American Academy of Neurology

Quality Measurement Manual

2014 Update

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Purpose
This edition of the American Academy of Neurology’s (AAN) Quality Measurement Manual outlines the AAN’s approach to measure development for neurological conditions. This document supersedes information provided in the 2008 AAN Quality Measures Development Process and 2010 addendum. This document:

- Provides the rationale for quality measure development by the AAN,
- Provides an overview of quality measurement,
- Explains the oversight role of the AAN’s Quality and Safety Subcommittee (QSS),
- Outlines the Measure Development process,
- Outlines Testing & Evaluation of Measures process, and
- Outlines Dissemination and Implementation of Measures in Practice process.

Goals for Quality Measure Development
- Develop measures to support guideline implementation and improve quality of care
- Establish AAN as a prominent measure developer and leader for neurological conditions
- Develop measures with broad stakeholder input
- Develop well defined measures statement and technical specifications
- Develop measures that allow neurologists to show the value they provide to patients

AAN Quality Measures:
- Have a strong evidence-base
- Link processes of care closely to desired outcomes
- Address a gap in care
- Are relevant to users and actionable
- Are feasible to collect, measure, and track
- Improve or maintain health outcomes, patient safety, quality of life, cost of care, the patient experience, or coordination of care
- Should have the capability to be developed into an e-measure

AAN Quality Measures Are Not
- A standard of care or new clinical practice guidelines for providers
- Mandates for clinical practice
- An effort to penalize physicians
- Intended for use as practice standards in malpractice claims

Quality Measurement in Neurology
Quality measures are objective measurements of the quality of patient care. Though the principles of quality management and continuous quality improvement were formalized in the manufacturing and service industries as early as the 1940s, health care did not adopt formal principles of quality improvement until the 1980s, when the Joint Commission of Accreditation of Healthcare Organizations mandated quality improvement and measurement of outcomes and processes for hospital accreditation. (Bever CT, Holloway RG, Iverson DJ, et al. Invited article: Neurology and quality improvement – An introduction. Neurology 2008;70:1636-1640. “Bever 2008”) The 1980s also marked the start of evidence-based clinical practice guideline
development, primarily under the aegis of medical specialty societies, professional associations, and some disease-specific organizations. In the 1990s, the concept of quality improvement first emerged in the outpatient setting, when managed care organizations began tracking performance measures such as immunization rates and mammography screening. (Beve 2008.) In 1998, the federal government’s growing interest in quality improvement led to the development of a National Forum for Health Care Quality Measurement and Reporting, now known as the National Quality Forum (NQF). The NQF acts as the principal endorser of healthcare performance measures, quality indicators, and quality standards at the national level, and provides a liaison between the Centers for Medicaid and Medicare Services (CMS) and stakeholders within the healthcare sector, including medical specialty societies, provider groups, and consumer organizations. (National Quality Forum About Us. Available at: http://www.qualityforum.org/story/About_Us.aspx Accessed on October 15, 2014.)

Cognizant of the potential impact of performance measurement on the practice of clinical neurology and the need for neurology-specific measures developed by and for neurologists, in 2003 the AAN incorporated quality measure development for neurological practice into their strategic plan. (American Academy of Neurology. Strategic Plan 2003, Practice and Patient Care.) To spearhead this effort, the AAN established the Quality Measurement and Reporting (QMR) subcommittee and charged it with establishing the capacity to produce and serve as steward for quality measures for neurological conditions. These measurement sets have consisted primarily of process measures, consistent the NQF’s finding that process measures constituted almost 90% of health care performance measures in 2011. (Damberg CL, Sorbero ME, Lovejoy SL, et al. An Evaluation of the Use of Performance Measures in Health Care. Santa Monica, CA: RAND Corporation, 2011)

The Physician Consortium for Practice Improvement (PCPI), convened by the American Medical Association (AMA) took a national leadership role in developing evidence-based, physician-led, quality measures in the early 2000’s. (AMA PCPI Overview Flyer. Available at: https://download.ama-assn.org/resources/doc/cqi/x-pub/pcpi-overview-flyer.pdf Accessed on October 17, 2014.)

The AAN participated in PCPI-led development of quality measurement sets for stroke and stroke rehabilitation and dementia. Recognizing the need for additional specialty-specific quality measures, the AAN began to develop measurement sets independently, and the AAN measurement set catalog continues to grow with current sets in development. All AAN measures are available online at AAN.com/practice/quality-measures/.

**Quality Measurement Overview**

A quality measure (also called a quality indicator or performance measure) is an objective measurement the patient received the indicated process(es) of care and/or whether the patient had the desired outcome(s) of care.

\[
\text{Quality of Patient Care} = \frac{\text{patients that meet criterion}}{\text{(eligible population} - \text{exclusions)}}
\]
The quality of patient care is frequently reported as a rate (or a score) derived by dividing the number of cases that meet a criterion for quality (the numerator) by the number of eligible cases within a given time frame (the denominator) where the numerator cases are a subset of the denominator cases. (AHRQ definition available at: http://www.qualitymeasures.ahrq.gov/about/glossary.aspx Accessed on September 25, 2014.)

Measures assess the degree to which physicians implement clinical practice guideline recommendations in practice. A specific process of care should directly correlate to a desired patient outcome.

**Measure Types**

Conceptually, quality measures in healthcare have been grouped into three main interrelated types: structural, process, and outcome measures. (Donabedian A. The role of outcomes in quality assessment and assurance. QRB Qual Rev Bull. 1992;18:356–360.) (See diagram below.) Structural measures emphasize innate features of the healthcare system as a whole, such as policy guidelines, management systems, and resource allocation. Process measures focus on the actions of health care providers and evaluate whether these activities follow established evidence-based clinical guidelines, care protocols, and best practices. Traditionally, outcome measures address critical endpoints that represent the culmination of an episode of care, defined as the entire spectrum of care related to a particular disease, disorder or condition, from the initial assessment through the final stages of care.

The following demonstrates some of the more common measure types as well as how aspects of care move from structure measures, to process, and then to a desired outcome measures.

<table>
<thead>
<tr>
<th>Structure</th>
<th>Process</th>
<th>Intermediate Outcome</th>
<th>Desired Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is in place (resources, systems)</td>
<td>What is done (treatments and therapies)</td>
<td>Precede the desired outcome</td>
<td>What will change as a result</td>
</tr>
<tr>
<td>Nurse educators on anti-seizure medication (ASM)</td>
<td>Patient education on ASM adherence</td>
<td>Pharmacy fills demonstrate ASM adherence</td>
<td>Decreased number of seizures</td>
</tr>
</tbody>
</table>

There are several types of desired outcome measures that can be developed, and increasing focus is being spent on developing patient reported outcomes (PRO) measures. The figure below outlines two types of the more common PROs: Health related Quality of Life and Patient Experience.
The AAN is increasingly focused on generating outcome measures. Outcome measures are preferred because:

- Patients need this information to make informed healthcare choices
- Accountability programs (i.e., pay for performance or public reporting) want this data to pay for quality
- Providers should use health care outcome measures to assess treatment effectiveness and make improvements to care

**Quality and Safety Subcommittee (QSS) Oversight**

The AAN QSS was established in February 2014, with the merger of the former Patient Safety Subcommittee and the Quality Measure and Reporting Subcommittees. QSS reports to the Practice Committee.

- QSS develops and maintains quality measures for neurological care and promotes improvements to clinical outcomes, patient safety, resources use, and patient-experience.
- QSS oversees the development and beta testing of quality measures.
- QSS increases the awareness of tools available to assist in quality reporting and measurement, as well as supporting the integration of measures into pay for performance programs and electronic health records.
- QSS develops the methodology for evaluating and rating externally generated quality measures as well as prioritizing and tracking measures affecting neurologists.

**Measure Development Process**

The AAN measure development process starts once a topic is identified. AAN commissions a multi-disciplinary measure development work group (Work Group) to evaluate available
evidence, draft measures concepts, and attend an in-person meeting to refine and vote on proposed measures.

Following the meeting, measures are further refined and posted for public comment. The leadership team reviews public comments and refines measures prior to a Work Group vote. Once approved by a simple majority of the Work Group, AAN staff facilitates internal AAN approvals and external endorsements. A writing work group drafts a manuscript, an executive summary of the measurement set, for publication in Neurology®. Measure technical specifications are developed. AAN measures undergo a maintenance review every three years.

**Topic Nomination and Selection**

Any individual, AAN member, AAN Committee, AAN Section, government agency (i.e., CMS), non-governmental agency (i.e., AMA-PCPI, AQA Alliance, and NQF), and employers or payers may submit a topic for measure development. Nominations are submitted in writing and should address the gap in care, potential impact, and evidence-base. Annually, an environmental scan is conducted evaluating gaps in neurology-relevant measures, the evidence-base to support the development of measures, and the potential impact of topic area. QSS will review possible measure development topics, including those identified in the environmental scan and assign a topic for development dependent on available resources. QSS will determine the scope of the proposed measurement set, identify facilitators, and possible content experts to chair the work group.

**Criteria for Topic Selection**

<table>
<thead>
<tr>
<th>Required characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>If a potential topic does not meet all the required characteristics, it will not be prioritized.</td>
<td></td>
</tr>
<tr>
<td><strong>Gaps and Variations in Care</strong></td>
<td>Documented evidence of deviation (or observed patterns of deviation) in care from established norms or standards of care. Gaps in care may be manifested by underuse, overuse, or misuse of health services.</td>
</tr>
<tr>
<td><strong>Evidence Base</strong></td>
<td>One or more national, widely-accepted clinical guidelines OR One or more documented quality improvement (QI) initiatives or research projects that have demonstrated improvement in the quality of care (based on measures of access, processes, outcomes or the patient experience of care)</td>
</tr>
<tr>
<td><strong>High Impact</strong></td>
<td>High prevalence of the clinical problem or condition, significant burden of illness, high cost, or nationally identified clinical priority area (e.g., Institute</td>
</tr>
</tbody>
</table>
High value characteristics

<table>
<thead>
<tr>
<th>Care Coordination</th>
<th>Improve coordination of care among a patient’s multiple providers and during entire episodes of illness addressing one of the following domains: healthcare “home” (i.e., a source of usual care selected by the patient, integration of care across the community and longitudinally), proactive plan of care and follow-up, communication, integrated electronic information systems</th>
</tr>
</thead>
</table>
| Patient Safety    | • Reduce healthcare associated infections  
|                   | • Reduce surgical mishaps  
|                   | • Reduce adverse drug events  
|                   | • Reduce preventable complications (e.g., pressure ulcers, falls, blood product injury)                                                                                                               |
| Appropriateness/ | Address at least one of nine targeted areas:  
| Overuse           | • Inappropriate medication use  
|                   | • Unnecessary laboratory tests  
|                   | • Inappropriate diagnostic procedures  
|                   | • Inappropriate procedures  
|                   | • Unnecessary consultations  
|                   | • Preventable emergency department visits and hospitalizations  
|                   | • Inappropriate non-palliative services at end of life  
|                   | • Potentially harmful preventive services with no benefit                                                                                                                                        |
| Quality Improvement Collaboratives | Measures that can be used in quality improvement collaboratives that can accelerate the spread of measures use. |

Work Group Formation

Work groups consist of 18-23 individuals and include two chairs, two facilitators, and at least one patient advocate. The AAN makes every effort to collaborate with other appropriate and relevant professional associations and patient advocacy organizations when developing measures. If possible, AAN will partner with other specialty societies to co-lead and facilitate the development process and disseminate measurement sets. If other organizations are not interested, or the disease state is specific to neurology, AAN will invite other specialty societies to participate as stakeholder representatives.

Facilitators

For every quality measure topic, two QSS member volunteers are assigned as facilitators to guide the measure development work group co-chairs and AAN staff through the measures process. If no members volunteer, QSS measurement development leaders assist in identifying QSS members to serve as facilitators or serve as project facilitators. Facilitators are non-voting members of the work group. The process of taking clinical practice guidelines recommendations
and developing measures requires an understanding of the clinical area involved and the technical aspects of measure development. Facilitator responsibilities include:

- Serve as a neutral party to measure development work group
- Advance the project goals and adherence to development timeline
- Serve as methodologist in measure development and specification
- Assist in finalizing the composition of the work group
- Develop and host the pre-meeting webinar
- Resolve work group conflict
- Ensure the finalized measures are high quality, valid, and implementable
- Participate in pre-and-post-meeting leadership calls
- Participate in the development of the manuscript
- Have no voting authority on proposed measures or approval of the finalized set

**Chairs**

QSS will seek out content experts who have experience leading work groups or consensus activities or have a strong understanding of evidence-based medicine to chair measure development work groups. Chairs are identified through the topic nomination process, outreach to AAN sections and subspecialty societies, through an external call for chairs, or through partner specialty societies when jointly facilitating. Chair responsibilities include:

- Serve as content expert (understanding of evidence, gaps in care and patient outcomes; familiarity with valid and reliable assessment tools, etc.)
- Participate in pre-and-post-meeting leadership call series
- Lead the in-person meeting
- Ensure the work group adheres to project timeline and scope
- Represent disseminated measures for endorsement to external organizations, as needed
- Participate in the development of the manuscript

**Staff**

AAN staff provides expertise in all areas of measure development, including AAN’s measure development process, meeting facilitation, methodology, and manuscript development and submission. Staff are accountable for resource allocation, project management, coordination with external organizations, and Neurology® approval and publication process. If another organization is co-facilitating a measure development project these duties will be shared among both organization’s staff.

**Leadership Team**

Chairs, facilitators, and AAN staff (and other association staff representatives if applicable) make up the leadership team. During the pre-meeting conference call series, the leadership team:

- Review project scope
- Agree to project deliverables and timelines
- Identify appropriate stakeholder organizations for participation and finalize work group make-up
- Outline desired patient outcomes
- Identify and summarize the evidence base
- Develop a list of candidate measures
- Finalize the face-to-face meeting agenda

Work Group Members
The leadership team generates a list of potential stakeholders including appropriate AAN sections, patient advocacy organizations, relevant medical specialty associations, large group health employers, and insurer representatives and sends a call for nominations to this list. Current employees of pharmaceutical companies or a device manufacturers may not serve on work groups. Interested nominees submit their curriculum vitae (CV), a conflict of interest form, and a statement of interest or experience with performance measures, quality improvement, and guideline development.

The leadership team shall identify the appropriate number of potential AAN representatives needed to form a well-rounded work group. Each Work Group will include at least one general neurologist. Often there will be a limited number of AAN representative seats, and the leadership team will use submitted nomination materials to identify work group members based on a ranking that assesses guideline development and implementation experience, quality measure development and implementation experience, clinical expertise, and leadership experience.

Work Group responsibilities include:
- Develop quality measures that assess improvements to desired outcomes and gaps in care
- Provide feedback on measure concepts developed by Leadership Team or other Work Group members
- Provide insights on the degree to which measures are high quality, valid, and implementable

Work Group members will:
- Attend an introductory webinar and 3-4 conference calls
- Attend and participate in an in-person meeting
- Adhere to timelines and respond to requests for information
- Review existing guideline and literature recommendations
- Assist in the development of process, outcome, and system level quality measures
- Give final work group approval on measures
- Assist with updates to the measurement set

A pre-meeting webinar is held for all work group members. The pre-meeting webinar provides an opportunity for work group members to learn more about measure development, the AAN’s rationale and goals for developing measures, and review work group timeline, scope, and other specifics. The AAN pays for all costs associated with work group member attendance at face-to-face meetings, including airfare and accommodations.

Conflict of Interest (COI), Non-disclosure, and Copyright
The AAN is committed to producing independent and critical quality measures. However, it is difficult to form a work group that is devoid of potential conflicts. The COI policy of the AAN (http://tools.aan.com/apps/disclosures/index.cfm?event=committee:intro) is strictly enforced and all nominees are required to complete a conflict of interest form. Individuals with a COI can
serve on the work group, but if a financial or other important COI is present for a specific measure(s) the member must abstain from voting on the measure(s).

Once selected all work group members complete copyright and non-disclosure agreements. Work group members must complete a copyright form to ensure AAN has the full copyright and ownership of the measures. The AAN is responsible for maintaining and updating measures and must own full copyright for the measures. A non-disclosure agreement is obtained as work group members are privy to confidential AAN materials that remain embargoed pending publication.

**Evidence-base to Support Development of Measures**

The measure development process takes evidence-based guideline recommendations and uses them to develop measures. The measurement set is not new guidelines, but a way to implement existing guidelines into practice. The evidence behind AAN quality measures is not limited to only AAN guidelines, but also includes guidelines developed by other organizations. Staff conducts a comprehensive search to identify published guidelines, measures, and consensus recommendations from five years prior to current year using the National Guidelines Clearinghouse, the National Measures Clearinghouse, PubMed, MEDLINE, EMBASE, and the Cochrane Library. AAN contracts with a medical librarian to assist work group leadership in identifying appropriate search terms, key words, search filters, and databases. The librarian conducts the searches on at least three major databases (MEDLINE®, Web of Science, EMBASE®, etc.). AAN staff performs a quick review of the results to ensure that the measures, guidelines, and consensus papers pertinent to the search are identified. All results are compiled into an Endnote® library. The literature search is kept on file at the AAN. The following criteria are captured:

- Date searches were conducted
- Search terms/strategy used
- Databases searched
- Dates included in the search
- Explicit description of the criteria and terms used

The leadership team reviews the selected abstracts and further refines the literature base, according to relevance. Recommendation statements and their corresponding level of evidence, as defined by the guideline developers’ rating scheme methodology, are extracted from eligible guidelines and consensus papers.

**Measure Specification**

Measure concepts are drafted by the leadership team and work group members. Measure concepts include the following components:

- Measure statement:
  - Numerator: specifies action needed to meet the measure
  - Denominator: specifies the target population and time period. This is accomplished by referring back to the case definition used in the studies that led to the high-level recommendations. The definition should include inclusion criteria, such as the diagnosis, diagnostic subgroup, and acuity of diagnosis, age ranges, and other positive selection factors.
  - Denominator exclusions, exceptions, and exception justification:
- A denominator exclusion is a factor supported by the clinical evidence that removes a patient from inclusion in the measure population. For example, if the denominator indicates the measure is for all patients aged 0 to 18 years of age, a patient who is 19 years of age is excluded.

- A denominator exception is a condition that should remove the patient, procedure or unit of measurement from the denominator only if the numerator criteria are not met. The AAN includes three possible types of exceptions for reasons why a patient should not be included in a measure denominator: medical, patient or system reasons. For each measure, there must be a clear rationale to permit an exception for a medical, patient, or system reason.

- Supporting guideline and other references: Supply the evidence-base verbatim when appropriate. Measure importance includes a brief statement of the relationship to the desired outcome (for process measures) and opportunities for improvement. Applicability to the National Quality Strategy Domains is included. (more information on the National Quality Strategy can be found at AHRQ.gov/workingforquality/)

- Measure Harmonization: A work group may recommend the creation of a measure that may be similar to an existing measure. The measure specifications will address steps taken to harmonize the AAN measure with existing measures, as well as the rationale for development of a separate measure. As illustrated below, the AAN will not create measures in direct conflict with other measures. When possible, AAN will partner with measure developers to include neurological conditions in existing and endorsed measures, as appropriate.

<table>
<thead>
<tr>
<th>Same denominator</th>
<th>Different numerator focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competing measures. AAN refrains from developing measure.</td>
<td>Related measures. Efforts taken to harmonize.</td>
</tr>
</tbody>
</table>

| Different denominator | Related measures. Efforts taken to harmonize. | No competition. No need to harmonize. AAN develops measure. |

- Measure Designation: All of AAN’s measures are applicable for quality improvement, but may also be applicable for accountability programs.

- Measure Type: See above page 4 for further details

- Level of Measurement: provider, practice, or system

- Risk Adjustment: See below AAN Statement on Comparing Outcomes of Patients. Outcome measures will address risk adjustment. The denominator should incorporate dimensions of risk for the outcome, where applicable and must not lead to gaming or affect patient access to neurological care. To alleviate data burden, AAN measures should seek to avoid complex risk adjustment methodologies.

- Care Setting(s): Outpatient, inpatient, or emergency department

- Data sources: EHR, Claims, Chart Review, or Registry
AAN Statement on Comparing Outcomes of Patients

Why this statement: Characteristics of patients can vary across practices and differences in those characteristics may impact the differences in health outcomes among those patients. Some examples of these characteristics are: demographics, co-morbidities, socioeconomic status, and disease severity. Because these variables are typically not under the control of a clinician, it would be inappropriate to compare outcomes of patients managed by different clinicians and practices without accounting for those differences in characteristics among patients. There are many approaches and models to improve comparability, but this statement will focus on risk adjustment. This area continues to evolve (1), and the AAN will revisit this statement regularly to ensure accuracy, as well as address other comparability methods (2) should they become more common.

AAN quality measures are used primarily to demonstrate compliance with evidence-based and consensus-based best practices within a given practice as a component of a robust quality improvement program. The AAN includes this statement to caution against using certain measures, particularly outcome measures, for comparison to other individuals/practices/hospitals without the necessary and appropriate risk adjustment.

What is Risk Adjustment: Risk adjustment is a statistical approach that can make populations more comparable by controlling for patient characteristics (most commonly adjusted variable is a patient’s age) that are associated with outcomes but are beyond the control of the clinician. By doing so, the processes of care delivered and the outcomes of care can be more strongly linked.

Comparing measure results from practice to practice: For process measures, the characteristics of the population are generally not a large factor in comparing one practice to another. Outcome measures, however, may be influenced by characteristics of a patient that are beyond the control of a clinician. For example, demographic characteristics, socioeconomic status, or presence of comorbid conditions, and disease severity may impact quality of life measurements. Unfortunately, for a particular outcome, there may not be sufficient scientific literature to specify the variables that should be included in a model of risk adjustment. When efforts to risk adjust are made, for example by adjusting socioeconomic status and disease severity, values may not be documented in the medical record, leading to incomplete risk adjustment.

When using outcome measures to compare one practice to another, a methodologist, such as a health researcher, statistician, actuary or health economist, ought to ensure that the populations are comparable, apply the appropriate methodology to account for differences or state that no methodology exists or is needed.

Use of measures by other agencies for the purpose of pay-for-performance and public reporting programs: AAN measures, as they are rigorously developed, may be endorsed by the National Quality Forum or incorporated into Centers for Medicare & Medicaid Services (CMS) and private payer programs.
It is important when implementing outcomes measures in quality measurement programs that a method be employed to account for differences in patients beyond a clinicians’ control such as risk adjustment.

References and Additional Reading for AAN Statement on Comparing Outcomes of Patients


Refining Candidate Measures

Work Group members review and rank these concepts for validity, feasibility, and gaps in care. This results in winnowing down to approximately 10 candidate measures to be reviewed at the in-person meeting. At the in-person, meeting members engage in an interactive discussion to review and edit the desired outcomes and candidate measures, review candidate measure specifications and rationale, and consider new measures. Following measure discussion, Work Group members vote on each measure. If approved, by a simple majority, the measure is included in the draft measurement set for public comment. A modified Delphi process may be used to reach measure consensus if the work group has concerns regarding the level of evidence, link to health outcomes, existence of a gap in care, or other measure specification concerns.

Public Comment Period

Staff posts the approved measures on the AAN website for a minimum 30-day public comment period whereby interested individuals, groups, outside organizations, and stakeholders have an opportunity to comment and suggest changes to the measures. Staff sends a notification to the AAN leadership, key subcommittees,
sections, and the AAN membership. All patient advocacy organizations, relevant associations, large group health employers, and insurer representatives are also contacted and encouraged to engage their members in the public comment period. After the public comment period, the leadership team will review each comment and consider measure revisions to improve clarity or modify content. All public comments receive a written response. Comments and responses are included in the final measurement set.

Approval and Endorsement

After the measurement set is revised post public comment period, the Work Group votes to approve a finalized version. A simple majority is required for approval. The measurement set, the comments, the response to those comments, and changes to the measurement set are submitted to QSS for review and approval (simple majority). If approved by QSS, the measurement set goes to Practice Committee and the AANI Board of Directors for approval. If not approved by QSS, Practice Committee, or AANI Board, the measurement set will be returned to the work group for further action that may include modification or termination of further development. Upon approval from the AANI Board, the measurement set is final.

Simultaneous to public comment process, AAN staff will seek out external endorsement, joint publication, and implementation support from interested stakeholder organizations. Formal endorsements received from organizations in advance of manuscript submission will be acknowledged in possible Neurology® publications.

Manuscript

An executive summary of the measurement set is prepared to publish in Neurology®. The leadership team will be asked to draft the manuscript. Work Group members may be approached to participate in drafting the manuscript, if a member of the leadership team is not able or declines this role. The first author of the manuscript will be the individual who has written the majority of the manuscript. The manuscript highlights the final measures and rationale, as well as, discusses how providers can implement the measures in practice. The manuscript will link to the full measurement set. All papers submitted to Neurology® undergo a separate peer review as is their customary process. Following publication, AAN staff will coordinate dissemination activities.

Periodic Review and Update

Every three years the measurement set undergoes a full search for new evidence. QSS convenes a leadership group (i.e., chairs, facilitators, and staff) to make recommendations on updating a measurement set. Chairs who previously demonstrated strong leadership skills will be asked if they are available to lead the evidence review. Leaders review the previously used literature search criteria and update search terms as needed. The leadership team will use the same evidence-base search process described above to identify relevant guidelines and evidence. The leadership team will make a recommendation to reaffirm, partial update, full update, or retire the measurement set following a review of the evidence base (see graphic below). The appropriate AAN section executive leadership team reviews their recommendation and provides their input. QSS will vote for approval (a simple majority) on the recommendation. The following describes the process once approved:
Testing and Evaluation of Measures Overview

The AAN is currently unable to test all measures due to the significant costs associated with testing. Testing preference will be given to outcome measures and measures that can be e-specified. Measures that have a high likelihood of being endorsed or incorporated into accountability programs will be given priority. The AAN will test measures for reliability, validity, and feasibility.

Reliability

Reliability relates to the overall consistency of a measure and includes a review of:

- **Reliability**
  - Reliability relates to the overall consistency of a measure and includes a review of:
    - Recommend QSS reaffirm with no changes made to the set.
    - There has been no new literature published or changes to the literature that would indicate a need for new process or outcome measures. OR
    - There is new literature that supports the current process or outcome measures.
    - Following AANI governance vetting, measure dissemination activities may occur if warranted.

- **Partial Update**
  - Recommend QSS update select measures and/or develop new outcomes measures.
  - The existing measures remain relevant and supported by literature BUT
  - There is new literature that indicates the potential to develop one or two new outcomes measures to supplement the existing measurement set.
  - Original work group organizations are invited to participate. Measure concepts are developed using process outlined above. Measure meeting held virtually.
  - Draft measures undergo public comment review and measures are vetted by AANI governance.

- **Full Update**
  - Recommend QSS conduct a full update using measure development process outlined above.
  - Majority of existing measures are no longer relevant. There is new literature indicating new processes of care or outcomes are recommended.

- **Retire**
  - Recommend QSS retire measures.
  - There is new literature that refutes or does not support all or select processes or outcomes in the set OR
  - There is no longer a gap in care for all or select measures
  - Leadership team has option of recommending to retire select measures, the full set, or to conduct a full update. Retirement recommendations are reviewed with appropriate AAN section leadership and organizations that participated in development are asked to comment on this recommendation.
• Data collection methodology, an analysis of data submitted and consultation with data abstractors
• Measure specification precision
  o Able to query denominator to whom the measure applies in data set
  o Able to identify those who achieved the specific measure focus in data set
  o Distribution of missing data in data set
  o Measure time window can be captured (12 month retrospective)
  o Analysis of exclusion clarity and ability to find in data set
  o Analysis of definition clarity
  o Code lists with descriptors are accurate
  o Scores are able to be computed from data set
• Inter-rater/abstractor or intra-rater/abstractor reliability (site to site comparisons of results above)

Validity
Validity is the extent to which a measure measures what it is intended to measure and includes a review of:
• Data collection methodology, an analysis of data submitted
• Calculation of scores across sites for each measure
  o Identify gaps in care across sites for each measure and calculate statistical significance of the gaps
  o Analysis of exclusions (frequency, rates)
• Justification for no risk adjustment/ stratification
  o For each measure stratify results by payer type, race/ethnicity, gender, geographic area

Feasibility
Feasibility is the extent to which a measure is capable of being implemented in practice and includes a review of:
• Data collection methodology, a consultation with data abstractors
  o Data can be implemented and are available or could be captured without undue burden
  o Data availability
  o Frequency

Dissemination and Implementation Overview

Technical Specifications of Measures
For each measure, a description and instructions are provided for how the measure is intended to be captured and reported. The AAN develops technical specifications for measures that may include:
• Electronic Health Record (EHR) Data
• Chart Review
• Registry
The AAN is committed to development of EHR usable data measures. However, the work group may develop measures that cannot be e-specified. In such cases, registry and chart review may be recommended. The AAN stopped developing administrative claims specifications in 2014 following the announcement that the American Medical Association is no longer supporting CPT-II code development, as CPT-II codes are vital to claims specifications.

The AAN is in the process of creating code value sets as well as the logic required for electronic capture of the quality measures with EHRs. A listing of the quality data model elements, code value sets, and measure logic (through the CMS Measure Authoring Tool) for appropriate measures will be made available when it is possible.

**Implementation of measures**

The AAN will draft measure implementation tools to support quality improvement efforts for neurologists and notify the public of measurement release in multiple formats that may include social media, aan.com, or webinars.
Appendix A: Process Map
Conduct environmental scan

Measure topic selected

Leaders selected

Select meeting date

Leadership Kick off call

Outline Outcomes & Measurement Gaps

Conduct further literature review

Draft measure concepts

Call for WG members

Review nomination materials

Members selected

Pre-meeting webinar

Review draft measures & suggest new measure concepts. Rank measures

LT revise measures

Develop meeting materials

PREMEETING DRAFT MEASURES

Plan in person meeting