

## 2024 MIPS Peer-Reviewed Journal Article Requirement Template

Section 101(c)(1) of the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) requires submission of new measures for publication in applicable specialty-appropriate, peer-reviewed journals prior to implementing in the Merit-based Incentive Payment System (MIPS). Such measures will be submitted by the Centers for Medicare & Medicaid Services (CMS), to a journal(s), before including any new measure on the MIPS Quality Measures List. The measure submitter shall provide the required information for article submission under the MACRA per the MIPS Annual Call for Quality Measures submission process.

Interested parties submitting measures for consideration through the MIPS Annual Call for Quality Measures must complete the required information by the CMS Annual Call for Measures deadline (8 p.m. ET on May 10, 2024). Some of the information requested below may be listed in specific fields in the CMS Measures Under Consideration (MUC) Entry/Review Information Tool (MERIT); however, to ensure that CMS has all of the necessary information and avoid delays in the evaluation of your submission, please fully complete this form as an attached Word document. The information in MERIT must be consistent with the information below, including the following, but not limited to:

- **Parkinson's Syndromes, Multiple Sclerosis (MS), and Amyotrophic Lateral Sclerosis (ALS)**
- **Affordability and Efficiency**

**Measure Steward:** *Centers for Medicare & Medicaid Services*

**Measure Developer:** *Acumen, LLC*

**Description:** The Parkinson's Syndromes, Multiple Sclerosis (MS), and Amyotrophic Lateral Sclerosis (ALS) ("Parkinson's Syndromes, MS, and ALS") episode-based cost measure evaluates a clinician's or clinician group's risk-adjusted and specialty-adjusted cost to Medicare for patients who receive medical care to manage and treat Parkinson's syndromes, MS, or ALS. This chronic condition measure includes the costs of services that are clinically related to the attributed clinician's role in managing care during a Parkinson's syndrome, MS, or ALS episode.

### I. Statement

- Background (Why is this measure important?).

Neurological conditions influencing movement affect almost 40 million Americans across different conditions.<sup>1</sup> Parkinson's disease, other degenerative diseases of basal ganglia, Multiple Sclerosis (MS), and Amyotrophic Lateral Sclerosis (ALS) affect nearly half a million of Medicare beneficiaries, and patients with these disorders have higher utilization of healthcare services. For example, patients with Parkinson's present 31% higher emergency department (ED) admissions and double the number of Skilled Nursing Facilities (SNF) stays.<sup>2</sup> Patients with MS present double the number of ED admissions and 3.5 times the number of inpatient stays,<sup>3</sup> and patients with ALS alternatively have high rates of home health service utilization as well as the highest national economic burden amongst patients diagnosed with a neurological condition affecting movement.<sup>4</sup>

These conditions are also costly to the American healthcare system. Around 90% of Parkinson's disease patients in the U.S. are covered by Medicare, which have been estimated to represent a

<sup>1</sup> University of Michigan Health, "Movement Disorders," <https://www.uofmhealth.org/conditions-treatments/brain-neurological-conditions/movement-disorders>

<sup>2</sup> Gandhi, Aakash Bipin et al. "Health Care Resource Utilization Associated With Parkinson Disease Among Medicare Beneficiaries." *Neurology* vol. 97,6 (2021): e597-e607. doi:10.1212/WNL.00000000000012290

<sup>3</sup> Asche, Carl V et al. "All-cause health care utilization and costs associated with newly diagnosed multiple sclerosis in the United States." *Journal of managed care pharmacy : JMCP* vol. 16,9 (2010): 703-12. doi:10.18553/jmcp.2010.16.9.703

<sup>4</sup> Winston Wong, PharmD "Managed Care Considerations to Improve Health Care Utilization for Patients With ALS." *Am J Manag Care*. 2023;29(suppl 7):S120-S126. <https://doi.org/10.37765/ajmc.2023.89388>

total economic burden of \$51.9 billion.<sup>5,6</sup> The costs are equally as large for the management of MS and ALS, which represent a total burden of roughly \$85.4 billion and \$1.4 billion, respectively. As part of these costs, multiple studies have found that prescription medications and the furnishing of medical equipment influence more than half of the financial burden to Medicare in the treatment of all conditions.<sup>7,8</sup>

- Environmental scan (Are there existing measures in this area?)

Based on a search of the CMS Measure Inventory Tool (CMIT), no related or competing measures are currently used in the MIPS Cost performance category. However, the Supportive Care for Neurodegenerative Conditions MVP includes quality measures that align with the measure's intent. These MIPS and QCDR quality measures (listed in Tables 1 and 2 below, respectively) may include metrics focused on similar patient cohorts, clinically related to the care provided for the episode group, or complementary care.

**Table 1. MIPS Quality Measures Potentially Relevant for the Parkinson's Syndromes, MS, and ALS Measure**

Measure Title	Measure ID	Measure Description	Measure Type
Assessment of Mood Disorders and Psychosis for Patients with Parkinson's Disease	497	Percentage of all patients with a diagnosis of Parkinson's Disease [PD] who were assessed for depression, anxiety, apathy, AND psychosis once during the measurement period.	Process
Assessment of Cognitive Impairment or Dysfunction for Patients with Parkinson's Disease	496	Percentage of all patients with a diagnosis of Parkinson's Disease [PD] who were assessed for cognitive impairment or dysfunction once during the measurement period.	Process
Rehabilitative Therapy Referral for Patients with Parkinson's Disease	498	Percentage of all patients with a diagnosis of Parkinson's Disease who were referred to physical, occupational, speech, or recreational therapy once during the measurement period.	Process
Amyotrophic Lateral Sclerosis (ALS) Patient Care Preferences	53	Percentage of patients diagnosed with Amyotrophic Lateral Sclerosis (ALS) who were offered assistance in planning for end of life issues (e.g., advance directives, invasive ventilation, hospice) at least once annually.	Process
Advance Care Plan	37	Percentage of patients aged 65 years and older who have an advance care plan or surrogate decision maker documented in the medical record or documentation in the medical record that an advance care plan was discussed but the patient did not wish or was not able to name a surrogate decision maker or provide an advance care plan.	Process
Use of High-Risk Medications in Older Adults	744	Percentage of patients 65 years of age and older who were ordered at least two high-risk medications from the same drug class.	Process
Screening for Social Drivers of Health	1664	Percent of patients 18 years and older screened for food insecurity, housing instability, transportation needs, utility difficulties, and interpersonal safety.	Process

<sup>5</sup> Yang, W., Hamilton, J.L., Kopil, C. et al. Current and projected future economic burden of Parkinson's disease in the U.S.. *npj Parkinsons Dis.* 6, 15 (2020). <https://doi.org/10.1038/s41531-020-0117-1>

<sup>6</sup> Pearson C, Hartzman A, Munevar D, Feeney M, Dolhun R, Todaro V, Rosenfeld S, Willis A, Beck JC. Care access and utilization among medicare beneficiaries living with Parkinson's disease. *NPJ Parkinsons Dis.* 2023 Jul 10;9(1):108. doi: 10.1038/s41531-023-00523-y. PMID: 37429849; PMCID: PMC10333279

<sup>7</sup> Bebo B, et al. The Economic Burden of Multiple Sclerosis in the United States: Estimate of Direct and Indirect Costs. *Neurology.* 2022 May 3;98(18):e1810-e1817. doi: 10.1212/WNL.000000000000200150. Epub 2022 Apr 13. PMID: 35418457; PMCID: PMC9109149.

<sup>8</sup> Berry, J. D., et al. (2023). Epidemiology and economic burden of amyotrophic lateral sclerosis in the United States: a literature review. *Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration*, 24(5–6), 436–448. <https://doi.org/10.1080/21678421.2023.2165947>

Falls: Plan of Care	255	Percentage of patients aged 65 years and older with a history of falls that had a plan of care for falls documented within 12 months.	Process
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**Table 2. QCDR Quality Measures Potentially Relevant for the Parkinson's Syndromes, MS, and ALS Measure**

Measure Title	Measure ID	Measure Description	Measure Type
Quality of Life Outcome for Patients with Neurologic Conditions	AAN22	Percentage of patients whose quality of life assessment results are maintained or improved during the measurement period.	Patient Reported Outcome
Patient reported falls and plan of care	AAN34	Percentage of patients (or caregivers as appropriate) with an active diagnosis of a movement disorder, multiple sclerosis, a neuromuscular disorder, dementia, or stroke who reported a fall occurred and those that fell had a plan of care for falls documented at every visit	Patient Reported Outcome
Querying and Follow-up About Symptoms of Autonomic Dysfunction for Patients with Parkinson's Disease	AAN9	Percentage of all patients with a diagnosis of PD (or caregivers, as appropriate) who were queried about symptoms of autonomic dysfunction* in the past 12 months and if autonomic dysfunction identified, patient had appropriate follow-up.	Process

## II. Gap Analysis

- Provide evidence for the measure (What are the gaps and opportunities to improve care?).

The Parkinson's Syndromes, MS, and ALS episode-based cost measure assesses costs related to the care of such neurodegenerative conditions, a current measurement gap in the MIPS cost performance category. This literature scan identifies three primary areas for improving care for Parkinson's syndromes, MS, and ALS. These include:

1. Improving fall-related education and treatment
2. Screening patients for additional comorbidities not related to physical complications
3. Mitigating drug interactions or use of inappropriate medications

In a survey of Parkinson's patients at 10 years of the disease, 39.8% indicated they were not exercising.<sup>9</sup> Increased activity improves both physical health and mental acuity in both Parkinson's and MS patients<sup>10</sup> and, in fact, significantly improves fall-related outcomes in Parkinson's patients.<sup>11</sup> Educating patients on the benefits of exercise and/or appropriate physical activity is thus imperative to the improvement of fall-related outcomes and reducing any costs of subsequent hospitalizations.

Beyond experiencing physical constraints, between 43 to 70% of MS patients report cognitive impairment, which requires regular assessment to detect.<sup>12</sup> Other studies have also found that clinically significant depressive disturbances affect 40 to 50% of Parkinson's patients, whereas only 36.9% of applicable providers completed a comprehensive annual review of psychiatric disorders.<sup>13,14</sup> As such, the screening of patients for both cognitive impairment and

<sup>9</sup> da Silva, Franciele Cascaes et al. "Effects of physical exercise programs on cognitive function in Parkinson's disease patients: A systematic review of randomized controlled trials of the last 10 years." *PLoS one* vol. 13,2 e0193113. 27 Feb. 2018, doi:10.1371/journal.pone.0193113

<sup>10</sup> Döring, Andrea et al. "Exercise in multiple sclerosis -- an integral component of disease management." *The EPMA journal* vol. 3,1 2. 24 Dec. 2011, doi:10.1007/s13167-011-0136-4

<sup>11</sup> Shen, Xia et al. "Effects of Exercise on Falls, Balance, and Gait Ability in Parkinson's Disease: A Meta-analysis." *Neurorehabilitation and neural repair* vol. 30,6 (2016): 512-27. doi:10.1177/1545968315613447

<sup>12</sup> Langdon, D W et al. "Recommendations for a Brief International Cognitive Assessment for Multiple Sclerosis (BICAMS)." *Multiple sclerosis (Houndmills, Basingstoke, England)* vol. 18,6 (2012): 891-8. doi:10.1177/1352458511431076

<sup>13</sup> Reijnders, Jennifer S A M et al. "A systematic review of prevalence studies of depression in Parkinson's disease." *Movement disorders : official journal of the Movement Disorder Society* vol. 23,2 (2008): 183-9; quiz 313. doi:10.1002/mds.21803

<sup>14</sup> Baek, William S et al. "Quality care assessment of Parkinson's disease at a tertiary medical center." *The International journal of neuroscience* vol. 123,4 (2013): 221-5. doi:10.3109/00207454.2012.751024

mental/behavioral health intervention represents a relevant opportunity to improve their quality of life. Studies focused on ALS have provided evidence these screenings can take place in both multidisciplinary and specialized clinics.<sup>15,16</sup> Beyond screening, patients can also benefit from referrals to additional evaluation and management.

Lastly, Parkinson's, MS, and ALS patients are also heavily dependent on medications to manage symptoms and additional comorbidities. The simultaneous use of multiple drugs has become more common in recent years, which increased the risk of potential drug-drug interactions (pDDIs). Drug interactions can affect the efficacy of one or more medications and lead to treatment failure and/or serious side effects.<sup>17</sup> Additionally, for patients with Parkinson's Disease, contra-indicated dopamine blocking agents are often used as antipsychotics, which can cause severe adverse drug reactions and worsen Parkinson's-related motor symptoms.<sup>18,19</sup>

- Expected outcome (patient care/patient health improvements, cost savings).

Implementing a value-based approach to the care of Parkinson's syndromes, MS, and ALS may help incentivize clinicians conduct a comprehensive assessment of patients to determine the appropriate diagnosis and develop a management plan for both physical and cognitive complications. The accurate diagnosis of these conditions is imperative to tackle symptoms at early stages and delaying disease progression. In-depth physical and neurological exams, combined with evaluation of medical, family, and behavioral history have shown to be important diagnostic tools. These, alongside technologies such as an MRI imaging, specialized neurological testing, and more specialized imaging or laboratory tests (including biological markers), can be useful to identify the specific disorder and its severity, therefore reducing unnecessary or counterproductive treatments.<sup>20,21,22</sup>

Physical and occupational therapy have also been repetitively cited to provide significant physical and mental benefits for movement disorders patients, which may assist in reducing costs with the alleviation of symptoms and fall-related outcomes.<sup>23</sup> One study also showed that long term physical therapy decreases the need for Parkinson's medications, amongst other benefits.<sup>24</sup> Speech pathology presents additional results in improving health outcomes, as many patients struggle with communication, swallowing, or speech difficulties throughout the course of their illness. Parkinson's<sup>25</sup> and ALS<sup>26</sup> patients may especially benefit from a variety of speech-related care. Clinicians may also consider varied Disease Modifying Therapies (DMTs) to help slow disease

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<sup>15</sup> Woolley, Susan C et al. "Detecting frontotemporal dysfunction in ALS: utility of the ALS Cognitive Behavioral Screen (ALS-CBS)." *Amyotrophic lateral sclerosis : official publication of the World Federation of Neurology Research Group on Motor Neuron Diseases* vol. 11,3 (2010): 303-11. doi:10.3109/17482961003727954

<sup>16</sup> Gordon, Paul H et al. "A screening assessment of cognitive impairment in patients with ALS." *Amyotrophic lateral sclerosis : official publication of the World Federation of Neurology Research Group on Motor Neuron Diseases* vol. 8,6 (2007): 362-5. doi:10.1080/17482960701500817

<sup>17</sup> Bachmann, Paula et al. 2022. "Prevalence and Severity of Potential Drug-Drug Interactions in Patients with Multiple Sclerosis with and without Polypharmacy" *Pharmaceutics* 14, no. 3: 592. <https://doi.org/10.3390/pharmaceutics14030592>

<sup>18</sup> Lertxundi, Unax et al. "Adverse reactions to antipsychotics in Parkinson disease: an analysis of the Spanish pharmacovigilance database." *Clinical neuropharmacology* vol. 38,3 (2015): 69-84. doi:10.1097/WNF.0000000000000080

<sup>19</sup> Weintraub, Daniel et al. "Patterns and trends in antipsychotic prescribing for Parkinson disease psychosis." *Archives of neurology* vol. 68,7 (2011): 899-904. doi:10.1001/archneurol.2011.139

<sup>20</sup> Stoessl, A Jon, and Martin J McKeown. "Movement disorders." *Handbook of clinical neurology* vol. 136 (2016): 957-69. doi:10.1016/B978-0-444-53486-6.00049-1

<sup>21</sup> Tolosa, Eduardo et al. "Challenges in the diagnosis of Parkinson's disease." *The Lancet. Neurology* vol. 20,5 (2021): 385-397. doi:10.1016/S1474-4422(21)00030-2

<sup>22</sup> Mahajan, Abhimanyu, and Ludy C Shih. "Introduction to Diagnostic Challenges in Movement Disorders." *Seminars in neurology* vol. 43,1 (2023): 2-3. doi:10.1055/s-0043-1762913

<sup>23</sup> Ortega-Hombrados, Laura et al. "Systematic Review of Therapeutic Physical Exercise in Patients with Amyotrophic Lateral Sclerosis over Time." *International journal of environmental research and public health* vol. 18,3 1074. 26 Jan. 2021, doi:10.3390/ijerph18031074

<sup>24</sup> Ji, Xiaotian et al. "Physical Therapy for at Least 6 Months Improves Motor Symptoms in Parkinson's Patients: A Meta-Analysis." *Computational and mathematical methods in medicine* vol. 2022 3393191. 31 Jul. 2022, doi:10.1155/2022/3393191

<sup>25</sup> Ransmayr, G. "Physical, occupational, speech and swallowing therapies and physical exercise in Parkinson's disease." *Journal of neural transmission (Vienna, Austria : 1996)* vol. 118,5 (2011): 773-81. doi:10.1007/s00702-011-0622-9

<sup>26</sup> De-Bernardi-Ojuel, Luis et al. "Occupational Therapy Interventions in Adults with Multiple Sclerosis or Amyotrophic Lateral Sclerosis: A Scoping Review." *International journal of environmental research and public health* vol. 18,4 1432. 3 Feb. 2021, doi:10.3390/ijerph18041432

progression, as Parkinson's,<sup>27,28</sup> MS,<sup>29,30</sup> and ALS<sup>31</sup> all have FDA approved therapies to address the diseases at varying levels.

- Recommendation for the measure (Is it based on a study, consensus opinion, USPSTF recommendation etc.?).

This measure is based on input from a Technical Expert Panel (TEP), Clinical Expert Workgroup, and other interested parties' feedback on the measure concept and the measure specifications.

### III. Reliability/Validity

- What testing has been performed at the level of implementation? (MIPS requires full measure testing at the individual clinician level (and may also need to be tested at the group level) for MIPS Clinical Quality Measures (CQMs) and Electronic Clinical Quality Measures (eCQMs) collection types. Administrative claims measures tested at the group level require a reliability threshold to be implemented at the group level.)

Please provide testing results including the N value, Bonnie test case results, correlation coefficient and any other pertinent information or values to be considered.

- Reliability Testing Results at the accountable entity level

Reliability evaluates a measure's ability to differentiate the performance of one clinician from another consistently. The signal-to-noise ratio is used to estimate reliability, which indicates how much of the variation in the measure score is explained by differences among clinicians' performance (i.e., signal) instead of differences within each clinician's performance (i.e., noise). Specifically, noise is the variation from one episode to another during the performance period for a particular clinician.

The table below shows reliability metrics at various testing volume thresholds. While higher thresholds yield higher reliability results, it is at the cost of further reducing the number of clinicians and clinician groups eligible for the measure, which would reduce the potential impact of the measure. We used a 20-episode volume threshold; for simplicity, we use this threshold across all measures. If the measure is implemented in MIPS in the future, CMS will establish a case minimum through notice-and-comment rulemaking.

CMS generally considers 0.4 as the threshold indicating 'moderate' reliability, which is supported by previous work into reliability and the threshold was finalized in the CY 2022 Physician Fee Schedule final rule<sup>32</sup>. At the 20-episode volume threshold, testing indicates that the mean reliability for the Parkinson's Syndromes, MS, and ALS measure is 0.611 at the TIN level (n= 2,930) and 0.571 at the TIN-NPI level (n= 2,930), indicating moderate level of reliability for the measure at both reporting levels. Additionally, 82.70% and 78.94% of TINs and TIN-NPIs, respectively, meet or exceed the moderate reliability threshold of 0.4.

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<sup>27</sup> Connolly, Barbara S, and Anthony E Lang. "Pharmacological treatment of Parkinson disease: a review." *JAMA* vol. 311,16 (2014): 1670-83. doi:10.1001/jama.2014.3654

<sup>28</sup> Sivanandy, Palanisamy et al. "Systematic Review on Parkinson's Disease Medications, Emphasizing on Three Recently Approved Drugs to Control Parkinson's Symptoms." *International journal of environmental research and public health* vol. 19,1 364. 30 Dec. 2021, doi:10.3390/ijerph19010364

<sup>29</sup> Rafiee Zadeh, Aryan et al. "Mechanism and adverse effects of multiple sclerosis drugs: a review article. Part 2." *International journal of physiology, pathophysiology and pharmacology* vol. 11,4 105-114. 15 Aug. 2019

<sup>30</sup> McGinley, Marisa P et al. "Diagnosis and Treatment of Multiple Sclerosis: A Review." *JAMA* vol. 325,8 (2021): 765-779. doi:10.1001/jama.2020.26858

<sup>31</sup> Soares, Pedro et al. "Drug discovery and amyotrophic lateral sclerosis: Emerging challenges and therapeutic opportunities." *Ageing research reviews* vol. 83 (2023): 101790. doi:10.1016/j.arr.2022.101790

<sup>32</sup> CMS, "Medicare Program; CY 2022 Payment Policies Under the Physician Fee Schedule and Other Changes to Part B Payment Policies; Medicare Shared Savings Program Requirements; Provider Enrollment Regulation Updates; and Provider and Supplier Prepayment and Post-Payment Medical Review Requirements," 86 FR 64996-66031.

**Table 3. Sample Size, Mean Reliability, and Proportion of Clinicians above Moderate Reliability at Various Testing Volume Thresholds**

Volume Threshold	TIN			TIN-NPI		
	Number of TINs	Mean Reliability	Percent Above 0.4	Number TIN-NPIs	Mean Reliability	Percent Above 0.4
10	5,258	0.505	63.56%	6,284	0.482	60.92%
20	2,930	0.611	82.70%	2,930	0.571	78.94%
30	2,133	0.671	91.37%	1,792	0.627	88.84%

- Face Validity Testing Results, Clinician Sites

Face validity testing was not conducted for the Parkinson's Syndromes, MS, and ALS measure.

- Empiric Validity Testing Results at the accountable entity level

Validity is a criterion used to assess whether the cost measure can quantify the construct it aims to measure, which is the cost directly related to treatment choices and the cost of adverse outcomes resulting from care. Validity is evaluated empirically by estimating the effect of relevant treatment choices on the measure score. This analysis first estimates the correlation between treatment choices and the measure score while controlling for adverse outcomes. Then the correlation between treatment choices and related adverse outcomes is calculated to demonstrate the indirect effect. Generally, adverse outcomes are non-trigger inpatient hospitalizations, non-trigger emergency room visits, and post-acute care. The remaining service categories are typically considered treatment.

Overall, the results demonstrate that the cost measure is reflective of both the cost directly related to treatment choices, as well as cost of adverse outcomes as a result of care (Table 4). Therefore, there's evidence that the measure is capturing what it purports to measure.

Model 1 shows that the cost of adverse events is associated with a worse measure score. Physical/occupational/speech pathology therapy, major procedures, imaging services, laboratory tests, and Part B medications are all associated with worse measure scores (Model 1) but also with lower costs of adverse events at the TIN-NPI level (Model 2), suggesting that these services are beneficial to patient outcomes but may be prone to overuse. Costs of outpatient evaluation and management (E/M) services and durable medical equipment are marginally associated with better measure scores at the TIN level (Model 1), which suggests that they are beneficial to the overall episode spending. Finally, Part D costs are associated with a worse measure score at both reporting levels but do not have a statistically significant association with the cost of adverse events, which could indicate the potential to reduce medication costs without increasing the occurrence of adverse events.

**Table 4: Estimated Effect of Treatment Choices on the Measure Score**

Service Categories	Coefficient in Thousands [95% Confidence Interval] (p-value)			
	TIN		TIN-NPI	
	Model 1: Mean O/E = Mean Cost of Treatment Choices + Mean Cost of Adverse Events	Model 2: Mean Cost of Adverse Events = Mean Cost of Treatment Choices	Model 1: Mean O/E = Mean Cost of Treatment Choices + Mean Cost of Adverse Events	Model 2: Mean Cost of Adverse Events = Mean Cost of Treatment Choices
Adverse Events	0.04 [0.04,0.05] (p < 0.01)	-	0.06 [0.05,0.06] (p < 0.01)	-
Outpatient Evaluation & Management Services	-0.05 [-0.07,-0.03] (p < 0.01)	4.34 [4.13,4.54] (p < 0.01)	-0.03 [-0.07,0.00] (p = 0.07)	3.87 [3.61,4.12] (p < 0.01)
Major Procedures	0.34 [0.25,0.44] (p < 0.01)	-1.38 [-2.40,-0.35] (p < 0.01)	0.14 [0.06,0.22] (p < 0.01)	-0.14 [-0.79,0.50] (p = 0.67)



Outpatient Physical, Occupational, or Speech and Language Pathology Therapy	0.06 [0.05,0.08] (p < 0.01)	0.08 [-0.09,0.26] (p = 0.35)	0.09 [0.07,0.11] (p < 0.01)	-0.26 [-0.40,-0.11] (p < 0.01)
Laboratory, Pathology, and Other Tests	0.14 [-0.02,0.30] (p = 0.08)	-5.17 [-6.90,-3.44] (p < 0.01)	0.32 [0.18,0.46] (p < 0.01)	-3.55 [-4.69,-2.42] (p < 0.01)
Imaging Services	0.25 [0.11,0.39] (p < 0.01)	-4.34 [-5.87,-2.82] (p < 0.01)	-0.02 [-0.12,0.09] (p = 0.75)	-0.92 [-1.76,-0.08] (p = 0.03)
Durable Medical Equipment and Supplies	0.00 [-0.01,0.00] (p = 0.59)	0.20 [0.15,0.25] (p < 0.01)	-0.01 [-0.02,0.01] (p = 0.33)	0.28 [0.19,0.38] (p < 0.01)
Chemotherapy and Other Part B-Covered Drugs	0.03 [0.02,0.03] (p < 0.01)	-0.04 [-0.06,-0.01] (p = 0.02)	0.03 [0.03,0.03] (p < 0.01)	-0.02 [-0.04,0.00] (p = 0.01)
Part-D Drugs	0.02 [0.02,0.02] (p < 0.01)	0.02 [-0.02,0.06] (p = 0.30)	0.02 [0.02,0.02] (p < 0.01)	0.03 [0.01,0.06] (p = 0.01)

- Data Element/Patient Encounter Level Testing

This is not applicable to the Parkinson's Syndromes, MS, and ALS measure.

- Exclusion Frequency

Exclusions specific to the Parkinson's Syndromes, MS, and ALS measure are developed with input from the Parkinson's Syndromes, MS, and ALS Clinician Expert Workgroup. These exclusion criteria ensure that the reportable episode populations are more homogenous and comparable than all episodes meeting the triggering logic for the measure. The table below displays descriptive statistics of all episodes meeting the measure's triggering logic, excluded episodes, and final reportable episodes at both TIN and TIN-NPI levels.

**Table 5: Frequency of Measure Exclusions**

Exclusion Criteria	Episodes	
	Count	% of All Episodes Meeting Trigger Logic
All Episodes Meeting Triggering Logic	467,336	100%
Beneficiary Death in Episode	69,794	14.93%
Outlier	7,896	1.69%
Microvascular Decompression	13	0.00%
Spinal Cord Injury	12	0.00%
Stereotactic Radiosurgery	64	0.01%
TIN does not Meet Testing Volume Threshold	102,494	21.93%
TIN-NPI does not Meet Testing Volume Threshold	261,424	55.94%
<b>Reportable Episodes</b> (if all clinicians reported as TIN at the testing volume threshold)	305,938	65.46%
<b>Reportable Episodes</b> (if all clinicians reported as TIN-NPI at the testing volume threshold)	131,723	28.19%

- What were the minimum sample sizes used for reliability results?

Please refer to table 2 for the breakdown of TINs and TIN-NPIs that meet the 10, 20, and 30 case volume thresholds used to assess reliability

- Other Information
  - Is it risk adjusted? If so, how?

The Parkinson's Syndromes, MS, and ALS episode-based cost measure is a risk-adjusted measure. The risk adjustment model for this measure uses a log-linear regression model, which utilizes variables from the CMS Hierarchical Condition Code Version 24 (CMS-HCC V24) 2021 Risk Adjustment Model. This includes comorbidities captured by 86 HCC codes that map with thousands of ICD-10-CM codes, and other standard risk adjustors, including interaction variables accounting for a range of comorbidities, patient level demographics (i.e., age) and health status (i.e., disability status, end-stage renal disease [ESRD] status, recent use of long-term care), dual eligibility, and types of clinician specialties from which the patient has received care. Additional risk adjustors that are clinically relevant to this measure were developed with input from the Parkinson's Syndromes, MS, and ALS Clinician Expert Workgroup. The measure is further stratified by sub-group and Part D enrollment status (i.e., Parkinson's and Related Conditions with/without Part D enrollment, MS with/without Part D enrollment, and ALS with/without Part D enrollment); risk adjustment is performed separately for episodes within each combination to allow for comparisons within more clinically homogenous cohorts.

As background for the risk adjustment approach, Acumen received generalized feedback on risk adjustment in episode-based cost measure calculation during a previous TEP meeting. This input informed the way in which the Clinician Expert Workgroup's feedback on risk adjustors and exclusions was sought and incorporated. The draft measure also underwent a national field testing period and public comment periods, where interested parties were able to provide feedback on the measure specifications including the risk adjustment model. The Clinician Expert Workgroup had an opportunity to further refine the measure specifications after considering feedback collected during field testing.

- What benchmarking information is available?

This measure provides a score evaluating clinician's risk-adjusted resource use as a dollar amount which can be compared with the scores for other clinicians, as well as relevant national averages.

- Collection Type: Specify the data collection type.

This measure uses administrative Medicare claims data.

- Specify measure stage of development.

This measure is fully developed.

- For Patient Reported Outcome Performance Measures:
  - The survey or tool has been tested and does not require modifications based on results?
  - Patient/encounter level testing for each critical data element does not require changes to the tool base on the results?

This is not applicable to the Parkinson's Syndromes, MS, and ALS measure.

#### IV. Endorsement

- Provide the Consensus-Based Entity (CBE) (i.e., Partnership for Quality Measures (PQM)) endorsement status (and CBE ID) and/or other endorsing body. If the measure is only endorsed for paper records, please note endorsement for only the data source being submitted.

This measure is not currently endorsed by the CBE and has never been submitted for endorsement.

#### V. Summary

- Alignment with CMS Meaningful Measures Initiative or MACRA (if applicable).

This cost measure aligns CMS's Meaningful Measures 2.0 domain of Affordability and Efficiency. Through this measure, we aim to improve care by optimizing health outcomes and resource use



associated with treating and managing Parkinson's Syndromes, MS, and ALS. The development of episode groups for resource use analysis is also required by section 101(f) of MACRA.

- Relevance to MIPS or other CMS programs.

This measure would be proposed in future rulemaking for inclusion in the Cost performance category for MIPS. If finalized through rulemaking, the measure would assess clinician performance in the Cost performance category, and could count toward the overall MIPS final score.

- Rationale: Use of measure for inclusion in program (specialty society, regional collaborative, other).

The Parkinson's Syndromes, MS, and ALS episode-based cost measure was selected for development because of its impact in terms of patient population, clinician coverage, and Medicare spending, and assesses costs for a condition not captured by other cost measures, as well as addressing a gap in clinician coverage of cost measures, as other existing episode-based cost measures are not applicable to neurologists providing chronic care and outpatient care management. Following measure selection based on prior public comments and feedback, initial empirical analyses, and CMS priority areas, the subsequent measure-specific clinician expert workgroup provided extensive, detailed input on this measure. The measure's development is aligned with episode-based cost measures currently used in the program.

- Public reporting (if applicable).

This is not applicable to the Parkinson's Syndromes, MS, and ALS measure.

- Preferable relevant peer-reviewed journal for publication.

JAMA Neurology, Neurology Journals, and Neurology Clinical Practice

- Rationale as to how the measure correlates to existing cost measures and improvement activities, as applicable and feasible.

This episode-based cost measure correlates with episode-based cost measures currently used in the Cost performance category of MIPS, as they were developed under the same comprehensive framework and systematic process that account for the roles and responsibilities of individual clinicians in the care of patients experiencing specific health conditions. Compared to the two population-based cost measures used in MIPS, Medicare Spending Per Beneficiary (MSPB) clinician and TPCC, episode-based cost measures only include items and services related to the episode for a clinical condition or procedure as opposed to all services provided to a patient over a given timeframe. While the two population-based measures may capture some of the same costs as episode-based cost measures, there is no risk of double counting as the measures are calculated separately and averaged into a single score for the MIPS Cost performance category. Across the different episode-based cost measures, each measure is tailored to assess the clinician's role in performing a particular procedure or managing a specific condition adjusted by specialty for the defined scope of the measure.

There are no improvement activities in MIPS specific to Parkinson's syndromes, MS, or ALS. However, there are improvement activities related to chronic care and care transition, Chronic Care and Preventative Care Management for Empowered Patients (IA\_PM\_13), Care Transition Documentation Practice Improvements (IA\_CC\_10), and Care Transition Standard Operational Improvements (IA\_CC\_11), which may correlate with the Parkinson's Syndromes, MS, and ALS measure as it aims to improve outcomes for patients that have chronic conditions or diseases and care transition.