

Quality improvement in neurology

Distal symmetric polyneuropathy quality measures



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Peripheral neuropathy is a common neurologic disorder, affecting 2% to 8% of the population^{1–3} in population-based studies with confirmation by neurologist examination. These prevalence numbers are remarkably stable across developed countries.⁴ In 1999, 8.6% of Medicare beneficiaries had neuropathy as a primary or secondary diagnosis, and the cost of treatment was estimated at \$3.5 billion (Consumer Price Index adjusted to 2013 \$4.9 billion), which did not include outpatient medications.⁵ Peripheral neuropathy has many causes and varies in regard to its clinical manifestations and severity. Distal symmetric polyneuropathy (DSP) is the most common pattern of peripheral neuropathy generally and the most common phenotype of neuropathy due to diabetes. Reported prevalence rates of DSP among diabetic patients range from 15% to 37% across large population-based studies, and the prevalence among those with impaired glucose tolerance has been reported to be 11%.^{4,6} DSP can result in weakness, sensory loss, pain, autonomic dysfunction, gait impairment, falls, disability, and impaired quality of life.^{7,8}

Early identification and treatment of DSP is important to prevent or delay irreversible nerve damage. In evaluating a patient with DSP, at a minimum the clinical pattern of involvement, nerve conduction studies, and laboratory tests should be obtained to diagnose the condition and to identify potential treatable etiologies.^{3,9} Recent studies have demonstrated that adequate diagnostic studies are often not performed in patients with peripheral neuropathy.⁸

Neuropathy was selected as the topic because it is a clinical priority for neurology, has a high burden of illness, has demonstrated gaps in care with room for improvement, and has unexplained variations in care. The scope of neuropathy was narrowed down to DSP

because the majority of the available evidence that would meet a gap in care focused on DSP and because of the prevalence of DSP. The American Academy of Neurology (AAN) DSP Measures were chosen as the process measures that, if properly implemented, would have the potential to improve care, health outcomes, and quality of life for individuals with DSP. DSP measure development was also supported by the move toward quality improvement by medical professional societies and patient advocacy groups with a special interest in peripheral neuropathy, including the American Association of Neuromuscular & Electrodiagnostic Medicine (AANEM), American Academy of Physical Medicine and Rehabilitation (AAPM&R), American Diabetes Association, and The Neuropathy Association.

Measuring quality of health care is a central part of current concepts of health care plans and physician reimbursement. This measurement set is focused on minimum metrics for patients with a diagnosis of DSP. The AAN has developed quality measures for several other important neurologic conditions, including stroke and stroke rehabilitation,¹⁰ Parkinson disease,¹¹ epilepsy,¹² dementia,¹³ and amyotrophic lateral sclerosis,¹⁴ and plans to develop measurement sets for additional neurologic conditions, including headache, muscular dystrophies, and multiple sclerosis.

METHODS The AAN DSP quality measure development process followed the AAN Quality Measurement and Reporting Subcommittee process for measure development.¹⁵ The steps in this process require submitting the topic for selection, completing an evidence-based review of existing evidence-based guidelines and a supplementary literature search, constructing draft measures and technical specifications, convening a multidisciplinary expert work group to review draft measures, soliciting public comments during a 30-day period, refining the final measures and

GLOSSARY

AAN = American Academy of Neurology; **AANEM** = American Association of Neuromuscular & Electrodiagnostic Medicine; **AAPM&R** = American Academy of Physical Medicine and Rehabilitation; **CPT** = Current Procedural Terminology; **DSP** = distal symmetric polyneuropathy.

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corresponding technical specifications, and obtaining approvals from the AAN DSP quality measure expert work group, AAN committees, and the AAN Board of Directors. In addition, the measurement set was reviewed by the American Medical Association's Performance Measurement Advisory Group for overall quality of content and to assign Current Procedural terminology (CPT)–II codes. The full methodology including topic selection, literature search, and work group formation may be found online in appendix e-1 on the *Neurology*[®] Web site at Neurology.org.

RESULTS The literature search identified 128 relevant recommendations from 23 clinical practice guidelines. The review of the evidence by the work group leadership resulted in 15 recommendations that were rated highest on importance, validity, strength of evidence, and gaps in care to serve as the evidence base for 9 draft measures. At a face-to-face meeting on May 14, 2011, the work group revised the draft measures and eliminated 3 of the measures due to feasibility issues. The remaining 6 measures were posted for a 30-day public comment. A total of 78 comments were received from physicians, patients, insurers, and other interested individuals. These comments were used to refine

the draft measures. The 6 final measures were approved by the American Medical Association Performance Measurement Advisory Group for CPT II codes effective January 1, 2013. The final set of measures was approved by the expert work group, appropriate AAN committees, and the AAN Board of Directors. This set of measures will be revised periodically with an extensive review every 3 years.

Brief measure titles and measure statements for each of the 6 DSP Performance Measures are listed in the table. For the complete measure specifications, including exclusions, see appendix e-2.

DISCUSSION DSP is one of the most common neurologic disorders encountered by neurologists in practice and is a major source of referral to practitioners. In 2005, the results of a collaboration among the AAN, AANEM, and AAPM&R were published as a research case definition of DSP intended to improve consistency and specificity of diagnostic criteria across population-based and clinical trial studies.¹⁶ The research case definition has been cited in nearly 175 peer-reviewed studies on Web of Science in the past 7 years. To bridge the gap between the research enterprise and clinical practice, the Quality Measurement and Reporting Subcommittee of the AAN produced these 6 minimum quality measures reflective of the best available evidence and best practice.

Measures 1 and 2 are specifically derived from the 2005 published case definition.¹⁶ Implementation of these minimum measures will ensure more consistent application of the case definition in clinical practice and more consistent use of electrodiagnostic studies to confirm the diagnosis of DSP. These measures are paired measures to reflect the evidence-based diagnostic criteria for DSP.¹⁶ The measures should be performed together in order to appropriately diagnose the patient with DSP.

Measures 3 and 4 are intended to ensure that screening for common causes of DSP (diabetes, alcoholism) are routinely captured at initial diagnosis. These measures will ensure that both practices and health systems/communities attend to potential preventive interventions for these disorders. In population-based studies, the prevalence of DSP among patients with confirmed diabetes approaches 25% and is approximately 12% in those with impaired glucose tolerance.⁶ Among patients with chronic alcoholism, 12% to 66% have peripheral neuropathy, and the neuropathy may improve with abstinence.^{17,18} Hence, routine attention to these conditions will help identify comorbidities that may have substantial potential for prevention.

Measure 5 recommends the use of a brief, publicly available, validated instrument to track pain and

Table Measure title and description of the American Academy of Neurology Distal Symmetric Polyneuropathy Quality Measures

Measures addressing appropriate diagnosis

Measure 1: Distal symmetric polyneuropathy (DSP) diagnosis criteria: DSP symptoms and signs (paired with measure 2)

Percentage of patients age 18 years and older with a diagnosis of DSP who had their neuropathic symptoms and signs reviewed and documented at the initial evaluation for DSP. (Neuropathic symptoms: numbness, altered sensation, or pain in the feet. Neuropathic signs: decreased or absent ankle reflexes, decreased distal sensation, and distal muscle weakness or atrophy.)

Measure 2: DSP diagnosis criteria: Electrodiagnostic studies (paired with measure 1)

Percentage of patients age 18 years and older with a diagnosis of DSP who had electrodiagnostic studies conducted, documented, and reviewed within 6 months of initial evaluation for DSP.

Measures addressing underuse of effective services (evaluation and treatment services)

Measure 3: Diabetes/prediabetes screening for patients with DSP

Percentage of patients age 18 years and older with a diagnosis of DSP who had screening tests for diabetes (e.g., fasting blood sugar test, a hemoglobin A1C, or a 2-hour glucose tolerance test) reviewed, requested, or ordered when seen for an initial evaluation for DSP.

Measure 4: Screening for unhealthy alcohol use

Percentage of patients age 18 years and older with a diagnosis of DSP who were screened with a validated screening instrument for unhealthy alcohol use when seen for an initial evaluation for DSP. (Unhealthy alcohol use covers a spectrum that is associated with varying degrees of risk to health. Categories representing unhealthy alcohol use include risky use, problem drinking, harmful use, alcohol abuse, and the less common but more severe alcoholism and alcohol dependence.)

Measure addressing quality of life/morbidity

Measure 5: Querying about pain and pain interference with function

Percentage of patient visits for patients age 18 years and older with a diagnosis of DSP who were queried about pain and pain interference with function using a valid and reliable instrument.

Measure addressing safety

Measure 6: Querying about falls for patients with DSP

Percentage of patients age 18 years and older with a diagnosis of DSP who were queried at least once annually about falls within the past 12 months and the response was documented.

function routinely at each visit (e.g., Graded Chronic Pain Scale, Brief Pain Inventory).^{19,20} This type of measure is almost never implemented now in clinical practice; therefore, inclusion of such measures will assist in tracking patients over time with regard to both responses to therapy and the progression of DSP. In addition, similar measures may be used to determine clinically meaningful improvement in pain and function.¹⁹

Measure 6, querying about falls, is another measure that may contribute to preventive efforts in communities. Since this measure is conducted at least annually, patients who screen positive would prompt more intense monitoring, family counseling, and implementation of rehabilitation interventions that may reduce the risk of falls. Such further inquiry based on the screening measure could lead to institution in the future of more performance-based tests for balance (e.g., Timed Get Up and Go Test).²¹

These minimum measures are intended to be implemented across the wide spectrum of neurologic practice and are not intended for exclusive use by subspecialists. These measures are crafted such that use by any health care provider would accomplish the primary goal of improving quality of care for persons with DSP. Depending on specific clinical situations, availability of diagnostic resources, and availability of subspecialty expertise, more detailed evaluation of individuals with DSP beyond these minimum measures is warranted.

DSP represents a significant health problem because it is a chronic high-cost disease that leads to significant morbidity, increased mortality, and impaired quality of life. The AAN DSP quality measurement set defines basic yet critical DSP quality measures in an effort to improve health outcomes for patients with DSP. The benefits resulting from successful implementation of the AAN DSP quality measurement set include the following: (1) timely DSP diagnosis, including the appropriate use of electrodiagnostic testing to more accurately classify potentially treatable DSP conditions; (2) screening for the most important underlying causes of DSP in efforts at secondary prevention of worsening of the condition; (3) use of brief instruments to track pain and function to determine whether meaningful improvement occurs in response to treatment interventions; and (4) promotion of patient safety through reduction of falls due to DSP. These measures are intended to be implemented across the spectrum of neurologic practice and are intended for use by all health care practitioners, not just neurologists. In addition, the measures are crafted such that use by non-neurologic clinicians in more rural practices or in areas of shortages of neurologic practitioners would accomplish the primary goal of improving quality of care for persons with DSP.

AUTHOR CONTRIBUTIONS

Dr. England assisted with study concept and design, critical revision of the manuscript for important intellectual content, and analysis and interpretation. Dr. Franklin assisted with study concept and design, critical revision of the manuscript for important intellectual content, and analysis and interpretation. G. Gjørvad assisted with study concept and design, analysis and interpretation, and study supervision. R. Swain-Eng assisted with study concept and design, analysis and interpretation, critical revision of the manuscript for important intellectual content, and study supervision. Dr. David assisted with analysis and interpretation. Dr. Dubinsky assisted with analysis and interpretation. Dr. Smith assisted with analysis and interpretation.

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