reproduced with permission from Dr. Eileen Lake, who has reserved all rights to the instrument. This document may

[Response Ends]

8. State any disclaimers, if applicable. Otherwise, indicate "N/A".

[Response Begins]

N/A

[Response Ends]

9. Provide any additional information or comments, if applicable. Otherwise, indicate "N/A".

[Response Begins]

Regarding Ad.3: the measure has never been revised.

[Response Ends]