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Neurology, Spring 2021 Cycle: CDP Report

TECHNICAL REPORT
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Executive Summary

The National Quality Forum (NQF) Neurology Standing Committee oversees the measurement portfolio used to improve the quality of care for neurological conditions. This portfolio includes measures for stroke, subarachnoid and intracerebral hemorrhage, dementia, and carotid stenosis. The information regarding NQF's most recent Neurology Standing Committee meeting, as well as reports, measures, and past meeting materials, is available on NQF's project webpage.

For the spring 2021 cycle, the Standing Committee evaluated one newly submitted measure and one measure undergoing maintenance review against NQF's standard evaluation criteria.

The Standing Committee recommended one maintenance measure for endorsement, and the Consensus Standards Approval Committee (CSAC) upheld the Standing Committee's recommendation:

- **NQF #0507** Diagnostic Imaging: Stenosis Measurement in Carotid Imaging Reports (American College of Radiology)

The newly submitted measure was withdrawn from consideration following the post-comment meeting:

- **NQF #3614** Hospitalization After Release With Missed Dizzy Stroke (Johns Hopkins Armstrong Institute of Patient Safety and Quality)

Brief summaries of the measures are included in the body of the report; detailed summaries of the Standing Committee's discussion and ratings of the criteria for each measure are in Appendix A.

Introduction

Neurological conditions are disorders that affect the brain and the nerves found throughout the body and spinal cord. The Global Burden of Disease study found the three most burdensome neurological conditions in the U.S. to be stroke, Alzheimer's and other dementias, and migraine headache. Additionally, the study found that due to an increasingly aging population, many neurological disorders are rising in prevalence, incidence, and mortality as well as increasing in disability-adjusted life years (DALYs).[1]

Measuring the quality of care is a fundamental step toward improving healthcare. Quality measures are increasingly used in value-based purchasing applications and maintenance of certification requirements. A variety of quality measures exist that are related to the structure, process, and outcomes for neurological disorders, including epilepsy, child and geriatric neurology, headache, movement disorders, multiple sclerosis, neuromuscular disorders, and stroke.[2] NQF's Neurology Standing Committee assesses new and existing measures related to brain and spinal conditions brought by measure developers for endorsement.

For the spring 2021 cycle, the NQF Neurology project evaluated one new measure and one maintenance measure. The new measure, which was withdrawn from consideration following the post-comment meeting, assessed the rate of missed stroke in emergency departments (EDs) when patients present themselves with dizziness, which is a nonspecific symptom. The maintenance measure correlated to the appropriate measurement of carotid stenosis (i.e., a narrowing of the carotid artery) performed by radiologists on imaging studies, including computed tomography (CT), angiography, ultrasound, and magnetic resonance imaging (MRI). Proper carotid artery measurement is important in assessing eligibility for evidence-based interventions, such as carotid endarterectomy, which can reduce the risk of stroke.[3]

Carotid Stenosis

Approximately 87 percent of all strokes are ischemic strokes, in which blood flow to the brain is blocked.[4] A major cause of ischemic stroke is large blood vessel atherosclerosis, or the development of plaques in vessels, particularly the carotid arteries, which travel through the neck and brain. In 2005, the annual rate of strokes attributed to stenosis of the carotid artery was 13.4 per 100,000 persons.[5] When carotid stenosis is identified, particularly when it is causing stroke symptoms, treatment options (e.g., endarterectomy or stenting, anti-platelet medication) can be used to help reduce the risk of future stroke.[6]

NQF Portfolio of Performance Measures for Neurologic Conditions

The Neurology Standing Committee (Appendix C) oversees NQF's portfolio of Neurology measures (Appendix B), which includes measures for stroke, subarachnoid and intracerebral hemorrhage, dementia, and carotid stenosis. This portfolio contains five measures, all of which are process measures.

Neurology Measure Evaluation

On June 21, July 15, and July 19, 2021, the Neurology Standing Committee evaluated one new measure and one measure undergoing maintenance review against NQF's standard measure evaluation criteria.

Table 1. Neurology Measure Evaluation Summary

Measure Summary	Maintenance	New	Total
Measures under review	1	1	2
Measures endorsed	1	0	1
Measures withdrawn	0	1	1

Comments Received Prior to Standing Committee Evaluation

NQF accepts comments on endorsed measures on an ongoing basis through the Quality Positioning System (QPS). In addition, NQF solicits comments for a continuous 16-week period during each evaluation cycle via an online tool located on the project webpage. For this evaluation cycle, the commenting period opened on May 6, 2021, and pre-evaluation commenting closed on June 17, 2021. As of June 17, 2021, two comments were submitted and shared with the Standing Committee prior to the measure evaluation meetings (Appendix F).

Comments Received After Standing Committee Evaluation

The continuous 16-week public commenting period with NQF member support closed on September 27, 2021. Following the Standing Committee's evaluation of the measures under review, NQF received four comments from four member organizations and individuals pertaining to the draft report and to the measures under review (Appendix G). All comments for each measure under review have also been summarized in Appendix A.

Throughout the 16-week continuous public commenting period, NQF members had the opportunity to express their support ("support" or "do not support") for each measure submitted for endorsement consideration to inform the Standing Committee's recommendations during the commenting period. This expression of support (or not) during the commenting period replaces the member voting opportunity that was previously held subsequent to the Standing Committee's deliberations. No NQF members expressed "support" or "do not support" for either measure.

Overarching Issues

During the Standing Committee's discussion of the measures, two overarching issues emerged that were factored into the Standing Committee's ratings and recommendations for both measures under review and are not repeated in detail with each individual measure.

Concerns Over the Quality of the Evidence

For both measures, the Standing Committee raised concerns about the evidence that the developers presented. For outcome measures to pass the Standing Committee's review, a clear healthcare intervention that can improve the outcome must be present. For process measures to pass the Standing Committee's review, a clear linkage between the measured process and an important health outcome must also be present. The developer of the missed stroke measure (NQF #3614), an outcome measure,

detailed interventions that could potentially be performed, such as physical examination maneuvers. However, the Standing Committee ultimately felt that this was not sufficient evidence to show that performing these examinations would reduce the risk of missed stroke in patients presenting with dizziness. For the carotid stenosis measure (NQF #0507), a process measure, the Standing Committee raised concerns about whether better measurement of carotid stenosis itself was linked to improved outcomes. The developer was unable to describe a clear linkage between the process measure and any outcomes. However, the developer did articulate that the benefits of this measure outweigh potential risks. Therefore, a two-step evidence pathway was proposed, in which improved measurement would lead to a better selection of patients for interventions, which has been shown to improve outcomes. This led the Standing Committee to vote for insufficient evidence with exception due to the lack of strong empirical evidence between the process and the outcome; yet the benefits of this measure outweigh any potential harm.

Issues With Scientific Acceptability

For measures to receive NQF endorsement, they must be reliable, valid, and properly specified. Scientific acceptability (i.e., reliability and validity) concerns were raised during both measure discussions. Concerns were raised regarding the reliability of NQF #3614, particularly the importance of having sufficient observations to ensure the measure was reliable. Smaller hospitals may not achieve sufficient cases to generate a reliable measure. For NQF #0507, concerns were raised that empirical validity testing was not conducted (i.e., measure results are compared against another valid measure of a similar concept). While the developer did attempt to conduct empirical validity testing, they were initially unable to because they could not find a suitable comparator measure at the same level of analysis. This concern led to a vote of "consensus not reached" for the measure. The developer later re-attempted another method of validity testing and submitted the results during public commenting, which the Standing Committee ultimately found acceptable.

Summary of Measure Evaluation

The following brief summaries of the measure evaluation highlight the major issues that the Standing Committee considered. Details of the Standing Committee's discussion and ratings of the criteria for each measure are included in Appendix A.

NQF #0507 Diagnostic Imaging: Stenosis Measurement in Carotid Imaging Reports (American College of Radiology): Endorsed

Description: This measure assesses the percentage of final reports for carotid imaging studies (e.g., neck magnetic resonance angiography [MRA], neck computerized tomographic angiography [CTA], neck duplex ultrasound, and carotid angiogram) performed that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement. **Measure Type**: Process; **Level of Analysis**: Clinician: Individual; **Setting of Care**: Outpatient Services, Inpatient/Hospital; **Data Source**: Claims, Registry

This maintenance measure has been NQF-endorsed since 2013 and has been used in quality improvement and public reporting since 2011. When considering the evidence, the Standing Committee expressed that it did not observe a relationship between the measured process and a health outcome. Another Standing Committee member expressed that support for this measure would be improved with evidence showing a relationship between better performance on this measure and improved outcomes,

such as unnecessary surgery. The developer was asked whether any such data existed. The developer referred to a study in the *New England Journal of Medicine*, in which visual inspection was used to assess stenosis. This study found that it was difficult to generate such evidence linking the measurement process to outcomes. The Standing Committee considered the importance of assessing the degree of symptomatic carotid stenosis and that assessing the risk in asymptomatic stenosis is being tested in the Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial (CREST-2) study. The Standing Committee further acknowledged the importance of measuring carotid stenosis for better stroke care and that evidence exists to support interventions for carotid stenosis. Despite the lack of strong empirical evidence that associates the measured process to outcomes, the Standing Committee considered passing the measure with insufficient evidence with exception. The Standing Committee co-chair clarified that the insufficient evidence with exception could be considered if the Standing Committee agreed that the measure would be beneficial in the absence of strong empirical evidence or if better measure performance increased the accuracy of patient selection for carotid endarterectomy. The Standing Committee agreed and voted to pass the measure with insufficient evidence with exception.

The Standing Committee proceeded to the performance gap criterion and requested clarification of the submitted data because the rate appeared to have increased from 17 percent from when the measure was first being used to 97.7 percent in the most recent data. The developer clarified that the data provided in the submission initially included incorrect information; as a result, updated data were provided, which showed that the performance rate is between 75 to 80 percent. The Standing Committee requested additional clarification about the impact of removing the group data from the data set, particularly the number of physicians who were removed from the analysis as a result of removing group data. The developer reported that by removing the group data, the number of physicians in the analysis decreased by approximately 50 percent. Additionally, a Standing Committee member highlighted that the number of physicians included in the data analysis decreased each year, starting with over 3 million in 2012 to about 9,000 in 2015. The Standing Committee questioned how performance can be determined with this progressively smaller subgroup of physicians. The developer could not explain this large decline in the number of physicians because the Centers for Medicare & Medicaid Services (CMS) provided the data set. However, the Standing Committee recognized that a performance gap still exists and voted to pass the measure on the performance gap criterion.

Next, the Standing Committee began their discussion on the scientific acceptability criteria, starting with reliability. At the request of the Standing Committee, the developer provided a more detailed explanation about the use of signal-to-noise ratio (SNR) testing for reliability. No further discussion on reliability occurred, and the Standing Committee voted and passed the measure on reliability. The Standing Committee proceeded to discuss the validity criterion and the lack of empirical validity testing, which is required for maintenance measures. The developer explained that they attempted to construct validity testing by correlating the results of this measure with other measures; however, they were unable to find suitable measures for this correlation within the same accountability program. The developer also attempted criterion validity testing using data at the population level but was unable to format the measures' data sets to perform an empirical analysis. Additionally, the developer attempted to correlate the measure with Merit-Based Incentive Payment System (MIPS) #409 *Clinical Outcome Post-Endovascular Stroke Treatment* and MIPS #413 *Door-to-Puncture Time for Endovascular Stroke Treatment*. However, while these measures were specified at the individual-clinician level, CMS was

unable to provide the developer with the individual-level data since all submissions were made at the group level. The developer then performed a new face validity study in November 2020, which demonstrated that 82 percent of the developer-convened expert panel either agreed or strongly agreed that this measure accurately distinguishes good from poor quality. NQF staff provided clarification about how the Standing Committee should evaluate the validity criterion, specifically that the Standing Committee should assess whether the developer had a reasonable approach to attempting empirical validity and whether it was sufficient to resort to face validity. Based upon this discussion, the Standing Committee voted and did not reach consensus on the validity criterion. A Standing Committee member asked the developer whether they could have approached validity testing by auditing a sample number of charts outside of the measure's data set to demonstrate the accuracy of the method used to report. The developer stated that they did not know this was an option for testing but that it could be possible. The Standing Committee strongly encouraged the inclusion of empirical validity in the next submission if endorsement is maintained.

Moving to feasibility, the Standing Committee proceeded to discuss the feasibility criterion. The Standing Committee did not raise any concerns, although one comment was made about the process of chart abstraction being prone to errors. The co-chair clarified that data had been gathered on this measure for many years. It was also clarified that some data are collected from electronic fields, while others are manually abstracted from charts; in addition, it was also noted that the measure developer collects subscription fees.

The Standing Committee raised no concerns regarding the use and usability criteria. This measure is currently being used in a CMS accountability program and for quality improvement within the American College of Radiology (ACR) registries for public reporting. The Standing Committee did not identify any potential harm based on the measure's use and voted to pass the measure on the use and usability criteria.

The Standing Committee did not vote on the recommendation for endorsement at the initial measure evaluation meeting because the Standing Committee did not reach consensus on validity—a must-pass criterion. During the public commenting period, the developer submitted additional validity testing and summarized the results. Data element validity testing was conducted by the measure developer and involved random audits of data that were submitted to the Qualified Clinicians Data Registry (QCDR) as part of the CMS MIPS program over a four-year period. Data submitted to the QCDR were compared with a chart review and demonstrated a high level of concordance (98-100 percent) between the exam record data and registry data. No other public comments were received. The Standing Committee did not raise any major concerns and passed the measure on validity. The Standing Committee moved to a vote on overall suitability for endorsement. The measure passed and was recommended for endorsement. The CSAC had no concerns and voted unanimously to uphold the Standing Committee's recommendation to endorse the measure. No appeals were received.

NQF #3614 Hospitalization After Release With Missed Dizzy Stroke (Johns Hopkins Armstrong Institute for Patient Safety and Quality): Withdrawn

Description: This outcome measure tracks the rate of patients admitted to the hospital for a stroke within 30 days of being treated and released from the ED with either a nonspecific, presumed benign symptom-only dizziness diagnosis or a specific inner ear/vestibular diagnosis (collectively referred to as *benign dizziness*). The measure accounts for the epidemiologic base rate of stroke in the population

under study using a risk difference approach (observed [short-term rate] minus expected [long-term rate]). **Measure Type**: Outcome; **Level of Analysis**: Facility; **Setting of Care**: Emergency Department and Services; **Data Source**: Claims

In review of the evidence, a Standing Committee member expressed concerns about the ability of an intervention being performed to improve the measure. The developer first described the intervention of the Head Impulse, Nystagmus, Test of Skew (HINTS) examination battery, which can diagnose central dangerous causes of dizziness with high sensitivity and specificity. The HINTS examination, in conjunction with positional maneuvers (e.g., the Dix-Hallpike maneuver for Benign Positional Paroxysmal Vertigo [BPPV]), can assist in the diagnosis of the causes of underlying dizziness that do not need imaging. Another Standing Committee member commented that direct evidence of the use of the HINTS examination lowering stroke rate does not appear to be presented. Rather, the literature shows that early diagnosis and interventions in stroke reduce the rates of strokes. The developer shared early clinical trial results, which showed that a Tele-Dizzy consult service was able to substantially improve the diagnosis of dizziness and eliminated the excess 30-day stroke hospitalizations from the baseline. The developer commented that consultation with a neurologist can also improve diagnostic accuracy for patients with dizziness, thus substantially increasing the yield of stroke diagnoses relative to the baseline and the accuracy of diagnoses for patients with inner ear disease. Additionally, the developer acknowledged that an area for opportunity exists among ED physicians regarding bedside diagnostic maneuvers, and the Society of Academic Emergency Medicine (SAEM) is currently working on guidelines for dizziness and bedside diagnostic maneuvers.

A few Standing Committee members expressed concerns with the appropriateness of the 30-day time frame and the potential for overdiagnosis. The developer shared that they engaged a Technical Expert Panel (TEP) regarding the time frame. The developer acknowledged that a seven-day time frame could potentially provide increased precision; however, the numbers were low overall. Additionally, 30 days is often used for CMS metrics and provides face validity to ED physicians.

The Standing Committee also expressed concern about the incompleteness of using “dizziness” to capture all classifications of dizziness (e.g., also considering syncope, imbalance, and vertiginous). One Standing Committee member shared a recent study published in the *Academic Emergency Medicine* journal in April 2021, which showed that the HINTS examination did not identify a single central cause of stroke in 2,000 patients; there were also patients who experienced missed posterior circulation strokes. The Standing Committee member noted that this experience was similar to his clinical experience in which patients presented themselves with intense nausea and vomiting with vertigo; however, dizziness is not a main designation, which is concerning with regard to the numerator and denominator for the measure. According to the developer, studies have shown that differentiating between different symptoms (e.g., dizziness, syncope, vertigo, unsteadiness, etc.) does not adequately differentiate between the different causes of underlying dizziness. The developer acknowledged the possibility of a patient with a missed stroke presenting themselves with syncope and not be coded for dizziness. From a quality improvement standpoint, however, having a symptom-specific approach is more actionable than a more general approach to stroke misdiagnosis.

Additionally, a Standing Committee member expressed concern about the generalizability of the intervention because few EDs have neurologists available at the bedside for consultation to perform the

assessments that could have an impact on this measure. The developer highlighted that proper bedside examination is highly effective in diagnosing patients with dizziness, at accurately diagnosing peripheral inner ear diseases, and at accurately diagnosing stroke. The developer also acknowledged the low accuracy of performing the examinations effectively among ED physicians; nonetheless, careful training can be effective. Additionally, the developer shared that other clinicians, in addition to neurologists (e.g., a vestibular physical therapist), may be able to assist in these examinations. The developer mentioned that there are currently no quality improvement initiatives for improving the diagnosis of dizziness because there is no way to measure performance.

Quorum was lost before the vote for the evidence criterion was conducted; following the meeting, the Standing Committee received a recording of the meeting and submitted votes online for the criteria that it fully discussed during the meeting: evidence and performance gap. The Standing Committee did not pass the measure on evidence; therefore, no further votes were recorded.

Moving to performance gap, the Standing Committee expressed recognition of the existing gap for missed stroke diagnosis. The Standing Committee did not have any major concerns. Due to the loss of quorum, performance gap was voted on asynchronously following the meeting, along with evidence. Since the Standing Committee did not pass the measure on evidence during this post-meeting vote, the vote for performance gap was not recorded.

For scientific acceptability, the Standing Committee began with a discussion on reliability. The Scientific Methods Panel (SMP) evaluated the measure in March 2021 (SMP Meeting Summary) and passed it on reliability with a rating of moderate. A Standing Committee member shared the SMP's concerns about the minimum case volume needed for the measure and expressed concern with the measure's lack of reliability for hospitals with less than 250 cases. This Standing Committee member also questioned whether the interquartile range of 0.590 for the signal-to-noise analysis was sufficient. The developer reminded the Standing Committee that they used Medicare Fee-for-Service (FFS) data, which represent 20 percent of the overall patient population; however, if they had access to all ED discharges from every hospital, they would be able to calculate a more precise reliability result. The developer shared data from large and small hospitals, highlighting that hospital variability can be measured if sufficient events are available. One Standing Committee member mentioned that the use of Medicare data skews the data towards an older average age group. This led to a discussion on the appropriateness of eliminating stroke misdiagnosis among the younger population. The developer shared that the risk of stroke misdiagnosis increases sevenfold for patients between the ages of 18 and 45 compared with patients over 75 years of age. Additionally, diagnostic interventions to improve the diagnosis of dizziness have an impact on young and older patients who are inappropriately irradiated by CT when their true diagnosis is benign positional vertigo.

Due to losing sufficient attendance (minimum 50 percent of the Standing Committee) to continue the meeting on June 21, 2021, the Standing Committee did not complete its discussion on the reliability criterion. Since the Standing Committee did not pass the measure on evidence, a must-pass criterion, during offline voting, the measure was not recommended for endorsement. No additional discussion or voting was scheduled.

During the post-commenting period, the developer submitted a reconsideration request for NQF #3614, which contested that the evidence submitted does in fact meet the evidence criterion. The developer also expressed concerns about the fragmentation of the meeting discussion and that the lead developer was not permitted to present the measure to the Standing Committee because it was viewed as a conflict since the lead developer was also a member of the Standing Committee.

During the post-comment meeting, quorum was lost before the reconsideration vote for NQF #3614 was conducted, but sufficient Standing Committee attendance was maintained to continue the meeting discussion. Since quorum was lost, no live voting occurred during the meeting. Rather, NQF staff moved to open the measure for reconsideration, and the Standing Committee held a full discussion of all measure criteria. The Standing Committee received a voting survey and recording of the meeting following the post-comment call for offline voting. For the discussion on evidence, a Standing Committee member commented that an action that is tied to the outcome is needed. The developer shared that the relationship between the measure and improvement in patient outcomes focuses on improving diagnostic accuracy in stroke, which will improve outcomes for patients in reducing morbidity and mortality. The developer further shared that the Acute Video-oculography for Vertigo in Emergency Rooms for Rapid Triage (AVERT) clinical trial is ongoing and is assessing diagnostic accuracy as an outcome of a care pathway for the evaluation of patients with dizziness. Preliminary results show that experts assessing eye movements do improve diagnostic accuracy, approximately doubling the detection rate. In addition, there is evidence that the quality of treatment improves with better diagnosis. In particular, the developer stated that earlier treatment of minor stroke cuts the risk for major stroke by 34 percent within the next 21 days. The Standing Committee expressed concern that this connection is somewhat indirect and that the link between diagnostic accuracy and improving patient outcomes is unclear.

Moving to scientific acceptability, the Standing Committee expressed concerns with both reliability and validity. The Standing Committee shared that the reliability score was low. For validity, there was concern that the diagnostic codes may not accurately capture the actual miss rate. In addition, when there is a low prevalence, the positive predictive value is low, meaning subtle differences between coding and local clinical practice could confound differences in quality between hospitals observed in this measure. The Standing Committee also questioned the usability of the measure due to concern that neurologists may not be available to help implement this measure, which could lead to unintended consequences, namely diametrically opposed incentives for emergency physicians to reduce both diagnostic imaging and missed diagnoses. In reviewing the results from the offline voting, the Standing Committee once again did not pass the measure on the evidence criterion, a must-pass criterion.

The developer withdrew the measure from consideration following the post-comment meeting in order to work on strengthening their measure submission for a future cycle in response to the Standing Committee's concerns.

References

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Appendix A: Details of Measure Evaluation

Rating Scale: H=High; **M**=Moderate; **L**=Low; **I**=Insufficient; **NA**=Not Applicable

Vote totals may differ between measure criteria and between measures as Standing Committee members often have to join calls late or leave calls early. NQF ensures that quorum is maintained for all live voting. All voting outcomes are calculated using the number of Standing Committee members present during the meeting for that vote as the denominator. Denominator vote counts may vary throughout the criteria due to intermittent Standing Committee attendance fluctuation. The vote totals reflect members present and eligible to vote at the time of the vote. One Standing Committee member was recused from discussion and voting on NQF #0507, and one Standing Committee member was recused from discussion and voting on NQF #3614. Quorum (a minimum of 12 out of 18 active non-recused Standing Committee members present) was reached and maintained for the duration of the discussion and voting on NQF #0507. Quorum (a minimum of 12 out of 18 active non-recused Standing Committee members present) was not maintained for live voting on NQF #3614; instead, asynchronous voting was conducted following the meeting.

Measures Endorsed

NQF #0507 Diagnostic Imaging: Stenosis Measurement in Carotid Imaging Reports

Measure Worksheet | Specifications

Description: This measure assesses the percentage of final reports for carotid imaging studies (i.e., neck magnetic resonance angiography [MRA], neck computerized tomographic angiography [CTA], neck duplex ultrasound, and carotid angiogram) performed that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement.
Numerator Statement: Final reports for carotid imaging studies that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement
Denominator Statement: All final reports for carotid imaging studies (i.e., neck MRA, neck CTA, neck duplex ultrasound, and carotid angiogram) performed
Exclusions: No denominator exclusions or denominator exceptions
Adjustment/Stratification: No risk adjustment or stratification
Level of Analysis: Clinician: Individual
Setting of Care: Outpatient Services, Inpatient/Hospital
Type of Measure: Process
Data Source: Claims, Registry Data
Measure Steward: American College of Radiology (ACR)

STANDING COMMITTEE MEETING [July 15, 2021, and July 19, 2021]

1. Importance to Measure and Report: The measure meets the Importance criteria.

(1a. Evidence, 1b. Performance Gap)

1a. Evidence: **Total Votes: 15; H-0**; **M-1**; **L-0**; **I-14;** Evidence Exception: **Total Votes: 15; Yes-11; No-4;** 1b. Performance Gap: **Total Votes: 14; H-0**; **M-9**; **L-3**; **I-2**

Rationale

- Moderate and severe stenosis (50-90% occlusion) of the carotid artery affects approximately 10% of the general population by their eighth decade and causes approximately 10% of strokes.
- The stroke risk associated with asymptomatic carotid stenosis (ACS) falls between 60-80% with medical treatment alone versus additional carotid endarterectomy (CEA). This improved stroke prevention efficacy also has implications for better outcomes for patients with symptomatic carotid stenosis (SCS).
- There is a significantly higher overall risk of stroke or death associated with carotid angioplasty/stenting than with CEA.

- The Standing Committee did not see a relationship between outcomes and quality of care with accurate versus inaccurate carotid measurement. However, multiple Standing Committee members expressed that the measurement of carotid stenosis was good for improving stroke care.
- The Standing Committee ultimately voted for insufficient evidence with exception due to the absence of empirical evidence but agreed that holding providers accountable for this measure is beneficial to patients.
- The developer provided data with performance rates increasing from 16.85 in 2012 to 74.97 in 2018.
- The Standing Committee questioned the developer's data because the original submission included data from both individual providers and groups. Because the measure's level of analysis is for individuals, the group data were removed, and updated data were provided. When the group data were removed, the number of physicians included in the data analysis decreased by approximately 50%. The Standing Committee also highlighted that the number of physicians included in the data analysis decreased from about 3 million physicians in 2012 to about 9,000 physicians in 2015 and questioned how performance could be determined.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria.

(2a. Reliability precise specifications, testing; 2b. Validity testing, threats to validity)

2a. Reliability: **Total Votes: 14; H-6**; **M-8**; **L-0**; **I-0;** 2b. Validity: Measure Evaluation Meeting – **Total Votes: 15; H-0; M-7**; **L-5**; **I-3;** Post-Comment Meeting – **Total Votes: 12; H-0; M-9; L-2; I-1**

Rationale

- The beta-binominal model was used to assess the SNR at the performance score level. The overall mean reliability score was 0.9340 (Confidence Interval [0.99331, 0.99350]).
- The Standing Committee had no concerns about reliability.
- The developer attempted construct validity by correlating the results of NQF #0507 with other measures but was unable to find suitable measures for this purpose within same accountability program.
- The developer also attempted criterion validity testing using data at the population level but was unable to format measures' data sets to perform an empirical analysis; while MIPS #409 and MIPS #413 were specified at the individual-clinician level, the Centers for Medicare & Medicaid Services (CMS) was unable to provide the developer with individual-level data because all submissions were made at the group level.
- The developer performed a new face validity study in November 2020, which demonstrated that 82.15% (23 members) of the panel either agreed or strongly agreed that this measure accurately distinguishes good from poor quality.
- Empirical validity testing is required for maintenance measures. However, the Standing Committee can assess whether the developer had a reasonable approach to attempting empirical validity and whether it was sufficient to resort to face validity.
- A Standing Committee member asked the developer whether they could have approached validity testing by auditing a sample number of charts outside of the measure data set to demonstrate the accuracy of the method used to report. The developer stated that they did not know this was an option for testing but that it could be possible.
- The Standing Committee did not reach consensus on validity during the measure evaluation meeting.

3. Feasibility: Total Votes: 13; H-5; M-8; L-0; I-0

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified; 3d. Data collection strategy can be implemented)

Rationale:

- Data elements are abstracted from a record, some are in defined fields in electronic clinical data, and some elements are manually abstracted from the radiology report. ACR is working to enable artificial intelligence (AI) and natural language processing (NLP) in their data collection.
- Subscription fees are collected for use of this measure.
- The Standing Committee highlighted that chart abstraction is prone to errors; nonetheless, this

measure has been used for a long time.
- The Standing Committee did not have any additional concerns regarding feasibility.

4. **Usability and Use: The maintenance measure meets the Use subcriterion.**

(Used and useful to the intended audiences for 4a. Accountability and Transparency; 4b. Improvement; and 4c. Benefits outweigh evidence of unintended consequences)

4a. Use**: Total Votes: 13; Pass-13; No Pass-0;** 4b. Usability: **Total Votes: 13; H-2; M-11; L-0; I-0**

Rationale

- This measure is being used for accountability (i.e., CMS Payment Program for accountability and reimbursement) and public reporting (i.e., quality improvement within ACR registries).
- This measure has created more standardization for carotid imaging results while supporting increased communications between radiologists and referring physicians.
- The Standing Committee did not identify potential harms.
- The Standing Committee did not have any concerns regarding use or usability.

5. **Related and Competing Measures**
   - No related or competing measures were noted.
6. **Standing Committee Recommendation for Endorsement: Yes-12; No-0**
7. **Public and Member Comment**
   - The measure developer submitted a comment that provided additional validity testing for the Standing Committee to consider during the post-comment meeting.
   - During the post-commenting period, the Standing Committee reviewed this information, determined that the measure did meet the validity criterion, and passed the measure on validity.
8. **Consensus Standards Approval Committee (CSAC) Vote: Yes-10; No-0 (November 30, 2021): Endorsed**
   - The CSAC upheld the Standing Committee's decision to recommend the measure for endorsement.
9. **Appeals:** No appeals were received.

Measures Withdrawn

NQF #3614 Hospitalization After Release With Missed Dizzy Stroke

Measure Submission

Description: This outcome measure tracks the rate of patients admitted to the hospital for a stroke within 30 days of being treated and released from the ED with either a nonspecific, presumed benign symptom-only dizziness diagnosis or a specific inner ear/vestibular diagnosis (collectively referred to as *benign dizziness*). The measure accounts for the epidemiologic base rate of stroke in the population under study using a risk difference approach (observed [short-term rate] minus expected [long-term rate]).

Numerator Statement: The number of ED index visits during the performance period that are followed within 30 days by an inpatient hospital admission to any hospital that ends in a primary diagnosis of stroke

Denominator Statement: Patients discharged from the ED with benign dizziness as the primary diagnosis code, counting a patient's first such discharge during the performance period (an "index visit") and all subsequent such discharges that fall outside a 360-day follow-up window from the previous qualifying "index visit"

Exclusions: No exclusions

Adjustment/Stratification: No risk adjustment or stratification

Level of Analysis: Facility

Setting of Care: Emergency Department and Services

Type of Measure: Outcome

Data Source: Claims

Measure Steward: Johns Hopkins Armstrong Institute of Patient Safety and Quality

STANDING COMMITTEE MEETING [June 21, 2021]

1. Importance to Measure and Report: The measure does not meet the Evidence criterion.

(1a. Evidence, 1b. Performance Gap)

1a. Evidence: **Measure Evaluation Meeting Total Votes: 13; Yes-4; No-9**

Post-Comment Meeting Total Votes: 14; Yes-5; No-10

1b. Performance Gap: **Total Votes: 13; H-3**; **M-8**; **L-2**; **I-0**

Rationale

- This is intended to be a measure of patients who had a treat-and-release ED visit with a diagnosis of benign dizziness who were discharged and later had a stroke, with the suggestion being that the dizziness treat-and-release ED visit reflected a potentially missed stroke diagnosis.
- Dizziness is commonly misdiagnosed in the ED with rates as high as 80%.
- Patients hospitalized for stroke (about 190,000 admissions from nine U.S. states in 2009) are more likely to have had a treat-and-release ED visit for so-called "benign" dizziness within the prior 14 days than those who have had an ED visit for a different chief complaint.
- Benign dizziness treat-and-release discharges from the ED (about 30,000 visits per year) are more likely to return for an inpatient stroke admission within the subsequent 30 days than a heart attack admission.
- The Standing Committee expressed concerns about the ability of an intervention (e.g., HINTS examination or positional maneuvers, such as Dix-Hallpike for Benign Positional Paroxysmal Vertigo) being performed to improve the measure as well as the lack of evidence to support that these particular interventions lower stroke rates.
- Some Standing Committee members expressed concern about the appropriateness of the 30-day time frame and the potential for overdiagnosis. The developer mentioned that they engaged a TEP regarding the time frame, and overall, a period of 30 days provided face validity to ED physicians as is often used for other CMS metrics.
- The Standing Committee also expressed concern about the incompleteness of using "dizziness" to capture all classifications of dizziness (e.g., also considering syncope, imbalance, and vertiginous) and referenced an April 2021 journal article that showed that the HINTS examination did not identify a single central cause of stroke in 2,000 patients as well as patients who experienced missed posterior circulation strokes. According to the developer, studies have shown that differentiating between different symptoms (e.g., dizziness, syncope, vertigo, unsteadiness, etc.) does not adequately differentiate between the different causes of underlying dizziness.
- The Standing Committee additionally expressed concern about the generalizability of the intervention because few EDs have neurologists available at the bedside for consultation to perform the assessments that could have an impact on this measure. The developer highlighted that proper bedside examination is highly effective in diagnosing patients with dizziness, at accurately diagnosing peripheral inner ear diseases, and at accurately diagnosing stroke.
- The Standing Committee had no concerns regarding performance gap.
- Quorum was not present during the meeting, and online voting occurred for the evidence and performance gap criteria. The Standing Committee did not pass the measure on evidence; therefore, the measure was not recommended for endorsement.

2. Scientific Acceptability of Measure Properties

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **Vote Not Taken**; 2b. Validity: **Vote Not Taken**

3. Feasibility: Vote Not Taken

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified; 3d. Data collection strategy can be implemented)

4. Usability and Use

(Used and useful to the intended audiences for 4a. Accountability and Transparency; 4b. Improvement; and 4c. Benefits outweigh evidence of unintended consequences)

4a. Use: **Vote Not Taken** 4b. Usability: **Vote Not Taken**

5. Related and Competing Measures

- No related or competing measures were noted.

6. Standing Committee Recommendation for Endorsement: Vote Not Taken

7. Public and Member Comment

- The developer submitted a reconsideration request for this measure. During the post-comment meeting, quorum was lost prior to voting on reconsideration, but sufficient attendance was maintained to continue the discussion. Because quorum was lost, NQF moved to open the measure for reconsideration, and the Standing Committee held a full discussion of all measure criteria, including the evidence criterion.
- The measure developer submitted an additional presentation of evidence to support re-discussion of this criterion and to help enhance the Standing Committee's understanding of the evidence in the original submission.
- Two comments expressed support for this measure and asked the Standing Committee to reconsider its decision on the evidence criterion.
- Two comments did not express support for the measure. One comment expressed concern with the evidence and scientific acceptability of the measure, while the other comment expressed concerns about the lack of exclusions, delineation of a case minimum, and risk adjustment, as well as the lack of variation in performance scores.
- During the post-comment discussion, the Standing Committee expressed continued concerns that the evidence supporting this outcome was indirect and that the link between diagnostic accuracy and improving patient outcomes is still unclear. It expressed additional concerns with both reliability and validity. The reliability score was somewhat low. For validity, concern was raised that the diagnostic codes may not accurately capture the actual miss rate. In addition, when there is a low prevalence, the positive predictive value is low, meaning subtle differences between coding and local clinical practice could confound differences in quality between hospitals observed in this measure. The Standing Committee also questioned the usability of the measure due to concern that neurologists may not be available to help implement this measure, which could lead to unintended consequences, particularly with diametrically opposed incentives for emergency physicians to reduce both diagnostic imaging and missed diagnoses.
- Following the meeting, the Standing Committee received a recording of the meeting and voted using an online voting tool. The Standing Committee once again did not pass the measure on evidence; therefore, the measure was not recommended for endorsement. The developer withdrew the measure from consideration following the post-comment meeting.

Appendix B: Neurology Portfolio—Use in Federal Programs*

NQF #	Title	Federal Programs (Finalized or Implemented)
0437	STK 04: Thrombolytic Therapy	N/A
0507	Diagnostic Imaging: Stenosis Measurement in Carotid Imaging Reports	Merit-Based Incentive Payment System (MIPS) Program Physician Compare
0661	Head CT or MRI Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke Patients Who Received Head CT or MRI Scan Interpretation Within 45 Minutes of ED Arrival	Care Compare Hospital Outpatient Quality Reporting
1952	Time to Intravenous Thrombolytic Therapy	N/A
2872e	Dementia: Cognitive Assessment	Medicaid Promoting Interoperability Program for Eligible Professionals Merit-Based Incentive Payment System (MIPS) Program Physician Compare

*** CMS Measures Inventory Tool Last Accessed February 7, 2022.**

Appendix C: Neurology Standing Committee and NQF Staff

STANDING COMMITTEE

David Tirschwell, MD, MSc (Co-Chair)
Professor of Neurology, Medical Director of Comprehensive Stroke Care, University of Washington, Harborview Medical Center
Seattle, Washington

Mary Kay Ballasiotes (inactive)
Executive Director, International Alliance for Pediatric Stroke
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Jocelyn Bautista, MD
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Administrative Assistant, Measurement Science and Application

Jesse Pines, MD, MBA, MSCE
Consultant

Appendix D: Measure Specifications

#0507 Diagnostic Imaging: Stenosis Measurement in Carotid Imaging Reports

STEWARD

American College of Radiology (ACR)

DESCRIPTION

Percentage of final reports for carotid imaging studies (neck magnetic resonance angiography (MRA), neck computerized tomographic angiography (CTA), neck duplex ultrasound, carotid angiogram) performed that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement

TYPE

Process

DATA SOURCE

Claims, Registry Data Not applicable

LEVEL

Clinician: Individual

SETTING

Inpatient/Hospital, Outpatient Services

NUMERATOR STATEMENT

Final reports for carotid imaging studies that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement

NUMERATOR DETAILS

Definition:

"Direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement" includes direct angiographic stenosis calculation based on the distal lumen as the denominator for stenosis measurement OR an equivalent validated method referenced to the above method (e.g., for duplex ultrasound studies, velocity parameters that correlate with anatomic measurements that use the distal internal carotid lumen as the denominator for stenosis measurement).

Numerator Instructions:

For duplex imaging studies the reference is indirect, since the degree of stenosis is inferred from velocity parameters and cross referenced to published or self-generated correlations among velocity parameters and results of angiography or other imaging studies which serve as the gold standard. In Doppler ultrasound, the degree of stenosis can be estimated using Doppler parameter of the peak systolic velocity (PSV) of the internal

carotid artery (ICA), with concordance of the degree of narrowing of the ICA lumen. Additional Doppler parameters of ICA-to-common carotid artery (CCA) PSV ratio and ICA end-diastolic velocity (EDV) can be used when degree of stenosis is uncertain from ICA PSV. (Grant et al, 2003)

Measure performance is met when study methodology is identified and findings are reported as a percentage or range of percentages of carotid stenosis. Documented findings of “No Stenosis” determined through NASCET or comparable methodology also meet measure performance. A short note can be made in the final report, such as:

A short note can be made in the final report, such as:

- "Severe left ICA stenosis of 70-80% by NASCET criteria” or
- “Severe left ICA stenosis of 70-80% by criteria similar to NASCET” or
- “70% stenosis derived by comparing the narrowest segment with the distal luminal diameter as related to the submitted measure of arterial narrowing” or
- “Severe stenosis of 70-80% - validated velocity measurements with angiographic measurements, velocity criteria are extrapolated from diameter data as defined by the Society of Radiologists in Ultrasound Consensus Conference Radiology 2003; 229;340-346”.

In a small number of denominator cases the distal ICA may not be viewed (e.g. an innominate artery or common carotid injection). Performance would be met if there is documentation, for example, that indicates “stenosis measurements are made with reference to the distal lumen”, as a matter of process and consistent practice method.

DENOMINATOR STATEMENT

All final reports for carotid imaging studies (neck MRA, neck CTA, neck duplex ultrasound, carotid angiogram) performed

DENOMINATOR DETAILS

This measure is to be submitted each time a carotid imaging study is performed during the performance period for all patients, regardless of age. There is no diagnosis associated with this measure. Eligible clinicians who provide the professional component of diagnostic imaging studies of the carotids will submit this measure.

Denominator Criteria (Eligible Cases) for Claims and Registry:

Patient procedure during the performance period (CPT): 36221, 36222, 36223, 36224, 37215, 37216*, 37217, 37218, 70498, 70547, 70548, 70549, 93880, 93882

DENOMINATOR NOTE: (*) Signifies that this CPT Category I code is a non-covered service under the Medicare Part B Physician Fee Schedule (PFS). These non-covered services should be counted in the denominator population for MIPS CQMs

EXCLUSIONS

No Denominator Exclusions or Denominator Exceptions

EXCLUSION DETAILS

None

RISK ADJUSTMENT

No risk adjustment or risk stratification

STRATIFICATION

We encourage the results of this measure to be stratified by race, ethnicity, gender, and primary language, and have included these variables as recommended data elements to be collected.

TYPE SCORE

Rate/proportion/better quality = higher score

ALGORITHM

To calculate performance rates:

1) Find the patients who meet the initial patient population (i.e., the general group of patients that the performance measure is designed to address).
2) From the patients within the initial patient population criteria, find the patients who qualify for the denominator (i.e., the specific group of patients for inclusion in a specific performance measure based on defined criteria). Note: in some cases the initial patient population and denominator are identical.
3) From the patients within the denominator, find the patients who qualify for the Numerator (i.e., the group of patients in the denominator for whom a process or outcome of care occurs). Validate that the number of patients in the numerator is less than or equal to the number of patients in the denominator.

If the patient does not meet the numerator, this case represents a quality failure. 108475| 145989| 141015| 142351| 151468

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Appendix E: Related and Competing Measures

There are no related or competing measures for NQF #0507 and NQF #3614.

Appendix F: Pre-Evaluation Comments

#3614 Hospitalization After Release With Missed Dizzy Stroke (H.A.R.M Dizzy-Stroke)

COMMENTER

Submitted by Donald May, Federation of American Hospitals

COMMENT

The Federation of American Hospitals (FAH) appreciates the opportunity to comment on this measure. While FAH supports the measure's focus of driving improvements in diagnostic accuracy, we are concerned that the measure may require additional exclusions and question if case minimums to ensure adequate reliability and risk adjustment are needed and whether the measure scores produce sufficient variation to make the results meaningful for accountability purposes. The FAH asks the Standing Committee to consider whether some exclusions, delineation of a case minimum, and possible risk adjustment would be appropriate for inclusion in this measure. For example, is it appropriate to hold a facility accountable for a possible missed diagnosis when an individual leaves against medical advice (AMA)? We are also concerned that a minimum number of patients will be required to ensure that the measure produces acceptable reliability thresholds of 0.7 or higher; yet we were unable to identify any such requirement. Finally, while we appreciate the analyses completed to justify the lack of risk adjustment, we request that the Committee discuss whether there are any clinical or social risk factors that could contribute to an individual presenting with a stroke within the 30-day window that is unrelated to the chief complaint of dizziness during the emergency department visit and as a result if there should be some adjustment based on those variables. The FAH also questions the usefulness of this measure given the limited variation in performance scores with no hospitals identified as statistically worse than the national average; only eight were identified as having significant harm, and the vast majority of the hospitals were no different or better than the national average. We do not believe that this measure provides any new information that would be useful to hospitals and patients. The FAH asks that the Committee carefully consider these concerns during their review.

#3614 Hospitalization After Release With Missed Dizzy Stroke (H.A.R.M Dizzy-Stroke)

COMMENTER

Submitted by Koryn Rubin

COMMENT

The American Medical Association (AMA) appreciates the opportunity to comment on this measure. While addressing diagnostic error is absolutely critical to ensuring that patients receive the highest quality of care possible, we are concerned with the lack of exclusions, such as those patients who leave against medical advice, and question whether the measure should be risk-adjusted for clinical and/or social risk factors. Specifically, it remains unclear to us whether there are any factors that could contribute to an individual being treated for benign dizziness but then present with an unrelated stroke within the 30-day time window, and if this scenario is possible, we believe that the measure should include risk adjustment.

In addition, we are disappointed to see the minimum measure score reliability results appeared to be less than 0.2 according to the histogram included in the testing form. While the median reliability score was 0.590, we believe that measures must meet minimum acceptable

thresholds of 0.7 for reliability, and the developer should include a minimum case number as a part of the measure specifications to achieve this threshold across all reporting hospitals.

Lastly, we question whether the information provided as a result of this measure is truly useful for accountability purposes and for informing patients on the quality of care provided by hospitals. Specifically, our concern relates to the relatively limited amount of variation across facilities. While 627 hospitals out of the 967 facilities were identified as performing "Better" than the national average, zero hospitals performed "Worse," and only eight were identified as having statistically significant "Harm." Endorsing a measure that currently only identifies such a small number of outliers does not enable users to distinguish meaningful differences in performance and limits a measure's usability.

We request that the Standing Committee evaluate whether the measure adequately meets the measure evaluation criteria.

Appendix G: Post-Evaluation Comments

NQF #0507 Diagnostic Imaging: Stenosis Measurement in Carotid Imaging Reports, Comment #7799

Standing Committee Recommendation: Consensus Not Reached

Comment ID#: 7799

Commenter: Submitted by Karen Orozco

Council / Public: HPR

Comment Period: Post-Evaluation Public and Member Commenting

Date Comment was Submitted: 9/23/2021

Developer Response Required? No

Level of Support: Member Does not support

Theme:

Comment

The American College of Radiology (ACR) has completed data element empirical validity to support NQF #0507 re-endorsement.

According to the Blueprint for the Centers for Medicare & Medicaid Services (CMS) Measures Management System, data element validity is the "extent to which the information represented by the data element or code used in the measure reflects the actual concept or event intended." The ACR performed random audits using the groups that submitted Qualified Clinical Data Registry (QCDR) records for the measure to CMS for their Merit-Based Incentive Payment System (MIPS) program, over a four-year period. The auditors compared the numerator data element registry submissions used in measure calculation with actual exam records from the submitters' systems. The audit confirmed a high level of agreement and concordance between the data shown on exam records and what was submitted to the registry. The records where exam data did not match the registry data represent human error in collection or submission of data.

Summary of NQF 0507 in 2017-2020 Audit by Year

Year	# Groups	# Records Audited	# Records Without Issue	% Records Without Issue
2017	11	108	106	98%
2018	22	128	126	98%
2019	17	130	130	100%
2020	15	69	69	100%

Developer Response

N/A

NQF Response

N/A

NQF Committee Response

Thank you for your comment. The Standing Committee reviewed and considered this information during the post-comment meeting and found the measure's validity acceptable and the measure to be suitable for endorsement at this time.

NQF #3614 Hospitalization After Release With Missed Dizzy Stroke (H.A.R.M Dizzy-Stroke), Comment #7756

Standing Committee Recommendation: Measure Not Recommended for Endorsement

Comment ID#: 7756

Commenter: Submitted by David Morrill

Council / Public: Public

Comment Period: Post-Evaluation Public and Member Commenting

Date Comment was Submitted: 9/7/2021

Developer Response Required? No

Level of Support: N/A

Theme: N/A

Comment

As a patient who struggles with ongoing vestibular issues as a result of a missed stroke diagnosis, I am deeply invested in supporting efforts to improve the diagnostic performance of Emergency Department (ED) physicians in identifying strokes in patients who present with symptoms of dizziness and vertigo. I am writing to urge the NQF Neurology Standing Committee to reconsider its vote on the "Evidence" criteria for measure #3614 "Hospitalization After Release With Missed Dizzy Stroke (H.A.R.M Dizzy-Stroke)".

Based on my work with the Vestibular Disorder Association (VeDA), I have been made aware of a number of diagnostic techniques that ED physicians can use to improve their performance in diagnosing patients that present with dizziness. These techniques include the Head Impulse, Nystagmus and Test of Skew (HINTS) exam; ordering MRIs instead of CT scans; and following published specialty guidelines (e.g SAEMS' GRACE3 guideline). As I understand the current healthcare landscape, these techniques have not been put into wide use.

Without a measure of diagnostic performance, the underlying assumption is that current diagnostic approaches are yielding an adequate result (and they're not!). Measure #3614 would provide the "feedback" loop this is currently missing on how well ED physicians recognize dizziness as "benign," as opposed to a symptom of a potentially devastating outcome, such as stroke.

My own misdiagnosis has left me with a life-long disability. Given the availability of interventions to improve diagnosis of dizzy patients, I would strongly urge the Standing Committee to reconsider its earlier vote on the “Evidence” associated with this measure and to support the measure’s full endorsement.

David M Morrill Stroke Patient

Developer Response

N/A

NQF Response

Thank you for your comment.

NQF Committee Response

Thank you for your comment. The Standing Committee reviewed and discussed this information during the post-comment meeting but determined that the evidence was not sufficient at this time to pass the measure.

NQF #3614 Hospitalization After Release With Missed Dizzy Stroke (H.A.R.M Dizzy-Stroke), Comment #7806

Standing Committee Recommendation: Measure Not Recommended for Endorsement

Comment ID#: 7806

Commenter: Submitted by Koryn Rubin

Council / Public: Health Professional

Comment Period: Post-Evaluation Public and Member Commenting

Date Comment was Submitted: 9/24/2021

Developer Response Required? No

Level of Support: Member Does not support

Theme: N/A

Comment

The American Medical Association (AMA) agrees with the concerns raised by the Standing Committee on this measure, particularly around the scientific acceptability of the measure. We support the Committee’s recommendation to not endorse the measure at this time.

Developer Response

N/A

NQF Response

Thank you for your comment.

NQF Committee Response

Thank you for your comment. The Standing Committee reviewed and discussed this information and the developer's response during the post-comment meeting and agreed with many of the concerns around scientific acceptability. Ultimately, the Standing Committee determined that the evidence was not sufficient at this time to pass the measure.

NQF #3614 Hospitalization After Release With Missed Dizzy Stroke (H.A.R.M Dizzy-Stroke), Comment #7752

Standing Committee Recommendation: Measure Not Recommended for Endorsement

Comment ID#: 7752

Commenter: Submitted by David Morrill

Council / Public: Public

Comment Period: Post-Evaluation Public and Member Commenting

Date Comment was Submitted: 9/7/2021

Developer Response Required? No

Level of Support: N/A

Theme: Supportive of measure

Comment

I am deeply invested in supporting efforts to improve the diagnostic performance of Emergency Department (ED) physicians in identifying strokes in patients who present with symptoms of dizziness and vertigo. I am writing to urge the NQF Neurology Standing Committee to reconsider its vote on the "Evidence" criteria for measure #3614 "Hospitalization After Release with Missed Dizzy Stroke (H.A.R.M Dizzy-Stroke)."

Based on my work with the Vestibular Disorder Association (VeDA), I have been made aware of a number of diagnostic techniques that ED physicians can use to improve their performance in diagnosing patients that present with dizziness. These techniques include the Head Impulse, Nystagmus and Test of Skew (HINTS) exam; ordering MRIs instead of CT scans; and following published specialty guidelines (e.g SAEMS' GRACE3 guideline). As I understand the current healthcare landscape, these techniques have not been put into wide use.

Without a measure of diagnostic performance, the underlying assumption is that current diagnostic approaches are yielding an adequate result (and they're not!). Measure #3614 would provide the "feedback" loop this is currently missing on how well ED physicians recognize dizziness as "benign", as opposed to a symptom of a potentially devastating outcome, such as stroke.

My own misdiagnosis has left me with a life-long disability. Given the availability of interventions to improve diagnosis of dizzy patients, I would strongly urge the Standing Committee to reconsider its earlier vote on the "Evidence" associated with this measure and to support the measure's full endorsement.

Developer Response

N/A

NQF Response

Thank you for your comment.

NQF Committee Response

N/A

NQF #3614 Hospitalization After Release With Missed Dizzy Stroke (H.A.R.M Dizzy-Stroke), Comment #7641

Standing Committee Recommendation: Measure Not Recommended for Endorsement

Comment ID#: 7641

Commenter: Submitted by Donald May, Federation of American Hospitals

Council / Public: PRO

Comment Period: Post-Evaluation Public and Member Commenting

Date Comment was Submitted: 6/10/2021

Developer Response Required? Yes

Level of Support: N/A

Theme: N/A

Comment

#3614 Hospitalization After Release With Missed Dizzy Stroke (H.A.R.M Dizzy-Stroke): The Federation of American Hospitals (FAH) appreciates the opportunity to comment on this measure. While FAH supports the measure's focus of driving improvements in diagnostic accuracy, we are concerned that the measure may require additional exclusions and question if case minimums to ensure adequate reliability and risk adjustment are needed and whether the measure scores produce sufficient variation to make the results meaningful for accountability purposes. The FAH asks the Standing Committee to consider whether some exclusions, delineation of a case minimum, and possible risk adjustment would be appropriate for inclusion in this measure. For example, is it appropriate to hold a facility accountable for a possible missed diagnosis when an individual leaves against medical advice (AMA)? We are also concerned that a minimum number of patients will be required to ensure that the measure produces acceptable reliability thresholds of 0.7 or higher, yet we were unable to identify any such requirement. Finally, while we appreciate the analyses completed to justify the lack of risk adjustment, we request that the Committee discuss whether there are any clinical or social risk factors that could contribute to an individual presenting with a stroke within the 30-day window that is unrelated to the chief complaint of dizziness during the emergency department visit and as a result if there should be some adjustment based on those variables. The FAH also questions the usefulness of this measure, given the limited variation in performance scores with no hospitals identified as statistically worse than the national average, only 8 were identified as having significant harm, and the vast majority of the hospitals were no different or better than the national average. We

do not believe that this measure provides any new information that would be useful to hospitals and patients. The FAH asks that the Committee carefully consider these concerns during their review.

Developer Response

We appreciate the opportunity to respond to The Federation of American Hospitals' (FAH) comments on measure #3614 under review by the NQF Neurology Standing Committee.

The concerns raised by FAH primarily relate to the scientific acceptability of the measure. These aspects of the measure have already been reviewed and discussed by the NQF Scientific Methods Panel, where the panel voted to pass the measure on scientific acceptability. We will address FAH's comments in brief below and would urge Standing Committee members and other interested parties to review the Scientific Methods Panel meeting notes for additional detail about these topics.

Lack of exclusions: Patients who left against medical advice (AMA) were excluded. We apologize for any lack of clarity on this point in the documentation. We are happy to provide additional information on this issue if the Committee so desires.

Minimum sample size for reliability: As described in our submitted testing documentation, we restricted our sample to those hospital EDs that had at least 250 "benign dizziness" discharges from the ED during the 3-year performance period (i.e., the measure denominator needs to be 250 or higher). The median reliability score for the entire 967 hospital sample was 0.590, with an interquartile range of 0.414-0.951. These values closely mirror the reliability statistics that describe many NQF-endorsed measures. We would encourage a potential user of the measure to use a similar denominator threshold. We note there are other measures (e.g., 30-day stroke mortality) used by the Centers for Medicare & Medicaid Services (CMS) for accountability where public reporting is reserved for larger hospitals; smaller hospitals receive their (less precise) results as a quality improvement tool rather than for public accountability. We envision that the same sort of procedure would occur for this measure once implemented.

Risk adjustment: The risk-adjustment approach used for this measure is unique in that it compares the same patient population at two different points in time. In short, it compares the patient's short-term risk of stroke (1-30d post-discharge) to their underlying baseline risk (91-360d post-discharge). As noted in the measure documentation, there are disparities in how well hospital EDs diagnosis strokes in different subgroups (women, younger patients, and people of color are more likely to experience a misdiagnosed stroke). It is these very disparities in diagnosis that our measure aims to highlight. Adjusting for clinical risk factors or social risk factors would result in these variations being adjusted away.

Sufficient variation: As discussed with the Scientific Methods Panel, our ability to distinguish "good" from "bad" performers on this measure is exclusively a function of the limited data set that we had available for testing the measure. The data set included only Medicare fee-for-service patients, which typically represents only about 20% of hospital ED discharges. In real-world applications, where more complete data sets are likely available, the ability to distinguish "good" from "bad" will be substantially more precise. As can be seen in the data presented as part of our measure developer comments (reproduced below as Figure 1a/b), the true practice variation is substantial, with hospital performance ranging from 0 to over 150 per 10,000 discharges, with hundreds of hospitals having measured rates ranging from 20 to 200 per 10,000. These data reflect a 10-year window, so this level of precision or greater is what one would expect from a complete 100% ED sample (5x the 20% Medicare sample) from each hospital when using the proposed 3-year rolling window of analysis. This could be accomplished using HCUP data from states with linkable SEDD-SID records (now nearly half). In other words, this problem noted by the FAH is a problem related to data availability, not the measure itself.

Figure 4. *From Medicare data using the method proposed (Figure 4, shown as the measured 30d rate above expected)*

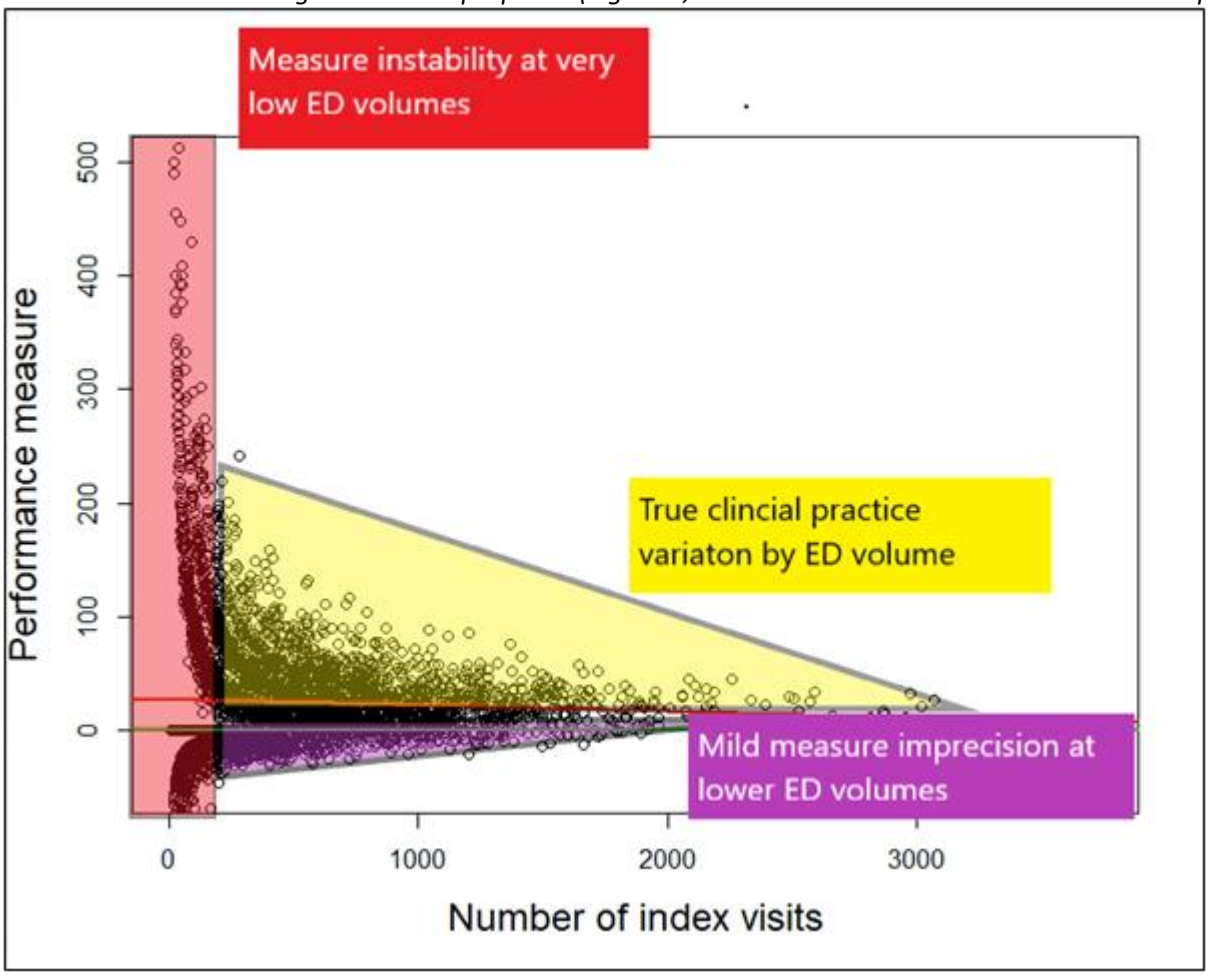


Figure 4. Excess short-term stroke rates at all hospitals by ED visit volume, with descriptive overlay separating true variation from measure imprecision. These Medicare data reflect 5,472 facilities over a 10-year window from 2009-2018. Each circle represents a single facility. The Figure demonstrates that smaller facilities have higher 30-day stroke hospitalization rates above the expected base rate after ED treat-and-release visit (TRV) for "benign dizziness." Optimal measure performance is to have a zero rate above baseline (0 on the Y axis). The graph shows wide variation in ED performance on the measure (from less than zero to 500 excess stroke hospitalizations per 10,000 TRVs). Although not all of this variation reflects actual clinical performance, the vast majority of U.S. hospitals have non-zero (>0) rates. The regression trend line shows the association between facility size and measure performance, with the larger facilities having the best performance (zero excess strokes over expected). The ***red shaded area*** reflects measure instability at the smallest hospitals. For hospitals with fewer than ~20 treat-and-release visits (TRV) for "benign dizziness" each year, the measure would be used only for quality improvement and **not** public accountability. The ***purple shaded area*** shows mild measure imprecision at hospitals with 20-200 dizziness TRVs each year; maximum imprecision is +/- ~20 per 10,000 TRVs at the smaller EDs. The ***yellow shaded area*** shows true clinical performance variability (from rates of 0 excess strokes per 10,000 TRVs to >150 excess strokes – i.e., 1.5% of all "benign" discharges). ***This is strong evidence of wide practice variation around the U.S***.

NQF Response

Thank you for your comment.

NQF Committee Response

Thank you for your comment. The Standing Committee reviewed and discussed this information and the developer's response during the post-comment meeting and agreed with many of the concerns presented. The Standing Committee ultimately did not pass the measure on evidence.

NQF #3614 Hospitalization After Release With Missed Dizzy Stroke (H.A.R.M Dizzy-Stroke), Comment #7835

Standing Committee Recommendation: Measure Not Recommended for Endorsement

Comment ID#: 7835

Commenter: Submitted by J. Matthew Austin

Council / Public: QMRI

Comment Period: Post-Evaluation Public and Member Commenting

Date Comment was Submitted: 9/27/2021

Developer Response Required? No

Level of Support: N/A

Theme: N/A

Comment

NQF Comment Period Additional Evidence for Measure #3614

Contents of this Document

Below the measure developers offer additional evidence to meet the NQF standard for "Evidence." Some members of the Neurology Standing Committee, in their initial review of Evidence, did not see a clear link between the measure, the quality improvements that would be induced, and the outcomes for patients. **Part I** below defines the logical links and accompanying evidence supporting the relationship between the measure and improved patient outcomes. **Part II** below shows how, in addition, the measure clearly meets the NQF standard for evidence on purely technical grounds.

Measure #3614

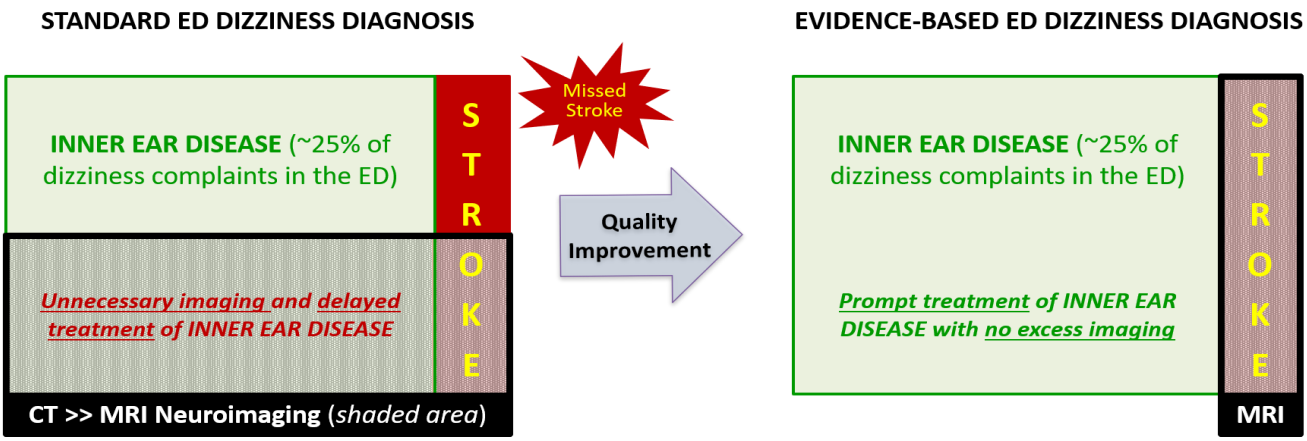
Avoid Hospitalization After Release With Missed Dizzy Stroke (Avoid H.A.R.M. Dizzy-Stroke)

The measure denominator is ED treat-and-release with "benign" dizziness. The measure numerator is observed 30-day stroke hospitalizations post ED treat-and-release with "benign" dizziness, minus the expected number of stroke hospitalizations occurring during that same period.

Part I. Logic Model and Supporting Evidence for Improved Quality and Patient Outcomes

A. Stepwise mechanism by which proposed measure will improve quality/safety for patients…

1. Measure #3614 reflects missed strokes in ED patients presenting with dizziness or vertigo
2. Accountability to the measure requires QI efforts that improve ED diagnosis of dizziness/vertigo (Figure 1)
3. These QI efforts will improve diagnosis both for patients with stroke and inner ear disease
4. Benefits to patients will then accrue from the prompt application of RCT-proven treatments
    a. Those with stroke will benefit from tPA or early secondary prevention, as appropriate
    b. Those with BPPV will benefit from prompt canalith repositioning and less CT radiation
5. These benefits to stroke patients (4a), in turn, will result in a "better" measure score (Figure 2)



CURRENT PRACTICE: Search for stroke is mostly based on non-selective imaging (~90% by CT) of dizziness based on patient age and vascular risk rather than exam. Estimated ~45,000-75,000 missed strokes annually, many causing harms.

NEW PRACTICE: Bedside exams lead to selective imaging (MRI) to confirm stroke, pinpoint cause, and guide stroke treatments. Estimated ~25,000 harms prevented and ~$1 billion in costs saved (half from unnecessary CTs, half admissions).

Figure 1. Theory for ED practice change. Standard practice in diagnosing dizziness now rests largely on CT to search for stroke in older patients with vascular risk factors. However, CT is ineffective for diagnosing vestibular strokes. Because inner ear causes are also more common among older populations with stroke risk factors, imaging is overused in inner ear diseases. Simultaneously, young patients (or old patients without vascular risk factors) who *do* have strokes as the cause may inadvertently be sent home untreated, sometimes with devastating consequences.[1,2] QI interventions such as teleconsultation will focus neuroimaging on directing stroke treatments, and more patients with inner ear disease will be correctly diagnosed and treated, preventing unnecessary imaging and admission.

Abbreviations: CT– computerized tomography; MRI – magnetic resonance imaging; QI – quality improvement

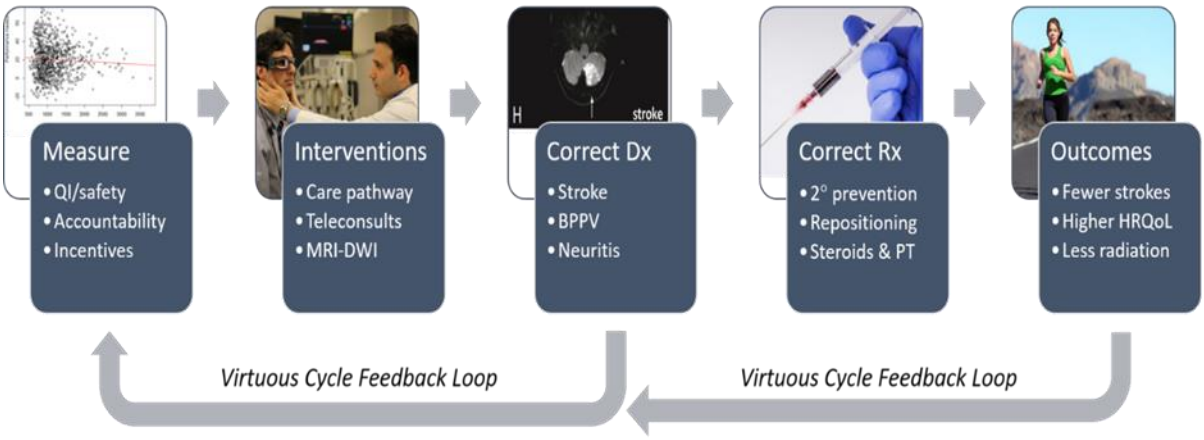


Figure 2. Logic model by which proposed measure will improve quality and safety for patients.

Abbreviations: 2° – secondary; Dx – diagnosis; HRQoL – health related quality of life; MRI-DWI – magnetic resonance imaging with diffusion weighted images; PT – physical therapy; QI – quality improvement; Rx – treatment

B. Logical validity of the evidence supporting positive impact of the measure on patient care…

1. **SYSTEMATIC REVIEW EVIDENCE THAT BETTER EYE EXAMS INCREASE CLINICAL DIAGNOSTIC ACCURACY**: There is strong evidence from multiple systematic reviews with meta-analyses of multiple prospective observational studies that bedside eye movement exams ("HINTS") in the hands of neurologists can more accurately diagnose stroke in patients with dizziness than even MRI scans.[3-6] Furthermore, the accuracy of these bedside exams far exceeds that of the more commonly used imaging technique of CT (which misses over 90% of acute posterior fossa strokes presenting with dizziness [reviewed in Newman-Toker, 2016[7]]), as well as the overall accuracy of current ED care, in which 40% of strokes presenting with dizziness are missed.[8] Neurology consultation services directly to the ED have demonstrated dramatically improved diagnostic accuracy, while simultaneously reducing inappropriate imaging.[9,10] Reductions in inappropriate CT use eliminate unnecessary irradiation, thereby cutting cancer risk, so improving outcomes for patients.[11] And while untrained ED clinicians do not perform this bedside testing well, those who are trained using direct observation and feedback methods achieve similar diagnostic results to those obtained by specialists—(sensitivity: 92.9% [95% CI 70–100%]; specificity: 96.4% [95% CI 93–98%]; positive predictive value: 81.3% [95% CI 61–87%]; negative predictive value: 98.8% [95% CI 95–100%]).[12]

2. **FACE VALIDITY THAT BETTER DIAGNOSIS YIELDS BETTER TREATMENT**: It is face valid that increasing correct diagnosis of posterior stroke in patients with dizziness and vertigo will lead to greater application of randomized trial and guideline approved stroke treatments in the ED. Likewise the same for inner ear diseases.

3. **RCT EVIDENCE THAT EARLY TREATMENT OF MINOR STROKE/TIA IMPROVES OUTCOMES**: It is proven through randomized clinical trials (CHANCE, POINT) that certain patients with TIA and minor stroke benefit from the application of early secondary prevention treatments, such as dual antiplatelet therapy. Combined results in over 10,000 patients show that treatment in the first 24 hours cuts the risk of a major stroke by 34% in the next 21 days.[13] In our original application for measure #3614, we provided similar empirical evidence from other studies of the benefit of immediate stroke treatments: "Preventable adverse outcomes of misdiagnosis result from missed opportunities for thrombolysis,[14,15] early surgery for malignant posterior fossa edema,[16,17] or prevention of subsequent infarction.[18-20] Rapid treatment improves health outcomes[21,22] and prompt prophylaxis lowers repeat stroke risk by up to 80%.[23,24] Thus, patients generally benefit from early, correct diagnosis."

4. **RCT EVIDENCE THAT EARLY TREATMENT OF INNER EAR DISEASES IMPROVES OUTCOMES**: Benefits also accrue to patients with dizziness or vertigo who are correctly diagnosed with inner ear disease (benign paroxysmal positional vertigo and vestibular neuritis) who receive guideline-supported treatments with randomized controlled trial evidence,[25-31] and direct harms of misdiagnosis[32] are reduced.

5. **FACE VALIDITY THAT PREVENTING MAJOR STROKES WILL LOWER THE MEASURE SCORE**: It is face valid that if there are fewer subsequent major strokes among those treated, then there will

be fewer short-term hospitalizations for stroke, which is, in turn, reflected in the measure (i.e., by reducing the "n" in the numerator). Furthermore, properly identifying such patients in the first place will remove these higher risk patients from the denominator (by correctly diagnosing stroke rather than "benign" inner ear disease or non-specific dizziness); this will tend to lower the observed number of subsequent strokes towards the expected population base rate (which is included as part of the measure calculation, which is observed minus expected).

C. Evidence of improved diagnostic accuracy in clinical practice with consult-based quality improvement…

Recent data (Table 1) from a quality improvement intervention (Tele-Dizzy) involving remote neurology consultations show dramatic ***increases*** in both stroke and specific inner ear diagnoses, along with dramatic ***decreases*** in inappropriate imaging among 287 patients who underwent consultation, relative to a matched emergency department population. These results provide compelling ***empirical evidence*** supporting the link between a ***healthcare intervention/service*** and the outcome of improved diagnosis, as well as better patient outcomes (reduction in unnecessary irradiation). It is inferentially logical and face valid, then, that these results, implemented more broadly, could be measured using #3614.

Table 1. Results of Tele-Dizzy Quality Improvement Intervention at Johns Hopkins Hospital (n=287 teleconsults).

Category	Parameter	Baseline*	Tele-Dizzy	Improvement	p-value (χ^2)
Diagnostic Yield	Specific Vestibular Diagnosis Rate	77 (20.6%)	163 (56.8%)	↑ 176%	P<0.0001
	Stroke Diagnosis Rate	1 (0.3%)	20 (7.0%)	↑ 2,506%	P<0.0001
	Non-Diagnosis Rate	235 (62.8%)	86 (30.0%)	↓ 52%	P<0.0001
Test Utilization	Neuroimaging (CT or MRI)	198 (52.9%)	70 (24.4%)	↓ 54%†	P<0.0001
Patient Outcomes	Excess 30-day stroke hospitalizations	0.1%‡	0 (0.0%)‡	↓ 100%‡	NA

** Baseline rates for diagnostic accuracy and test utilization are from 374 ED patients with a presenting symptom of dizziness (seen outside of Tele-Dizzy consultation hours) who had mention of "nystagmus" in notes and were comparable on the variables age, sex, and ED triage acuity.*

† CT scans were reduced by 96% (from 49.2% to 1.7%, p<0.0001) and MRIs for patients without strokes were unchanged (15.5% vs. 15.7%, p=0.95).

‡ Baseline 30d stroke hospitalizations are calculated as in Measure #3614 (not using the comparator population for Tele-Dizzy, which was too small for a precise estimate). The Tele-Dizzy value is based on actual patients seen at the same hospital – thus far, there have been zero stroke returns.

Part II. NQF Evidence Standard for Outcomes Measures (directly quoted from NQF documents, bold emphasis added)

"1a. Evidence. The evidence requirements for a health outcome measure include providing ***empirical data that demonstrate a relationship between the outcome and at least one healthcare structure, process, intervention, or service***; if these data [are] not available, ***data demonstrating wide variation in performance***, assuming the data are from a robust number of providers and results are not subject to systematic bias."

Technical Elements of NQF Evidence Standard Met by Measure #3614

A. *"…empirical data that demonstrate a relationship between the outcome and at least one healthcare **structure**…"*

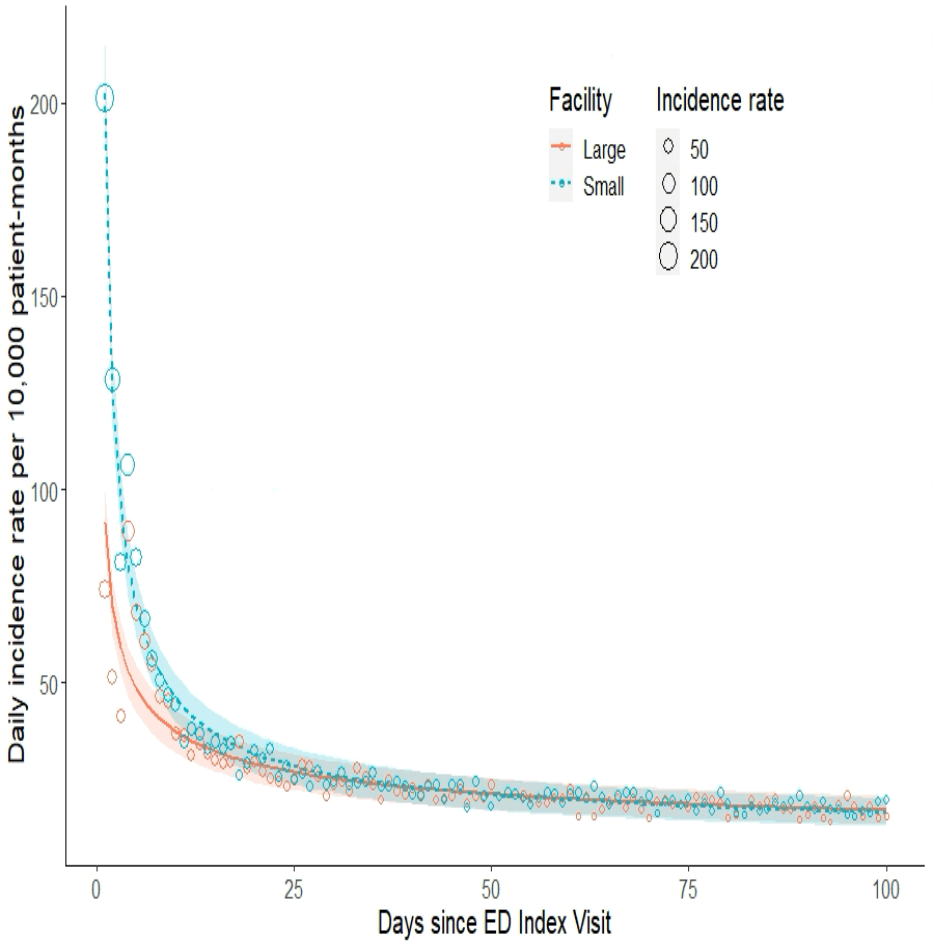
B. *"…empirical data that demonstrate a relationship between the outcome and at least one healthcare **process**…"*

C. *"…data demonstrating wide **variation** in performance…"*

*NOTE – Only **ONE** of the three options is needed to meet the NQF Evidence standard, but all three are met. Also, only **ONE** structure OR **ONE** process is required, but FOUR structures and THREE processes are empirically shown below.*

A. HEALTHCARE STRUCTURE (ED volume, population size, teaching status, % admitted from ED)

From Medicare data using the method proposed (Figure 3, shown as incidence rate curve) …



From Medicare data using the method proposed (Figure 3, shown as incidence rate curve) …

Figure 3. Short-term stroke rates at large vs. small hospitals (based on ED visit volumes). The graph at left shows stroke hospitalization incidence rates for the first 100 days after an ED treat-and-release visit (TRV) for "benign dizziness." Red represents larger hospitals and blue smaller hospitals. Shaded areas are 95% confidence intervals. These Medicare data reflect 5,472 facilities over a 10-year window from 2009-2018. A cutoff of 1,000 ED index visits over 10 years was used to define large vs. small facilities (1,472,612 ED TRVs occurred in large facilities, and 1,422,724 ED TRVs in small facilities). The Figure demonstrates that smaller facilities have higher short-term stroke incidence, mostly in the first 2 weeks after ED treat-and-release visit for "benign dizziness." These represent missed strokes in the ED.

From HCUP data (Newman-Toker, 2014[33]) using a similar method to that proposed…

Data element	Value	EST	SE	Z	P	OR	LCL	UCL
Hospital Characteristics	-	-	-	-	-	-	-	-
Region	-	-	-	-	-	-	-	-
	Midwest	-0.17	0.15	-1.1	0.27	0.84	0.62	1.14
	South	-0.12	0.13	-0.93	0.35	0.88	0.68	1.14
	West	-0.03	0.12	-0.24	0.81	0.97	0.77	1.22
	Northeast	-	-	-	-	-	-	-
Population size	-	-	-	-	-	-	-	-
	Small metropolitan	-0.26	0.09	-2.94	0.003	**0.77**	**0.65**	**0.92**
	Micropolitan	0.21	0.15	1.41	0.16	1.23	0.92	1.64
	Rural	0.06	0.24	0.24	0.81	1.06	0.67	1.68
	Large metropolitan	-	-	-	-	-	-	-
Ownership	-	-	-	-	-	-	-	-
	Public	0.01	0.12	0.10	0.92	0.99	0.78	1.25
	Private, for-profit	0.22	0.12	1.93	0.05	0.80	0.64	1.00
	Private, not-for-profit	-	-	-	-	-	-	-
Teaching Status	-	-	-	-	-	-	-	-
	Nonteaching	0.37	0.11	3.24	<0.001	**1.45**	**1.16**	**1.82**
	Teaching	-	-	-	-	-	-	-
Hospital workflow (annual average)	-	-	-	-	-	-	-	-
Inpatient occupancy rate (annual)	-	-	-	-	-	-	-	-
	Low <=0.5	0.00	0.13	0.03	0.98	1.00	0.78	1.29
	Moderate >0.5, <0.7	0.11	0.11	0.94	0.35	1.11	0.89	1.39
	High >=0.7	-	-	-	-	-	-	-
ED Volume (annual)	-	-	-	-	-	-	-	-
	Low <=29,124	0.45	0.17	2.69	0.007	**1.57**	**1.13**	**2.18**
	Moderate 29-125-64,434	0.10	0.10	1.02	0.31	1.11	0.91	1.36
	High >=64,435	-	-	-	-	-	-	-
Percent admitted from ED (annual)	-	-	-	-	-	-	-	-
	Low <=11.82%	0.44	0.15	2.88	.004	**1.55**	**1.15**	**2.09**
	Moderate >11.82, <19.46%	0.21	0.11	1.95	0.05	1.24	1.00	1.54
	High >=19.46%	-	-	-	-	-	-	-

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B. HEALTHCARE PROCESS (weekend visit, ED admit rate on day of visit, patient left AMA)

From HCUP data (Newman-Toker, 2014[33]) using a similar method to that proposed…

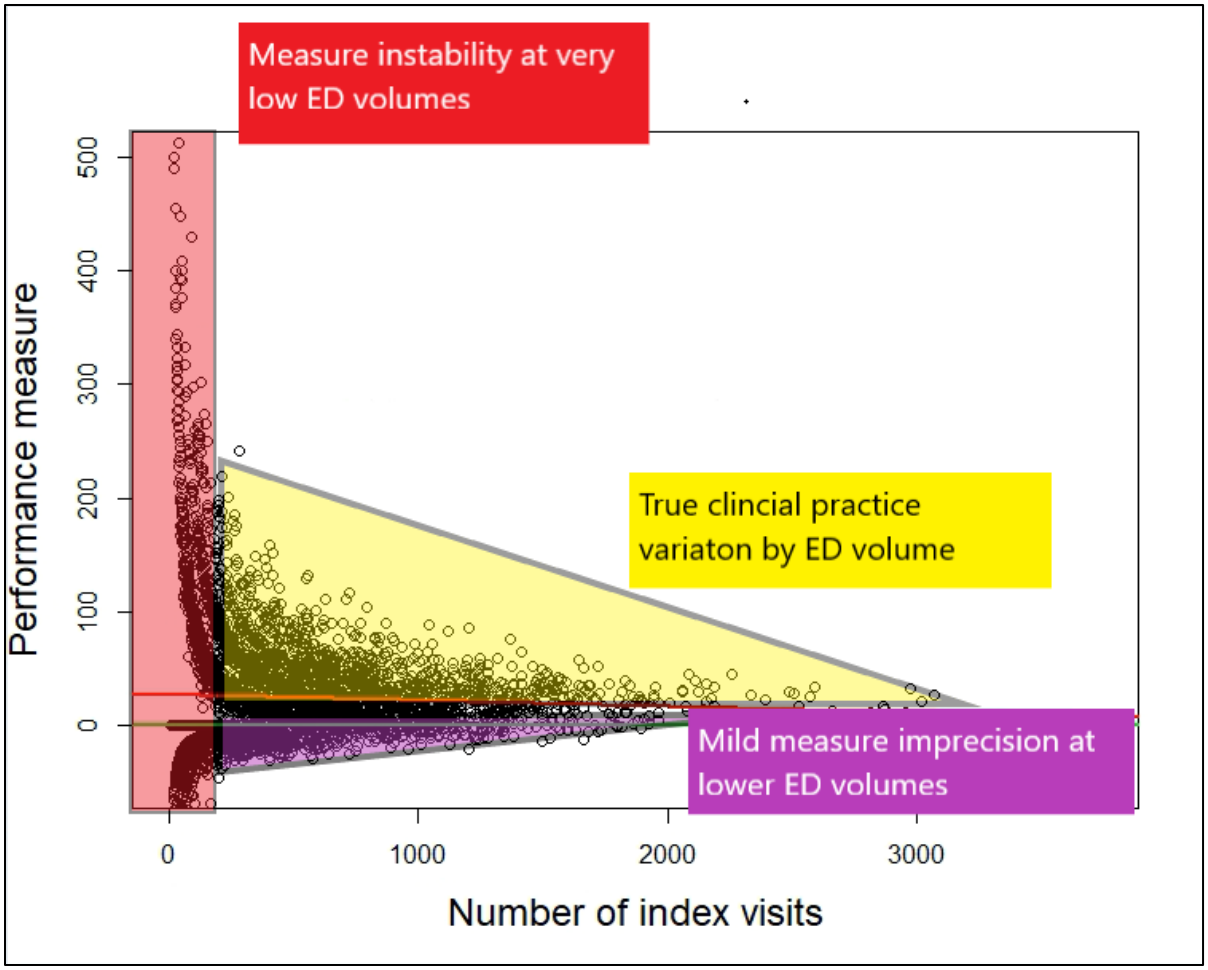
Data element	Value	EST	SE	Z	P	OR	LCL	UCL
ED Visit characteristics (day of initial treat-and-release visit)	-	-	-	-	-	-	-	-
Weekend	-	-	-	-	-	-	-	-
	Monday-Friday	0.11	0.05	2.09	0.04	**1.11**	**1.01**	**1.23**
	Saturday-Sunday	-	-	-	-	-	-	-
ED Crowding on day of visit (percentile)	-	-	-	-	-	-	-	-
	0-20th percentile	-0.02	0.07	-0.33	0.75	0.98	0.84	1.13
	21-40th percentile	0.04	0.07	0.5	0.62	1.04	0.90	1.19
	41-60th percentile	0.04	0.07	0.52	0.60	1.04	0.90	1.20
	61-80th percentile	0.08	0.07	1.18	.0.24	1.08	0.95	1.23
	81-100th percentile	-	-	-	-	-	-	-
ED admit rate on day of visit (percentile)	-	-	-	-	-	-	-	-
	0-20th percentile	1.85	0.16	11.72	<0.001	**6.34**	**4.66**	**8.63**
	21-40th percentile	0.91	0.11	8.03	<0.001	2.48	1.99	3.10
	41-60th percentile	0.61	0.10	6.05	<0.001	1.85	1.51	2.25
	61-80th percentile	0.34	0.08	4.04	<0.001	1.40	1.19	1.66
	81-100th percentile	-	-	-	-	-	-	-
Patient left against medical advice	-	-	-	-	-	-	-	-
	Against medical advice	1.08	0.14	7.50	<0.001	**2.94**	**2.22**	**3.89**
	Not against advice	-	-	-	-	-	-	-

Cells marked by a dash (-) are intentionally left blank.

187,188 of 198,819 trials used; number of events used =2088 of 2243 (records with missing data excluded); exchangeable correlation structure (working correlation = 0.002); 1016 clusters (facilities). EST, estimate; SE, standard error; Z, Z score; p, probability level; OR, odds ratio; LCL, lower confidence limit; UCL, upper confidence limit. [a]This is a patient-level analysis of inpatient stroke admissions, with and without a prior treat-and-release ED visit for dizziness or headache within 30 days of the stroke admission; only a single 'initial' ED visit (the most proximate to the 'index' stroke admission) is considered.

C. WIDE VARIATION IN PERFORMANCE

From Medicare data using the method proposed (Figure 4, shown as the measured 30d rate above expected)…



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SUMMARY

Part I above offers a set of valid logical links between the measure, quality improvement interventions, and improved patient outcomes. Each of the key steps is either supported by strong empirical evidence or is naturally face valid. Although none of this is required to meet the NQF "Evidence" standard for outcome measures, this, nevertheless, directly addresses the Neurology Standing Committee concerns regarding the strength of underlying evidence.

Part II above shows how the measure clearly meets the NQF "Evidence" standard on technical grounds. The measure must only demonstrate that it meets one such element, but we provide evidence that it meets the standard nine times.

Parts of the evidence presented here were submitted with the original NQF Evidence Attachment. This includes specific citations to randomized trials evidence of benefit to patients with early diagnosis and prompt treatments (quoted in Part I) and at least two components of the technical standard (Figure 3 and part of Figure 4). In accord with this, NQF staff, in their pre-review of the measure, concluded that the Evidence Criterion had been adequately passed by #3614.

Thus, in summary, we are confident that measure #3614 meets both the spirit and the letter of the standard.

Therefore, we hope that the Committee will reconsider its initial vote, and vote "pass" on the Evidence criterion.

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NQF Response

N/A

NQF Committee Response

Thank you for your comment. The Standing Committee reviewed and discussed this measure in full during the post-comment meeting but did not find the evidence sufficient to pass the measure at this time.

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