aaPM&R

American Academy of
Physical Medicine and Rehabilitation

American Academy of Physical Medicine & Rehabilitation (AAPM&R)

AAPM&R's 2019 - Registry Measure

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AAPM&R #1: Assessment and Management of Muscle Spasticity—Inpatient Setting

Measure Description	Percentage of patients, regardless of age with a diagnosis of stroke, acquired brain injury (ABI), spinal cord injury (SCI), cerebral palsy (CP), or multiple sclerosis (MS) who are admitted to inpatient rehabilitation, skilled nursing facility, or long-term care hospital with a documented assessment of muscle spasticity **AND** if muscle spasticity is present, a plan of care to monitor and/or manage muscle spasticity is documented prior to discharge Three rates are reported: 1. Percentage of patients, regardless of age with a diagnosis of stroke, acquired brain injury (ABI), spinal cord injury (SCI), cerebral palsy (CP), or multiple sclerosis (MS) who are admitted to inpatient rehabilitation, skilled nursing facility, or long-term care hospital with a documented assessment of muscle spasticity prior to discharge 2. Percentage of patients regardless of age with a diagnosis of stroke, acquired brain injury (ABI), spinal cord injury (SCI), cerebral palsy (CP), or multiple sclerosis (MS) who are admitted to inpatient rehabilitation, skilled nursing facility, or long-term care hospital with muscle spasticity who have a documented plan of care to monitor and/or manage muscle spasticity prior to discharge. 3. Percentage of patients, regardless of age with a diagnosis of stroke, acquired brain injury (ABI), spinal cord injury (SCI), cerebral palsy (CP), or multiple sclerosis (MS) who are admitted to inpatient rehabilitation, skilled nursing facility, or long-term care hospital with a documented assessment of muscle spasticity **AND** if muscle spasticity is present, a plan of care to monitor and/or manage muscle spasticity is documented prior to discharge
Numerator Statement	Numerator 1: Patients with a documented assessment of muscle spasticity prior to discharge Numerator 2: Patients who have a documented plan of care to monitor and/or manage muscle spasticity prior to discharge Numerator 3: Patients with a documented assessment of muscle spasticity AND if muscle spasticity is present have a documented plan of care to monitor and/or manage muscle spasticity prior to discharge
Denominator Statement	Denominator 1: All patients, regardless of age with any of the following diagnoses: stroke, acquired brain injury (ABI), spinal cord injury (SCI), cerebral palsy (CP), multiple sclerosis (MS) who are admitted to inpatient rehabilitation, skilled nursing facility, or long-term care hospital Denominator 2: All patients, regardless of age with any of the following diagnoses: stroke, acquired brain injury (ABI), spinal cord injury (SCI), cerebral palsy (CP), multiple sclerosis (MS) who are admitted to inpatient rehabilitation, skilled nursing facility, or long-term care hospital with muscle spasticity Denominator 3: All patients, regardless of age with any of the following diagnoses: stroke, acquired brain injury (ABI), spinal cord injury (SCI), cerebral palsy (CP), multiple sclerosis (MS) who are admitted to inpatient rehabilitation, skilled nursing facility, or long-term care hospital
Denominator Exclusions	Patients with an inpatient rehabilitation stay less than 24 hours

Denominator Exceptions	None
Definition	Documented assessment is defined as completion of a valid assessment tool (e.g. Modified Ashworth Scale, Modified Tardieu Scale, King's Hypertonicity Scale, or Tone Assessment Scale. or other valid tools. Functional assessment scales (e.g., Barthel Index, Patient's Disability Scale, Disability Assessment Scale, Patient's Disability & Career Burden Rating Scale) could also be used. A documented plan of care may include but is not limited to: active surveillance; education; stretching; bracing/splinting/casting, orthotics; positioning; medical management of exacerbating conditions (e.g. urinary tract infection, pressure sores, fecal impaction); physical therapy; occupational therapy; speech therapy; medications (including injectables); surgery, recommendation for periodic follow-up.
Guidance	This measure contains three reporting rates which aim to identify patients who were assessed for muscle spasticity prior to discharge (numerator/denominator 1), patients who were identified as having muscle spasticity and who have a documented plan of care to monitor and/or manage muscle spasticity prior to discharge (numerator/denominator 2), and a comprehensive look at overall performance on assessment and management of muscle spasticity (numerator/denominator 3). By separating the measure into various reporting rates, the eligible professional or eligible clinician will be able to better ascertain where gaps in performance exist, and identify opportunities for improvement. The overall rate (numerator/denominator 3) can be used for quality reporting purposes.
Supporting Guidelines and Other References	The following evidence statements are quoted verbatim from the referenced clinical guidelines and other sources, where applicable: **<u>Stroke</u>** Assessment, Prevention, and Treatment of Hemiplegic Shoulder Pain: A clinical assessment can be useful, including evaluation of spasticity. (Class IIa Recommendation; Level of Evidence C) (AHA/ASA, 2016)[1] Assessment of Motor Impairment, Activity, and Mobility: Motor impairment assessments (paresis/muscle strength, tone, individuated finger movements, coordination) with standardized tools may be useful. (Class IIb Recommendation, Level of Evidence C) (AHA/ASA, 2016) Assessment for major medical poststroke complications (DVT/PE, skin breakdown, spasticity, aspiration, malnutrition, contractures, and seizures) using reliable, valid, and widely accepted assessment methods is recommended. (Inpatient Setting: Class I, Level of Evidence A; Outpatient Setting: Class I, Level of Evidence A; Chronic Care Setting: Class I, Level of Evidence) (AHA, 2010)[2] Targeted injection of botulinum toxin into localized upper limb muscles is recommended to reduce spasticity, to improve passive or active range of motion, and to improve dressing, hygiene, and limb positioning. (Class I Recommendation, Level of Evidence A) (AHA/ASA, 2016)[1] Targeted injection of botulinum toxin into lower limb muscles is recommended to reduce spasticity that interferes with gait function. (Class I Recommendation, Level of Evidence A) (AHA/ASA, 2016)[1] Oral antispasticity agents can be useful for generalized spastic dystonia but may result in dose-limiting sedation or other side effects. (Class IIa; Level of Evidence A) (AHA/ASA, 2016)[1]

Physical modalities, such as NMES or vibration applied to spastic muscles may be reasonable to improve spasticity temporarily as an adjunct to rehabilitation therapy (Class IIb Recommendation; Level of Evidence A) (AHA/ASA, 2016)[1]

Intrathecal baclofen therapy may be useful for severe spastic hypertonia that does not respond to other interventions. (Class IIb Recommendation, Level of Evidence A) (AHA/ASA, 2016)[1]

Acquired Brain Injury

From the Ontario Neurotrauma Foundation Clinical Practice Guideline for the Rehabilitation of Adults with Moderate to Severe TBI:

Individuals with traumatic brain injury with spasticity should be assessed and provided with a coordinated plan of care for interdisciplinary management including:

- Identification and management of aggravating factors such as pain, bladder and bowel distention, skin irritation, and infection.
- Use of specific treatment modalities such as serial casting or removable splints.
- Use of anti-spasticity medications.
- Rehabilitation interventions that consider a range of motion, flexibility, and positioning routine. (Consensus Recommendation) (Ontario Neurotrauma Foundation, 2015)[3]

Botulinum neurotoxin therapy (BoNT) may be considered to reduce tone and deformity in individuals with traumatic brain injury with focal spasticity. (Priority Recommendation; Level of Evidence: B). (Ontario Neurotrauma Foundation, 2015)[3]

Botulinum neurotoxin therapy (BoNT) for individuals with traumatic brain injury should be used in an interdisciplinary setting with physiotherapist/occupational therapist and orthotist inputs where appropriate. (Level of Evidence C) (Ontario Neurotrauma Foundation, 2015)[3]
Oral baclofen, tizanidine, or dantrolene sodium may be considered for treatment of spasticity in individuals with traumatic brain injury.
Note: Physicians should consider and monitor the sedative and cognitive side effects when prescribing these medications. (Level of Evidence C) Ontario Neurotrauma Foundation, 2015)[3]

A trial of intrathecal baclofen for the treatment of severe spasticity in individuals with traumatic brain injury may be considered ager other treatment options have been exhausted, i.e., antispasticity medications (e.g., baclofen, dantrolene, tizanidine, botulinum toxin), casting, splinting, or stretching. The trial should be carefully monitored for possible complications, including pump malfunction. Consideration must also be given to the individual's ability to access ongoing follow-up, for example, to get refills, in case of a malfunction or for troubleshooting. (Level of Evidence: C) (Ontario Neurotrauma Foundation, 2015)[3]

Cerebral Palsy

Treatment of localized or segmental spasticity recommendations:

1. For localized/segmental spasticity in the upper and lower extremities of children with CP that warrants treatment. BoNT-A should be offered as an effective and generally safe treatment (Level A) There is insufficient evidence to support the use of BoNT-A to improve motor function in this population. (Level U) (AAN, 2010)[4]
2. There is insufficient evidence to support or refute the use of BoNT-B, phenol, and alcohol injections as treatments for spasticity in children with spastic CP. (Level U) (AAN, 2010)[4]

Treatment of generalized spasticity recommendations:

1. Diazepam should be considered as a short-term antispasticity treatment in children with CP (Level B). There is insufficient evidence to support or refute the use of diazepam to improve motor function in this population. (Level U) (AAN, 2010)[4]
2. There is insufficient evidence to support or refute the use of dantrolene for the treatment of spasticity in children with CP. (Level U) (AAN, 2010)[4]
3. There is insufficient evidence to support or refute the use of oral baclofen for the treatment of spasticity or to improve motor function in children with CP. (Level U) (AAN. 2010)[4]
4. Tizanidine may be considered for the treatment of spasticity in children with CP (Level C). There is insufficient evidence to support or refute the use of tizanidine to improve motor function in this population. (Level U) (AAN, 2010)[4]
5. There is insufficient evidence to support or refute the use of continuous ITB for the treatment of spasticity in children with CP. (Level U) (AAN, 2010)[4]

Multiple Sclerosis

The panel recommends that spasticity be evaluated as part of routine evaluation whether the person with MS makes a specific complaint. Documentation of baseline reflexes, Ashworth Scale, modified Ashworth Scale, Spasm Frequency Score, a clinical measure of pain intensity, or other measures provided a useful baseline for subsequent follow up. (Expert Consensus) (MSC, 2005)[5]

Goal: To optimize the person's participation in an intervention, increase adherence, and minimize secondary complications associated with spasticity, especially pain, skin breakdown, and contracture. Procedure: Provide a treatment plan that is individualized for each person, considering the individual's ability to adhere to the plan. (Level U/Expert Consensus) (MSC, 2005)[5]

Goal: To limit future disability and enhance quality of life: Procedure: Recommend community-based exercise that promotes stretching, strengthening, endurance, and function. (Level U/Expert Consensus) (MSC, 2005)[5]

Goal; To offer the most targeted treatment appropriate for the individual. Procedure: Use information from the history and physical exam to determine of impairments are caused by spasticity that is focal or generalized. (Level U/Expert Consensus) (MSC, 2005)[5]
Goal: To relieve focal spasticity: Procedure: Have appropriate specialists evaluate for and perform neuromuscular blocks. In practice, this is done in conjunction with referral for skilled rehabilitation therapies. (Level A Recommendation) (MSC, 2005)[5]
Focal Spasticity: Goal: To optimize function and to minimize secondary disability due to spasticity, Procedure: Provide a skilled rehabilitation program in conjunction with neuromuscular blocks. (Level A Recommendation) (MSC, 2005)[5]

Generalized Spasticity: Goal: To optimize function and to minimize secondary disability due to spasticity. Procedure: In the presence of generalized spasticity, refer to a skilled rehabilitation program. In practice, skilled rehabilitation strategies are often prescribed with oral pharmacotherapy. (Level A Recommendation) (MSC, 2005)[5]

In the presence of generalized spasticity, rehabilitation is an essential component of management, however the current state of rehabilitation research has not delineated a single modality that is sufficiently effective in the treatment of spasticity. Specific modalities:

1. Range of Motion (Level U/Expert Consensus)[5]
2. Stretching (Level U/Expert Consensus)[5]
3. Strengthening (Level U/Expert Consensus)
4. Light pressure stroking (Level U/Expert Consensus)[5]

5. Cold (Level B Recommendation)[5]. There is insufficient evidence to support the use of cooling as an independent modality in the treatment of spasticity.
6. Heat (Level U/Expert Consensus)[5]. The panel does not recommend the use of heat to treat spasticity in individuals with MS. Warm pools may be acceptable when a person's functional status is not adversely impacted by heat.
7. Education (Level U/Expert Consensus)[5]. Education fosters informed decisions, active participation, and long-term transition from a skilled environment to the community.
8. Compensatory Strategies to Optimize Energy Effectiveness
9. Gait Training: (Level U/Expert Consensus)[5]. Gait training used in conjunction with prescription of orthotics and aids enhances the safe use of assistive technology and mobility.
10. Upper and Lower Extremity Assistive Technology (Level U/Expert Consensus)5
11. Wheelchairs (Level U/Expert Consensus)[5]
12. TENS (Level U Expert Consensus)[5] TENS may be useful in selected patients with painful spasms.
13. Electrical Stimulation (Level U/Expert Consensus)[5]
14. Magnetic Stimulation (Level U/Expert Consensus)[5] There is evidence that magnetic stimulation has a transient effect on spasticity, but insufficient evidence to support its use for routine treatment of spasticity.

Goal: To effectively treat spasticity. Procedure: Initiate treatment with a single agent selected considering the person's preferences and the agent's efficacy, side effect profile, and cost. For spasticity that lasts most of the day, start with either baclofen or tizanidine (Level A Recommendation). In head-to-head studies of these two drugs, the evidence demonstrates no compelling difference in effect on spasticity (Level of Evidence B). A step therapy approach with individual agents should precede the use of combination therapy (Level U/Expert Consensus). In practice, oral pharmacotherapy and skilled rehabilitation strategies are often done concurrently[5].

Goal: To treat those individuals whose spasticity is not adequately responsive to oral and rehabilitation strategies. Procedure: Refer to center with extensive experience for baclofen pump evaluation, implantation, and management. (Level A Recommendation with Expanded Disability Status Scale (EDSS) of 7 or above; Level C Recommendation for patients with EDSS of 5.0-6,5). Intrathecal therapy is effective for patients with MS for whom oral therapy alone has failed[5].

Goal: To determine if the person's impairments and disabilities can reasonably be addressed by the anticipated benefits of other procedures including: paravertebral spinal nerve block with phenol or ethyl alcohol; intrathecal nerve root block with phenol or ethyl alcohol; dorsal rhizotomy; tenotomy; myelotomy; cordotomy. Procedure: Refer to the appropriate specialists. These approaches may not be beneficial for people with MS who are not appropriate candidates or who do not respond to other therapies. (Level U/Expert Consensus)[5]

While clinical guideline evidence is not currently available treatment of muscle spasticity in patients with spinal cord injury, the TEP agreed that this is an important aspect of care for this patient population and that the treatment of muscle spasticity for these patients is essentially the same as it is for those diagnoses where clinical guideline evidence is available.

While clinical guideline evidence is not currently available regarding completion of an assessment of muscle spasticity in patients with spinal cord injury and cerebral palsy, the TEP agreed that this is an important aspect of care for these patient populations and that the assessment of muscle spasticity for these patients is essentially the same as it is for those diagnoses where clinical guideline evidence is available.

Rationale	Muscle spasticity can occur due to many central nervous system conditions, such as stroke, acquired brain injury (ABI), spinal cord injury (SCI), cerebral palsy (CP), or multiple sclerosis (MS)[6]. Assessment of the severity of muscle spasticity and the effect of the muscle spasticity symptoms on the individual is the first step in determining the plan of care[7]. While there are no specific studies addressing patient outcomes if the assessment of spasticity does not occur in patients with these diagnoses, it is the first step in determining the best course of treatment. Development and documentation of a plan of care to address muscle spasticity management in these populations (stroke, ABI, SCI, CP, and MS), is key, given that there are numerous options available and that management is based on individual patient assessment and needs[7, 8]. While it is not known how often a plan of care is not documented in these populations, the TEP believes it is an important aspect of care.
Measure Designation	
Measure Purpose	Quality Improvement Accountability
Measure Type	Process
Level of Measurement	Individual Practitioner Group Practice
Improvement Notation	Higher score indicates better quality
National Quality Strategy Priority/CMS Measure Domain	☐Communication and Care Coordination ☐Community/Population Health ☒Effective Clinical Care ☐Efficiency and Cost Reduction ☐Patient Safety ☐Person and Caregiver-Centered Experience

AAPM&R #2: Management of Muscle Spasticity--Outpatient

Measure Description	Percentage of patients, regardless of age with any of the following diagnoses: stroke, acquired brain injury (ABI), spinal cord injury (SCI), cerebral palsy (CP), multiple sclerosis (MS) with muscle spasticity who are seen for an office visit during the measurement period with a documented plan of care to monitor and/or manage muscle spasticity
Numerator Statement	Patients with a documented plan of care* to monitor and/or manage muscle spasticity *A documented plan of care may include but is not limited to: active surveillance; education; stretching; bracing/splinting/casting, orthotics; positioning; medical management of exacerbating conditions (e.g. urinary tract infection, pressure sores, fecal impaction); physical therapy; occupational therapy; speech therapy; medications (including injectables); surgery, recommendation for periodic follow-up.
Denominator Statement	All patients, regardless of age with any of the following diagnoses: stroke, acquired brain injury (TBI), spinal cord injury (SCI), cerebral palsy (CP), multiple sclerosis (MS) with muscle spasticity who are seen for an office visit during the measurement period
Denominator Exclusions	None
Denominator Exceptions	Documentation of medical reason(s) for not documenting a plan of care to manage muscle spasticity (e.g., documentation that another provider is managing the muscle spasticity)
Supporting Guidelines and Other References	The following evidence statements are quoted verbatim from the referenced clinical guidelines and other sources, where applicable: **Stroke** Targeted injection of botulinum toxin into localized upper limb muscles is recommended to reduce spasticity, to improve passive or active range of motion, and to improve dressing, hygiene, and limb positioning. (Class I Recommendation, Level of Evidence A) (AHA/ASA, 2016)[1] Targeted injection of botulinum toxin into lower limb muscles is recommended to reduce spasticity that interferes with gait function. (Class I Recommendation, Level of Evidence A) (AHA/ASA, 2016)[1] Oral antispasticity agents can be useful for generalized spastic dystonia but may result in dose-limiting sedation or other side effects. (Class IIa; Level of Evidence A) (AHA/ASA, 2016)[1] Physical modalities, such as NMES or vibration applied to spastic muscles may be reasonable to improve spasticity temporarily as an adjunct to rehabilitation therapy (Class IIb Recommendation; Level of Evidence A) (AHA/ASA, 2016)[1] Intrathecal baclofen therapy may be useful for severe spastic hypertonia that does not respond to other interventions. (Class IIb Recommendation, Level of Evidence A) (AHA/ASA, 2016)[1] **Acquired Brain Injury** Botulinum neurotoxin therapy (BoNT) may be considered to reduce tone and deformity in individuals with traumatic brain injury with focal spasticity. (Priority Recommendation; Level of Evidence: B). (Ontario Neurotrauma Foundation, 2015)[3] Botulinum neurotoxin therapy (BoNT) for individuals with traumatic brain injury should be used in an interdisciplinary setting with physiotherapist/occupational therapist and orthotist inputs where appropriate. (Level of Evidence C) (Ontario Neurotrauma Foundation, 2015)[3]

Oral baclofen, tizanidine, or dantrolene sodium may be considered for treatment of spasticity in individuals with traumatic brain injury.
Note: Physicians should consider and monitor the sedative and cognitive side effects when prescribing these medications. (Level of Evidence C) Ontario Neurotrauma Foundation, 2015)[3]

A trial of intrathecal baclofen for the treatment of severe spasticity in individuals with traumatic brain injury may be considered ager other treatment options have been exhausted, i.e., antispasticity medications (e.g., baclofen, dantrolene, tizanidine, botulinum toxin), casting, splinting, or stretching. The trial should be carefully monitored for possible complications, including pump malfunction. Consideration must also be given to the individual's ability to access ongoing follow-up, for example, to get refills, in case of a malfunction or for troubleshooting. (Level of Evidence: C) (Ontario Neurotrauma Foundation, 2015)[3]

Cerebral Palsy

Treatment of localized or segmental spasticity recommendations:

3. For localized/segmental spasticityin the upper and lower extremities of children with CP that warrants treatment. BoNT-A should be offered as an effective and generally safe treatment (Level A) There is insufficient evidence to support the use of BoNT-A to improve motor function in this population. (Level U) (AAN, 2010)[4]
4. There is insufficient evidence to support or refute the use of BoNT-B, phenol, and alcohol injections as treatments for spasticity in children with spastic CP. (Level U) (AAN, 2010)[4]

Treatment of generalized spasticity recommendations:

6. Diazepam should be considered as a short-term antispasticity treatment in children with CP (Level B). There is insufficient evidence to support or refute the use of diazepam to improve motor function in this population. (Level U) (AAN, 2010)[4]
7. There is insufficient evidence to support or refute the use of dantrolene for the treatment of spasticity in children with CP. (Level U) (AAN, 2010)[4]
8. There is insufficient evidence to support or refute the use of oral baclofen for the treatment of spasticity or to improve motor function in children with CP. (Level U) (AAN. 2010)[4]
9. Tizanidine may be considered for the treatment of spasticity in children with CP (Level C). There is insufficient evidence to support or refute the use of tizanidine to improve motor function in this population. (Level U) (AAN, 2010)[4]
10. There is insufficient evidence to support or refute the use of continuous ITB for the treatment of spasticity in children with CP. (Level U) (AAN, 2010)[4]

Multiple Sclerosis

Goal: To optimize the person's participation in an intervention, increase adherence, and minimize secondary complications associated with spasticity, especially pain, skin breakdown, and contracture. Procedure: Provide a treatment plan that is individualized for each person, considering the individual's ability to adhere to the plan. (Level U/Expert Consensus) (MSC, 2005)[5]

Goal: To limit future disability and enhance quality of life: Procedure: Recommend community-based exercise that promotes stretching, strengthening, endurance, and function. (Level U/Expert Consensus) (MSC, 2005)[5]

Goal; To offer the most targeted treatment appropriate for the individual. Procedure: Use information from the history and physical exam to determine of impairments are caused by spasticity that is focal or generalized. (Level U/Expert Consensus) (MSC, 2005)[5]

Goal: To relieve focal spasticity: Procedure: Have appropriate specialists evaluate for and perform neuromuscular blocks. In practice, this is done in conjunction with referral for skilled rehabilitation therapies. (Level A Recommendation) (MSC, 2005)[5]
Focal Spasticity: Goal: To optimize function and to minimize secondary disability due to spasticity, Procedure: Provide a skilled rehabilitation program in conjunction with neuromuscular blocks. (Level A Recommendation) (MSC, 2005)[5]

Generalized Spasticity: Goal: To optimize function and to minimize secondary disability due to spasticity. Procedure: In the presence of generalized spasticity, refer to a skilled rehabilitation program. In practice, skilled rehabilitation strategies are often prescribed with oral pharmacotherapy. (Level A Recommendation) (MSC, 2005)[5]

In the presence of generalized spasticity, rehabilitation is an essential component of management, however the current state of rehabilitation research has not delineated a single modality that is sufficiently effective in the treatment of spasticity. Specific modalities:

15. Range of Motion (Level U/Expert Consensus)[5]
16. Stretching (Level U/Expert Consensus)[5]
17. Strengthening (Level U/Expert Consensus)
18. Light pressure stroking (Level U/Expert Consensus)[5]
19. Cold (Level B Recommendation)[5]. There is insufficient evidence to support the use of cooling as an independent modality in the treatment of spasticity.
20. Heat (Level U/Expert Consensus)[5]. The panel does not recommend the use of heat to treat spasticity in individuals with MS. Warm pools may be acceptable when a person's functional status is not adversely impacted by heat.
21. Education (Level U/Expert Consensus)[5]. Education fosters informed decisions, active participation, and long-term transition from a skilled environment to the community.
22. Compensatory Strategies to Optimize Energy Effectiveness
23. Gait Training: (Level U/Expert Consensus)[5]. Gait training used in conjunction with prescription of orthotics and aids enhances the safe use of assistive technology and mobility.
24. Upper and Lower Extremity Assistive Technology (Level U/Expert Consensus)[5]
25. Wheelchairs (Level U/Expert Consensus)[5]
26. TENS (Level U Expert Consensus)[5] TENS may be useful in selected patients with painful spasms.
27. Electrical Stimulation (Level U/Expert Consensus)[5]
28. Magnetic Stimulation (Level U/Expert Consensus)[5] There is evidence that magnetic stimulation has a transient effect on spasticity, but insufficient evidence to support its use for routine treatment of spasticity.

Goal: To effectively treat spasticity. Procedure: Initiate treatment with a single agent selected considering the person's preferences and the agent's efficacy, side effect profile, and cost. For spasticity that lasts most of the day, start with either baclofen or tizanidine (Level A Recommendation). In head-to-head studies of these two drugs, the evidence demonstrates no compelling difference in effect on spasticity (Level of Evidence B). A step therapy approach with individual agents should precede the use of combination therapy (Level U/Expert Consensus). In practice, oral pharmacotherapy and skilled rehabilitation strategies are often done concurrently[5].

Goal: To treat those individuals whose spasticity is not adequately responsive to oral and rehabilitation strategies. Procedure: Refer to center with extensive experience for baclofen pump evaluation, implantation, and management. (Level A Recommendation with Expanded Disability Status Scale (EDSS) of 7 or above; Level C Recommendation for patients with EDSS of 5.0-6,5). Intrathecal therapy is effective for patients with MS for whom oral therapy alone has failed[5].

	Goal: To determine if the person's impairments and disabilities can reasonably be addressed by the anticipated benefits of other procedures including: paravertebral spinal nerve block with phenol or ethyl alcohol; intrathecal nerve root block with phenol or ethyl alcohol; dorsal rhizotomy; tenotomy; myelotomy; cordotomy. Procedure: Refer to the appropriate specialists. These approaches may not be beneficial for people with MS who are not appropriate candidates or who do not respond to other therapies. (Level U/Expert Consensus)[5] While clinical guideline evidence is not currently available treatment of muscle spasticity in patients with spinal cord injury, the TEP agreed that this is an important aspect of care for this patient population and that the treatment of muscle spasticity for these patients is essentially the same as it is for those diagnoses where clinical guideline evidence is available.
Rationale	Development and documentation of a plan of care to address muscle spasticity management in these populations (stroke, ABI, SCI, CP, and MS), is key, given that there are numerous options available and that management is based on individual patient assessment and needs[7,8]. While it is not known how often a plan of care is not documented in these populations, the TEP believes it is an important aspect of care.
Measure Designation	
Measure Purpose	Quality Improvement Accountability
Measure Type	Process
Level of Measurement	Individual Practitioner Group Practice
Improvement Notation	Higher score indicates better quality
National Quality Strategy Priority/CMS Measure Domain	☐Communication and Care Coordination ☐Community/Population Health ☒Effective Clinical Care ☐Efficiency and Cost Reduction ☐Patient Safety ☐Person and Caregiver-Centered Experience

AAPM&R #3: Functional Assessment to Determine Rehabilitation Needs

Measure Description	Percentage of patients aged 18 years and older who have experienced an acute brain injury (ischemic stroke, hemorrhagic stroke, acute brain injury) and are admitted to acute care who have a comprehensive functional assessment to determine rehabilitation needs performed prior to discharge
Numerator Statement	Patients who have a comprehensive functional assessment* to determine rehabilitation needs performed prior to discharge *Functional assessment must include the following: assessments of residual neurological deficits; activity limitations; cognitive, communicative, and psychological status; swallowing ability; determination of previous functional ability and medical comorbidities; level of family/caregiver support; capacity of family/caregiver to meet the care needs of the stroke survivor; likelihood of returning to community living; and ability to participate in rehabilitation. **A validated tool that addresses these items may be used to complete the functional assessment and meet the intent of the numerator
Denominator Statement	All patients aged18 and older who have experienced an acute brain injury (ischemic stroke, hemorrhagic stroke, acute brain injury) and are admitted to acute care
Denominator Exclusions	None
Denominator Exceptions	None
Supporting Guidelines and Other References	The following evidence statements are quoted verbatim from the referenced clinical guidelines and other sources, where applicable: It is recommended that stroke survivors receive rehabilitation at an intensity commensurate with anticipated benefit and tolerance. (Class I, Level of Evidence B) (AHA/ASA, 2016)[1] Determination of postacute rehabilitation needs should be based on assessments of residual neurological deficits; activity limitations; cognitive, communicative, and psychological status; swallowing ability; determination of previous functional ability and medical comorbidities; level of family/caregiver support; capacity of family/caregiver to meet the care needs of the stroke survivor; likelihood of returning to community living; and ability to participate in rehabilitation. (Class I, Level of Evidence C) (AHA/ASA, 2016)[1]
Rationale	Ensuring that patients who have experienced a stroke receive the level of rehabilitation services appropriate for their needs is dependent on a complete and comprehensive functional assessment. While there are some standardized functional assessment scales that can be used (e.g. Barthel Index, NIH Stroke Scale), these do not give a complete view of the rehabilitation needs of the patient due to some of their limitations. There are some patients who score a “0” on the NIH Stroke Scale and still exhibit functional limitations[9,10]. This measure highlights the importance of the completion of a functional assessment prior to the patient being discharged from the acute care setting.
Measure Designation	
Measure Purpose	Quality Improvement Accountability
Measure Type	Process
Level of Measurement	Individual Practitioner Group Practice

Improvement Notation	Higher score indicates better quality
National Quality Strategy Priority/CMS Measure Domain	☐Communication and Care Coordination ☐Community/Population Health ☒Effective Clinical Care ☐Efficiency and Cost Reduction ☐Patient Safety ☐Person and Caregiver-Centered Experience

AAPM&R #4: Family Training—Inpatient Rehabilitation/Skilled Nursing Facility—Discharged to Home

Measure Description	Percentage of patients aged 18 years and older who have experienced an acute brain injury (ischemic stroke, hemorrhagic stroke, acute brain injury) discharged from inpatient rehabilitation, skilled nursing facility, or long-term care hospital to home, whose family/caregiver(s) demonstrated successful teach-back regarding skills for care of the patient in the home setting
Numerator Statement	Patients whose family/caregiver(s) demonstrated successful teach-back* regarding skills for care of the patient in the home setting *Ability to perform skills safely and without assistance on at least once occasion
Denominator Statement	All patients aged 18 years and older who have experienced an acute brain injury (ischemic stroke, hemorrhagic stroke, acute brain injury) discharged from inpatient rehabilitation, skilled nursing facility, or long-term care hospital to home
Denominator Exclusions	None
Denominator Exceptions	Documentation of patient reason(s) for family/caregiver not demonstrating successful teach-back regarding skills for care of the patient in the home setting (e.g., patient does not have family/caregiver available).
Supporting Guidelines and Other References	The following evidence statements are quoted verbatim from the referenced clinical guidelines and other sources, where applicable: It may be useful to have the family/caregiver involved in decision making and treatment planning as early as possible and throughout the duration of the rehabilitation process. (Class IIb, Level of Evidence B) (AHA/ASA, 2016)[1] It may be reasonable that the family/caregiver support include some or all the following on a regular basis: education, training, counseling, development of a support structure, financial assistance. (Class IIb, Level of Evidence A) (AHA/ASA, 2016)[1]
Rationale	Stroke patients who receive rehabilitation services prior to discharge to their home setting are likely to need some level of care in their home. This level of need can vary, based on patient need. In many cases, the care in the home is provided by a family caregiver (spouse, sibling, adult child, or other caregiver). Including the caregiver in the discharge planning process and teaching the caregiver the skills required to care for the patient in the home will help the caregiver feel more confident in caring for their family member, and increase satisfaction with the post-discharge experience on behalf of both the patient and the caregiver[11]. A study in the UK showed that training caregivers as part of the patient's rehabilitation process resulted in reduced cost and caregiver burden along with improved psychosocial outcomes for both the caregiver and patient at one-year post-discharge[12].
Measure Designation	
Measure Purpose	Quality Improvement Accountability
Measure Type	Outcome
Level of Measurement	Individual Practitioner Group Practice
Improvement Notation	Higher score indicates better quality

National Quality Strategy Priority/CMS Measure Domain	☐Communication and Care Coordination ☐Community/Population Health ☐Effective Clinical Care ☐Efficiency and Cost Reduction ☒Patient Safety ☒Person and Caregiver-Centered Experience

AAPM&R #5: Post-Acute Brain Injury: Depression Screening and Follow-Up Plan of Care

Measure Description	Percentage of patients aged 18 years and older who have experienced an acute brain injury (ischemic stroke, hemorrhagic stroke, acute brain injury), seen for an office visit during the measurement period who were screened for depression using a validated tool AND if positive, a follow up plan of care is documented on the date of the positive screen
Numerator Statement	Patients screened for depression using a validated tool* AND if positive, a follow up plan of care is documented on the date of the positive screen *Validated tool may include the PHQ-2, PHQ-9, Stroke Aphasic Depression Questionnaire (SADQ) or another validated tool
Denominator Statement	All patients aged 18 years and older who have experienced an acute brain injury (ischemic stroke, hemorrhagic stroke, acute brain injury) seen for an office visit during the measurement period
Denominator Exclusions	None
Denominator Exceptions	None
Supporting Guidelines and Other References	The following evidence statements are quoted verbatim from the referenced clinical guidelines and other sources, where applicable: Administration of a structured depression inventory, such as the Patient Health Questionnaire-2 is recommended to routinely screen for poststroke depression. (Class 1 Recommendation/Level of Evidence B) (AHA/ASA, 2016)[1] Periodic reassessment of depression, anxiety, and other psychiatric symptoms may be useful in the care of stroke survivors. (Class IIa Recommendation/Level of Evidence B) (AHA/ASA, 2016)[1]
Rationale	While it is understood that there are other, general depression screening measures available for use, screening for depression in patients who have had an acute brain injury can be a unique challenge, as patients who experience aphasia or other language impairments are not able to complete the most commonly used and validated tools[13]. Therefore, a separate measure that addresses the specific needs of acute brain injury patients regarding screening for depression is warranted.
Measure Designation	
Measure Purpose	Quality Improvement Accountability
Measure Type	Process
Level of Measurement	Individual Practitioner Group Practice
Improvement Notation	Higher score indicates better quality
National Quality Strategy Priority/CMS Measure Domain	☐Communication and Care Coordination ☐Community/Population Health ☒Effective Clinical Care ☐Efficiency and Cost Reduction ☐Patient Safety ☐Person and Caregiver-Centered Experience

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Quality Outcomes Database (QOD-Spine Care) and AAPM&R Registry
2019 Qualified Clinical Data Registry (QCDR)
QCDR Measures Specification

NPA3: Functional Outcome Assessment for Spine Intervention

NQS Domain:	Person and Caregiver-Centered Experience Outcomes
MIPS No. / NQF No.:	Non-MIPS; MIPS 220, MIPS 223, MIPS 182, MIPS 109, MIPS 217, MIPS 218, MIPS 219 and NQF 0422,
Measure Type (Process / Outcome):	Outcome
Description	Percentage of patients aged 18 years and older undergoing spine intervention(s) who completed baseline and 3-month follow-up (patient-reported) functional outcome assessment, with at least 10% improvement in the functional status scaled score from the baseline. This measure will be calculated with 2 performance rates: 1) Rate 1: Patient population with Follow-up/Patient population with baseline 2) Rate 2: Patient population with improvement in functional status after Follow-up/Patient population with Follow-up. Overall Rate = Rate 2
Denominator:	The listed denominator criteria is used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions allowed by the measures. The quality-data codes listed do not need to be submitted for registry-submissions.
There are Two Submission Criteria for this Measure:	1) Patients who are 18 years and older meeting QCDR inclusion criteria, undergoing spine intervention who completed baseline and 3-month follow-up (patient-reported) functional outcome assessment. **PLEASE NOTE:** AAPM&R's Registry will use Submission Criteria 1. Please email registry@aapmr.com with any questions.
Submission Criteria 1:	All patients meeting QCDR inclusion criteria, undergoing spine intervention who completed baseline and 3-month follow-up (patient-reported) functional outcome
Denominator (Submission Criteria 1):	Patients aged 18 years and older meeting QCDR inclusion criteria for the AAPM&R Registry, undergoing spine intervention who completed baseline and 3-month follow-up (patient reported) functional outcome assessment.
Denominator criteria (Eligible Cases) 1:	Patients aged 18 years and older undergoing spine intervention with any of the following diagnoses: * Please Page 44 below for a full list of diagnoses codes.
Numerator (Submission Criteria 1):	Percentage of patients aged 18 years and older undergoing spine intervention(s) who completed baseline and 3-month follow-up (patient-reported) functional outcome assessment (with an improvement in the quality of life status from the baseline).

Numerator Options:	Performance Met: Functional Outcome Assessment (Patient-Reported) completed at baseline and 3-month, with at least 10% improvement in the functional status scale scored from the baseline. The measures will be calculated with 2 performance rates: 1) Rate 1: Patient population with Follow-up/Patient population with baseline 2) Rate 2: Patient population with improvement in functional status after Follow-up/Patient population with Follow-up. Overall Rate = Rate 2 **OR**

Denominator Exceptions:	• Spinal infection (including osteomyelitis, TB, discitis)
	• Tumor: Current surgery for spinal tumor (benign/malignant); brain tumor affecting movement (e.g., parietal lobe or cerebellum); associated systemic malignancy present at the time of surgery
	• Spine fracture or spine traumatic dislocation
	• Incarceration (prisoner)
	• Hospital/Facility/Surgeon is not a participant
	• Refused Informed Consent: if informed consent is required by the local IRB, then refusal of consent
	• Age < 18yrs
	• Neurological paralysis due to pre-existing brain or spinal disease or injury (such as traumatic brain injury resulting in lower limb weakness, locked-in syndrome or cerebral palsy)
	• Surgical procedure/device on exclusion list
	  ○ Excluded procedures include laser disc ablation, Laser Discectomy, Percutaneous Endoscopic Laser Discectomy, Percutaneous Laser Discectomy, SI Joint Fusion (previous or current), Vertebrectomy, Fusion: AxiaLIF, Fusion: Mid-LIF, Fusion: OLIF, Coflex Laminectomy, Interlaminar Interspinous Fusion (ILIF), Kyphoplasty, AccuraScope, Spinous Process Fixation, Excision of Hemivertebrae, Arthroplasty, Rhizotomy Only
	  ○ Patients who have a history of or whose current surgery includes an excluded device. Excluded devices are interspinous distraction device, X-Stop at any level, Coflex Device, Aspen Clamp, Aspen Spinous Process System, Minimally Disruptive Fixation Device (DBR), spinal cord stimulator (past or present), Artificial Disc, Annulex Device, Intrathecal Pain Pump.
	• Documented severe Peripheral Neuropathy or Primary Neuropathy.
	• Chronic Regional Pain Syndrome (CRPS)
	• Severe cognitive or psychiatric impairment (advanced dementia, advanced Alzheimer's disease, severe altered mental status, or severe psychiatric condition that interferes with reliable patient reported outcomes and/or agreement for participation; patients with a health care surrogate should also be excluded).

Denominator Exclusions / Exceptions:	None

Numerator:	Percentage of patients aged 18 years and older undergoing spine intervention(s) who completed baseline and 3-month follow-up (patient-reported) functional outcome assessment (with an improvement in the quality of life status from the baseline).
Rationale:	Degenerative spine disease is recognized as a leading cause of disability in society[1], and low-back pain is the most expensive cause of work-related disability in the United States.[2] Measures of spine-related patient disability have been established and validated.[3] A recent analysis of 4970 patients enrolled in the QOD Spine Registry found significant levels of patient reported baseline functional impairment in spine patients (average disability index 50 [severe disability]).[4] Improvements in disability scores following spine surgery have been demonstrated in a number of conditions.[5-11] One multicenter study investigated the outcomes of treatment for lumbar spinal stenosis. In an as-treated analysis of 654 patients with 4-year follow-up, functional disability was found to be significantly reduced in patients undergoing surgery compared to those treated without surgery.[11] Given the prevalence, socio-economic impact, and relative severity of spine-related functional impairment, accurate assessment of patients' functional status pre and post therapy is essential to assess the impact of interventions and make appropriate plans for continuing care.
References:	1. Deyo RA, Mirza SK, Martin BI. Back pain prevalence and visit rates: estimates from U.S. national surveys, 2002. Spine 2006; 31:2724-7. 2. Asher AL, Speroff T, Dittus RS, et al. The National Neurosurgery Quality and Outcomes Database (QOD): a collaborative North American outcomes registry to advance value-based spine care. Spine 2014; 39:S106-16. 3. Parker SL, Adogwa O, Mendenhall SK, et al. Determination of minimum clinically important difference (MCID) in pain, disability, and quality of life after revision fusion for symptomatic pseudoarthrosis. The spine journal: official journal of the North American Spine Society 2012; 12:1122-8. 4. Parker SL, McGirt MJ. Determination of the minimum improvement in pain, disability, and health state associated with cost-effectiveness: introduction of the concept of minimum cost-effective difference. Neurosurgery 2015; 76 Suppl 1:S64-70. 5. Parker SL, Mendenhall SK, Shau D, et al. Determination of minimum clinically important difference in pain, disability, and quality of life after extension of fusion for adjacent-segment disease. Journal of Neurosurgery: Spine 2012; 16:61-7. 6. Parker SL, Mendenhall SK, Shau DN, et al. Minimum clinically important difference in pain, disability, and quality of life after neural decompression and fusion for same-level recurrent lumbar stenosis: understanding clinical versus statistical significance. Journal of Neurosurgery: Spine 2012; 16:471-8. 7. Scheer JK, Smith JS, Clark AJ, et al. Comprehensive study of back and leg pain improvements after adult spinal deformity surgery: analysis of 421 patients with 2-year follow-up and of the impact of the surgery on treatment satisfaction. Journal of Neurosurgery: Spine 2015:1-14. 8. Skovrlj B, Gilligan J, Cutler HS, et al. Minimally invasive procedures on the lumbar spine. World journal of clinical cases 2015; 3:1-9. 9. Fairbank J. Revised Oswestry Disability questionnaire. Spine 2000; 25:2552. 10. Weinstein JN, Lurie JD, Tosteson TD, et al. Surgical compared with nonoperative treatment for lumbar degenerative spondylolisthesis. four-year results in the Spine Patient Outcomes Research Trial (SPORT) randomized and observational cohorts. The Journal of bone and joint surgery American volume 2009; 91:1295- 304. 11. Weinstein JN, Tosteson TD, Lurie JD, et al. Surgical versus nonoperative treatment for lumbar spinal stenosis four-year results of the Spine Patient Outcomes Research Trial. Spine 2010; 35:1329-38.

NPA4: Quality-of-Life Assessment for Spine Intervention

NQS Domain:	Person and Caregiver-Centered Experience Outcomes
MIPS No. / NQF No.:	Non-MIPS
Measure Type (Process / Outcome):	Outcome
Description:	Percentage of patients aged 18 years and older undergoing index spine intervention(s) who completed baseline and 3- month follow-up (patient-reported) quality-of-life assessment, with an improvement in the quality of life status from baseline. This measure will be calculated with 2 performance rates: 1) Rate 1: Patient population with Follow-up/Patient population with baseline 2) Rate 2: Patient population with improvement in quality of life status after Follow-up/Patient population with Follow-up. Overall Rate = Rate 2
Denominator:	The listed denominator criteria is used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions allowed by the measures. The quality-data codes listed do not need to be submitted for registry-submissions.
There are Two Submission Criteria for this Measure:	1) Patients who are 18 years and older meeting QCDR inclusion criteria, undergoing index spine intervention(s) who completed baseline and 3-month follow-up (patient-reported) quality-of-life assessment. **PLEASE NOTE:** AAPM&R's Registry will use Submission Criteria 1. Please email registry@aapmr.com with any questions.
Submission Criteria 1:	All patients meeting QCDR inclusion criteria, undergoing index spine intervention(s) who completed baseline and 3-month follow-up (patient-reported) quality-of-life assessment.
Denominator (Submission Criteria 1):	Patients aged 18 years and older meeting QCDR inclusion criteria for the AAPM&R Registry, undergoing index spine intervention(s) who completed baseline and 3-month follow-up (patient-reported) quality-of-life assessment.
Denominator Criteria (Eligible Cases) 1:	Patients aged 18 years and older undergoing spine intervention with any of the following diagnoses: * Please Page 44 below for a full list of diagnoses codes.

Numerator (Submission Criteria 1):	Percentage of patients aged 18 years and older undergoing spine intervention(s) who completed baseline and 3-month follow-up (patient-reported) quality-of-life assessment (with an improvement in the quality of life status from the baseline). **OR**
Numerator Options:	Performance Met: Quality-of-Life assessment (Patient Reported) completed at baseline and 3-month, with an improvement in the quality of life status scored from the baseline. This measure will be calculated with 2 performance rates: 1) Rate 1: Patient population with Follow-up/Patient population with baseline 2) Rate 2: Patient population with improvement in quality of life status after Follow-up/Patient population with Follow-up. Overall Rate = Rate 2 **OR**
Denominator Exceptions:	● Spinal infection (including osteomyelitis, TB, discitis) ● Tumor: Current surgery for spinal tumor (benign/malignant); brain tumor affecting movement (e.g., parietal lobe or cerebellum); associated systemic malignancy present at the time of surgery ● Spine fracture or spine traumatic dislocation ● Incarceration (prisoner) ● Hospital/Facility/Surgeon is not a participant ● Refused Informed Consent: if informed consent is required by the local IRB, then refusal of consent ● Age < 18yrs ● Neurological paralysis due to pre-existing brain or spinal disease or injury (such as traumatic brain injury resulting in lower limb weakness, locked-in syndrome or cerebral palsy) ● Surgical procedure/device on exclusion list ○ Excluded procedures include laser disc ablation, Laser Discectomy, Percutaneous Endoscopic Laser Discectomy, Percutaneous Laser Discectomy, SI Joint Fusion (previous or current), Vertebrectomy, Fusion: AxiaLIF, Fusion: Mid-LIF, **Fusion: OLIF**, Coflex Laminectomy, Interlaminar Interspinous Fusion (ILIF), Kyphoplasty, AccuraScope, Spinous Process Fixation, Excision of Hemivertebrae, Arthroplasty, Rhizotomy Only ○ Patients who have a history of or whose current surgery includes an excluded device. Excluded devices are interspinous distraction device, X-Stop at any level, Coflex Device, Aspen Clamp, Aspen Spinous Process System, Minimally Disruptive Fixation Device (DBR), spinal cord stimulator (past or present), Artificial Disc, Annulex Device, Intrathecal Pain Pump. ● Documented severe Peripheral Neuropathy or Primary Neuropathy. ● Chronic Regional Pain Syndrome (CRPS) ● Severe cognitive or psychiatric impairment (advanced dementia, advanced Alzheimer's disease, severe altered mental status, or severe psychiatric condition that interferes with reliable patient reported outcomes and/or agreement for participation; patients with a health care surrogate should also be excluded).

Denominator Exclusions / Exceptions:	None
Numerator:	Percentage of patients aged 18 years and older undergoing index spine intervention(s) who completed baseline and 3- month follow-up (patient-reported) quality-of-life assessment (with an improvement in the quality of life status from the baseline).
Rationale:	Patient-reported quality of life is increasingly recognized as an important tool to allow clinicians to assess the effectiveness of various therapies, particularly when combined with traditional clinical measures of health.,[2] Impaired quality of life is commonly caused by spinal disorders, and routine use of quality-of-life instruments along with other patient-reported outcomes tools has been recommended in association with spine therapies.[3,4] A recent analysis of 4,970 patients enrolled in the QOD Spine Registry found significantly diminished levels of baseline patient-reported quality of life (average baseline EQ-5D 0.54 on a scale of 0-1 where 0 is the worst) in spine patients.5 Improvements in quality-of-life measures following treatment for spine disorders have been demonstrated in a number of conditions.[6-12] One multicenter study investigated the outcomes of treatment for lumbar spinal stenosis.[12] In an as-treated analysis of 654 patients with 4-year follow-up, quality of life was found to be significantly improved in patients who underwent surgery compared to those treated without surgery.[12] Given the prevalence, and relative severity of spine-related impairment of quality of life, accurate assessment of patients' self-reported quality of life pre and post therapy is essential to assess the impact of interventions and make appropriate plans for continuing care.

References:

1. Asher AL, Speroff T, Dittus RS, et al. The National Neurosurgery Quality and Outcomes Database (QOD): a collaborative North American outcomes registry to advance value-based spine care. Spine 2014; 39:S106-16.
2. Parker SL, Adogwa O, Mendenhall SK, et al. Determination of minimum clinically important difference (MCID) in pain, disability, and quality of life after revision fusion for symptomatic pseudoarthrosis. The spine journal: official journal of the North American Spine Society 2012; 12:1122-8.
3. Parker SL, McGirt MJ. Determination of the minimum improvement in pain, disability, and health state associated with cost-effectiveness: introduction of the concept of minimum cost-effective difference. Neurosurgery 2015; 76 Suppl 1:S64-70.
4. Parker SL, Mendenhall SK, Shau D, et al. Determination of minimum clinically important difference in pain, disability, and quality of life after extension of fusion for adjacent-segment disease. Journal of Neurosurgery: Spine 2012; 16:61-7.
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NPA5: Patient Satisfaction With Spine Care

NQS Domain:	Person and Caregiver-Centered Experience Outcomes
MIPS No. / NQF No.:	Non-MIPS, modification of MIPS 304
Measure Type (Process / Outcome):	Outcome
Description	Percentage of patients aged 18 years and older undergoing spine intervention(s) who completed 3-month follow-up (patient-reported) satisfaction with care assessment. Satisfaction will be reported as % of patients reporting satisfaction with procedure. This measure will be calculated with 2 performance rates: 1) Rate 1: Patient population with Follow-up/Patient population with baseline 2) Rate 2: Patient population with improvement in satisfaction with care status after Follow-up/Patient population with Follow-up. Overall Rate = Rate 2
Denominator:	The listed denominator criteria is used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions allowed by the measures. The quality-data codes listed do not need to be submitted for registry-submissions.
There are Two Submission Criteria for this Measure:	1) Patients who are 18 years and older meeting QCDR inclusion criteria, undergoing spine intervention(s) who completed 3-month follow-up (patient-reported) satisfaction with care assessment. **PLEASE NOTE:** AAPM&R's Registry will use Submission Criteria 1. Please email registry@aapmr.com with any questions.
Submission Criteria 1:	All patients meeting QCDR inclusion criteria, undergoing index spine intervention(s) who completed 3-month follow-up (patient-reported) satisfaction with care assessment
Denominator (Submission Criteria 1):	Patients aged 18 years and older meeting QCDR inclusion criteria for the AAPM&R Registry, undergoing spine intervention(s) who completed 3-month follow-up (patient-reported) satisfaction with care assessment.
Denominator Criteria (Eligible Cases) 1:	Patients aged 18 years and older undergoing spine intervention with any of the following diagnoses: * Please Page 44 below for a full list of diagnoses codes.
Numerator (Submission Criteria 1):	Percentage of patients aged 18 years and older undergoing spine intervention(s) who completed 3-month follow-up (patient-reported) satisfaction with care assessment.

Numerator Options:	Performance Met: Patient-reported satisfaction with care assessment completed at 3-month follow-up. Satisfaction will be reported as % of patients reporting satisfaction with procedure. This measure will be calculated with 2 performance rates: 1) Rate 1: Patient population with Follow-up/Patient population with baseline 2) Rate 2: Patient population with improvement in satisfaction with care status after Follow-up/Patient population with Follow-up. Overall Rate = Rate 2 **OR**

Denominator Exceptions:	• Spinal infection (including osteomyelitis, TB, discitis)
	• Tumor: Current surgery for spinal tumor (benign/malignant); brain tumor affecting movement (e.g., parietal lobe or cerebellum); associated systemic malignancy present at the time of surgery
	• Spine fracture or spine traumatic dislocation
	• Incarceration (prisoner)
	• Hospital/Facility/Surgeon is not a participant
	• Refused Informed Consent: if informed consent is required by the local IRB, then refusal of consent
	• Age < 18yrs
	• Neurological paralysis due to pre-existing brain or spinal disease or injury (such as traumatic brain injury resulting in lower limb weakness, locked-in syndrome or cerebral palsy)
	• Surgical procedure/device on exclusion list
	  ○ Excluded procedures include laser disc ablation, Laser Discectomy, Percutaneous Endoscopic Laser Discectomy, Percutaneous Laser Discectomy, SI Joint Fusion (previous or current), Vertebrectomy, Fusion: AxiaLIF, Fusion: Mid-LIF, Fusion: OLIF, Coflex Laminectomy, Interlaminar Interspinous Fusion (ILIF), Kyphoplasty, AccuraScope, Spinous Process Fixation, Excision of Hemivertebrae, Arthroplasty, Rhizotomy Only
	  ○ Patients who have a history of or whose current surgery includes an excluded device. Excluded devices are interspinous distraction device, X-Stop at any level, Coflex Device, Aspen Clamp, Aspen Spinous Process System, Minimally Disruptive Fixation Device (DBR), spinal cord stimulator (past or present), Artificial Disc, Annulex Device, Intrathecal Pain Pump.
	• Documented severe Peripheral Neuropathy or Primary Neuropathy.
	• Chronic Regional Pain Syndrome (CRPS)
	• Severe cognitive or psychiatric impairment (advanced dementia, advanced Alzheimer's disease, severe altered mental status, or severe psychiatric condition that interferes with reliable patient reported outcomes and/or agreement for participation; patients with a health care surrogate should also be excluded).

Denominator Exclusions / Exceptions:	None
Numerator:	Number of patients aged 18 years and older undergoing index intervention(s) who completed 3-month follow-up (patient-reported) satisfaction with care assessment.

Rationale:	Patient satisfaction represents a subjective assessment of a patient's overall healthcare experience, and has emerged as a common outcome measure following treatment of spine disorders.[1] In part due to its ease of assessment, both healthcare organizations and third-party payers have used patient satisfaction as a proxy for quality of care.[1,2] Further, the Joint Commission on Accreditation of Healthcare Organizations has identified patient satisfaction as an important measure and suggests that it be used for accreditation purposes.[3] A recent analysis of 4,970 patients enrolled in the QOD Spine Registry found significant improvements in patient-reported satisfaction after treatment of spine disorders, although almost 20% of patients reported less than satisfactory experiences. While there is some evidence that patient satisfaction may not be a valid means of assessing quality[2], other studies have found positive correlations between patient satisfaction and other measures of pain and disability.[4-5] Given the increased interest in patient satisfaction, studies have more recently sought to determine what factors contribute to these scores. At least two such studies have now found that one important factor in improving patient satisfaction following treatment is establishing realistic patient expectations.[6-7] Given the increasing relevance of satisfaction metrics in advancing patient-centered measures of health-care services, along with improvement opportunities identified in a large national clinical data program, accurate assessment of patients' self-reported satisfaction with care pre and post therapy is essential to assess the impact of interventions and make appropriate plans for continuing individual care as well as to improve systemic aspects of care.
References:	1. Chow A, Mayer EK, Darzi AW, et al. Patient-reported outcome measures: the importance of patient satisfaction in surgery. Surgery 2009; 146:435-43. 2. Godil SS, Parker SL, Zuckerman SL, et al. Determining the quality and effectiveness of surgical spine care: patient satisfaction is not a valid proxy. The spine journal: official journal of the North American Spine Society 2013; 13:1006-12. 3. Greene J. Competition for patients spurs hospitals' concern for serving the customer. Modern healthcare 1994; 24:30-4. 4. Yamashita K, Hayashi J, Ohzono K, et al. Correlation of patient satisfaction with symptom severity and walking ability after surgical treatment for degenerative lumbar spinal stenosis. Spine 2003; 28:2477-81. 5. Yamashita K, Ohzono K, Hiroshima K. Patient satisfaction as an outcome measure after surgical treatment for lumbar spinal stenosis: testing the validity and discriminative ability in terms of symptoms and functional status. Spine 2006; 31:2602-8. 6. Rönnberg K, Lind B, Zoëga B, et al. Patients' satisfaction with provided care/information and expectations on clinical outcome after lumbar disc herniation surgery. Spine 2007; 32:256-61. 7. Soroceanu A, Ching A, Abdu W, et al. Relationship between preoperative expectations, satisfaction, and functional outcomes in patients undergoing lumbar and cervical spine surgery: a multicenter study. Spine 2012; 37:E103-8.

NPAGSC8: Complication Following Percutaneous Spine-Related Procedure

NQS Domain	Effective Clinical Care
MIPS No. / NQF No.	Non-MIPS; modification of NQF 0705, modification of NPA 7
Measure Type (Process / Outcome)	Outcome
Description	Proportion of patients undergoing percutaneous spine-related procedures who have a complication (specifically, CSF leak, deep venous thrombosis [DVT], pulmonary embolism [PE], myocardial infarction [MI], stroke, procedure related infection or unexpected new neurological deficit) in the 30-day post-procedure period.
Denominator	All patients meeting QCDR inclusion criteria and entered into registry. Refer to QCDR specifications.
Numerator	Number of patients undergoing percutaneous spine-related procedures who have a complication (specifically, CSF leak, deep venous thrombosis [DVT], pulmonary embolism [PE], myocardial infarction [MI], stroke, procedure related infection or unexpected new neurological deficit) in the 30-day post-procedure period.
Rationale	Although overall complication rates for percutaneous spine-related procedures are low, certain potentially preventable complications such as CSF leak, DVT, PE, MI, stroke, and unexpected neurological deficit, is associated with significant morbidity and economic burden resulting in functional impairment, increased resource utilization, and delayed return to activity and work.[1,2] In the pre-procedure phase, certain high-risk modifiable risk factors, mainly insulin-dependent diabetes, smoking, and long-term steroid use, should be identified and mitigated.[3,4,5,6,7] In the intra-procedure phase, attention to physiological parameters, image-guided techniques, and shorter procedure times may facilitate a reduction in the likelihood of a complication.[8,9] In the post- procedure phase, appropriate mobilization of patients, meticulous blood glucose control, and close neurological monitoring may help reduce the incidence of these complications. Regardless, implementation of most of these factors is non-uniform and often varies by physician within a given institution, leading to variability in complication rates and types.

References	1. Akeda K, Matsunaga H, Imanishi T, Hasegawa M, Sakakibara T, Kasai Y, et al: Prevalence and countermeasures for venous thromboembolic diseases associated with spinal surgery: a follow-up study of an institutional protocol in 209 patients. Spine (Phila Pa 1976) 39:791–797, 2014 2. Asher AL, Speroff T, Dittus RS, Parker SL, Davies JM, Selden N, et al: The National Neurosurgery Quality and Outcomes Database (QOD): a collaborative North American outcomes registry to advance value-based spine care. Spine (Phila Pa 1976) 39 (22 Suppl 1):S106–S116, 2014 3. Masuda K, Chikuda H, Yasunaga H, Hara N, Horiguchi H, Matsuda S, et al: Factors affecting the occurrence of pulmonary embolism after spinal surgery: data from the national administrative database in Japan. Spine J 12:1029– 1034, 2012 4. Schoenfeld AJ, Herzog JP, Dunn JC, Bader JO, Belmont PJ Jr: Patient-based and surgical characteristics associated with the acute development of deep venous thrombosis and pulmonary embolism after spine surgery. Spine (Phila Pa 1976) 38:1892–1898, 2013 5. Schulte LM, O'Brien JR, Bean MC, Pierce TP, Yu WD, Meals C: Deep vein thrombosis and pulmonary embolism after spine surgery: incidence and patient risk factors. Am J Orthop 42:267–270, 2013 6. Tominaga H, Setoguchi T, Tanabe F, Kawamura I, Tsuneyoshi Y, Kawabata N, et al: Risk factors for venous thromboembolism after spine surgery. Medicine (Baltimore) 94:e466, 2015 7. Yoshioka K, Murakami H, Demura S, Kato S, Tsuchiya H: Prevalence and risk factors for development of venous thromboembolism after degenerative spinal surgery. Spine (Phila Pa 1976) 40:E301–E306, 2015 8. Landa J, Kim Y. Outcomes of interlaminar and transforaminal spinal injections. Bull NYU Hosp Jt Dis 70(1):6-10, 2012 9. McGrath JM, Schaefer MP, Malkamaki DM. Incidence and characteristics of complications from epidural steroid injections. Pain Med 12(5)726-731, 2011

NPAGSC9: Unplanned Admission to Hospital Following Percutaneous Spine Procedure within the 30-Day Post-procedure Period

NQS Domain	Patient Safety (also Efficiency and Cost Reduction)
MIPS No. / NQF No.	Non-MIPS; modification of NPA 10; modification of MIPS 356
Measure Type (Process/Outcome)	Outcome
Description	Percentage of patients aged 18 years and older who had any unplanned admission following percutaneous spine-related procedure within the 30-day post-procedure period.
Denominator	All patients meeting QCDR inclusion criteria and entered into registry. Refer to QCDR specifications.
Numerator	Number of patients aged 18 years and older who had any unplanned admission following percutaneous spine-related procedure within the 30-day post-procedure period.
Rationale	Unplanned postoperative readmissions contribute significantly to excessive resource utilization and drive increased health care cost. Consequently, readmissions have been under increasing scrutiny by CMS. Their prevalence is high in spine surgery. Analysis of 343,068 Medicare patients in the period 2003–2007 revealed an overall 30-day readmission rate of 7.3% for lumbar operations. The most common cause of readmission in this cohort was surgical complications, which accounted for 26%–33% of all events.[1] Analysis of the 2011 and 2012 ACS NSQIP data revealed an overall unplanned readmission rate of 4.4%. The most common etiology was wound complications (38.6%), including superficial and deep infection, hematoma, or seroma development.[2] In neurosurgery-specific data, a study of 4970 patients undergoing lumbar spine surgery in the QOD registry demonstrated an overall 30-day readmission rate of 3.7%, with a 90-day readmission rate of 8.9%.[3] Readmissions are often associated with poor outcomes and increased hospitalization costs. Rates of unplanned hospital admission following percutaneous spine procedures are less well understood. Tracking of this metric is essential to better understand overall resource utilization in spine care and assist in the planning of continuing care, all of which is consistent with our efforts to promote value-based care.
References	1. Wang MC, Shivakoti M, Sparapani RA, Guo C, Laud PW, Nattinger AB: Thirty-day readmissions after elective spine surgery for degenerative conditions among US Medicare beneficiaries. Spine J 12:902–911, 2012 2. Pugely AJ, Martin CT, Gao Y, Mendoza-Lattes S: Causes and risk factors for 30-day unplanned readmissions after lumbar spine surgery. Spine (Phila Pa 1976) 39:761–768, 2014 3. Asher AL, Speroff T, Dittus RS, Parker SL, Davies JM, Selden N, et al: The National Neurosurgery Quality and Outcomes Database (QOD): a collaborative North American outcomes registry to advance value-based spine care. Spine (Phila Pa 1976) 39 (22 Suppl 1):S106–S116, 2014

NPA16: Depression and Anxiety Assessment Prior to Spine-Related Therapies

NQS Domain:	Communication and Care Coordination
MIPS No. / NQF No.:	Non- MIPS
Measure Type (Process / Outcome):	Process
Description	Percentage of patients aged 18 years and older with documentation of depression and/or anxiety assessment through discussion with the patient including the use of a standardized assessment tool prior to index therapy(-ies) for treatment of spine-related pain symptoms.
Denominator:	The listed denominator criteria is used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions allowed by the measures. The quality-data codes listed do not need to be submitted for registry-submissions.
There are two Submission Criteria for this Measure:	1) Patients who are 18 years and older meeting QCDR inclusion criteria with documentation of depression and/or anxiety assessment through discussion with the patient including the use of a standardized assessment tool prior to index therapy(-ies) for treatment of spine-related pain symptoms. **PLEASE NOTE:** AAPM&R's Registry will use Submission Criteria 1. Please email registry@aapmr.com with any questions.
Submission Criteria 1:	All patients meeting QCDR inclusion criteria, with documentation of depression and/or anxiety assessment through discussion with the patient including the use of a standardized assessment tool prior to index therapy(-ies) for treatment of spine-related pain symptoms
Denominator (Submission Criteria 1):	Patients aged 18 years and older meeting QCDR inclusion criteria for the AAPM&R Registry, with documentation of depression and/or anxiety assessment through discussion with the patient including the use of a standardized assessment tool prior to index therapy(-ies) for treatment of spine-related pain symptoms.
Denominator Criteria (Eligible Cases) 1:	Patients aged 18 years and older undergoing spine intervention with any of the following diagnoses: * Please Page 44 below for a full list of diagnoses codes.
Numerator (Submission Criteria 1):	Number of patients aged 18 years and older with documentation of depression and/or anxiety assessment through discussion with the patient including the use of a standardized assessment tool prior to index therapy(-ies) for treatment of spine-related pain symptoms.

Numerator Options:	Performance Met: Depression and/or anxiety assessment documented, through discussion with the patient including the use of a standardized assessment tool prior to index therapy(-ies) for treatment of spine-related pain symptoms. **OR**

Denominator Exceptions:	• Spinal infection (including osteomyelitis, TB, discitis)
	• Tumor: Current surgery for spinal tumor (benign/malignant); brain tumor affecting movement (e.g., parietal lobe or cerebellum); associated systemic malignancy present at the time of surgery
	• Spine fracture or spine traumatic dislocation
	• Incarceration (prisoner)
	• Hospital/Facility/Surgeon is not a participant
	• Refused Informed Consent: if informed consent is required by the local IRB, then refusal of consent
	• Age < 18yrs
	• Neurological paralysis due to pre-existing brain or spinal disease or injury (such as traumatic brain injury resulting in lower limb weakness, locked-in syndrome or cerebral palsy)
	• Surgical procedure/device on exclusion list
	  ○ Excluded procedures include laser disc ablation, Laser Discectomy, Percutaneous Endoscopic Laser Discectomy, Percutaneous Laser Discectomy, SI Joint Fusion (previous or current), Vertebrectomy, Fusion: AxiaLIF, Fusion: Mid-LIF, Fusion: OLIF, Coflex Laminectomy, Interlaminar Interspinous Fusion (ILIF), Kyphoplasty, AccuraScope, Spinous Process Fixation, Excision of Hemivertebrae, Arthroplasty, Rhizotomy Only
	  ○ Patients who have a history of or whose current surgery includes an excluded device. Excluded devices are interspinous distraction device, X-Stop at any level, Coflex Device, Aspen Clamp, Aspen Spinous Process System, Minimally Disruptive Fixation Device (DBR), spinal cord stimulator (past or present), Artificial Disc, Annulex Device, Intrathecal Pain Pump.
	• Documented severe Peripheral Neuropathy or Primary Neuropathy.
	• Chronic Regional Pain Syndrome (CRPS)
	• Severe cognitive or psychiatric impairment (advanced dementia, advanced Alzheimer's disease, severe altered mental status, or severe psychiatric condition that interferes with reliable patient reported outcomes and/or agreement for participation; patients with a health care surrogate should also be excluded).

Denominator Exclusions / Exceptions:	See Appendix 1
Numerator:	Number of patients aged 18 years and older with documentation of depression and/or anxiety assessment through discussion with the patient including the use of a standardized assessment tool prior to index therapy(-ies) for treatment of spine-related pain symptoms.

Rationale:	Preoperative psychological screening is emerging as an important method to predict outcomes following elective spine surgery and potentially identify modifiable conditions to improve spine care outcomes. Depression and anxiety are prevalent in patients undergoing spine intervention. A recent analysis of the QOD Spine Registry found that 12.8% and 21.3% of patients undergoing elective spine surgery identified themselves as anxious or depressed, respectively. Furthermore, baseline depression and anxiety were strongly associated with patient outcomes following elective spine surgery. There is evidence that depression and anxiety predict outcomes including return to work,[2] medical complications,[3] functional recovery,[4,5] and quality of life.[6] Screening may aid in appropriate patient selection. In one large prospective study, depressive symptoms predicted functional improvement after non-surgical treatment of chronic low-back pain.[7] Screening may also guide interventions
References:	1. QOD, unpublished results. 2. Parker SL, Godil SS, Zuckerman SL, Mendenhall SK, Devin CJ, McGirt MJ. Extent of Preoperative Depression Is Associated with Return to Work After Lumbar Fusion for Spondylolisthesis. World neurosurgery. Dec 17 2014. 3. Lee MJ, Cizik AM, Hamilton D, Chapman JR. Predicting medical complications after spine surgery: a validated model using a prospective surgical registry. The spine journal: official journal of the North American Spine Society. Feb 1 2014; 14(2):291-299. 4. Sinikallio S, Aalto T, Airaksinen O, Herno A, Kroger H, Viinamaki H. Depressive burden in the preoperative and early recovery phase predicts poorer surgery outcome among lumbar spinal stenosis patients: a one-year prospective follow-up study. Spine. Nov 1 2009; 34(23):2573-2578. 5. Cobo Soriano J, Sendino Revuelta M, Fabregate Fuente M, Cimarra Diaz I, Martinez Urena P, Deglane Meneses R. Predictors of outcome after decompressive lumbar surgery and instrumented posterolateral fusion. European spine journal: official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society. Nov 2010; 19(11):1841-1848. 6. Miller JA, Derakhshan A, Lubelski D, et al. The impact of preoperative depression on quality of life outcomes after lumbar surgery. The spine journal: official journal of the North American Spine Society. Jan 1 2015; 15(1):58-64. 7. Hagg O, Fritzell P, Ekselius L, Nordwall A, Swedish Lumbar Spine S. Predictors of outcome in fusion surgery for chronic low back pain. A report from the Swedish Lumbar Spine Study. European spine journal: official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society. Feb 2003; 12(1):22-33. 8. Sinikallio S, Aalto T, Airaksinen O, Lehto SM, Kroger H, Viinamaki H. Depression is associated with a poorer outcome of lumbar spinal stenosis surgery: a two-year prospective follow-up study. Spine. Apr 15 2011; 36(8):677-682. 9. Young AK, Young BK, Riley LH, 3rd, Skolasky RL. Assessment of presurgical psychological screening in patients undergoing spine surgery: use and clinical impact. Journal of spinal disorders & techniques. Apr 2014; 27(2):76-79.

NPA17: Narcotic Pain Medicine Management Following Elective Spine Procedure

NQS Domain:	Communication and Care Coordination
MIPS No. / NQF No.:	Non- MIPS; MIPS 180-Modification
Measure Type (Process / Outcome):	Process
Description:	Percentage of patients aged 18 years and older with documentation of narcotic use/requirements at baseline (initial encounter) and at 3 months following initial assessment and interventions for treatment of spine-related pain symptoms and documentation of follow-up plan.
Denominator:	The listed denominator criteria is used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions allowed by the measures. The quality-data codes listed do not need to be submitted for registry-submissions.
There are two Submission Criteria for this Measure:	1) Patients who are 18 years and older meeting QCDR inclusion criteria, with documentation of narcotic use/requirements at baseline (initial encounter) and at 3 months following initial assessment and interventions for treatment of spine-related pain symptoms and documentation of follow-up plan. **PLEASE NOTE:** AAPM&R's Registry will use Submission Criteria 1. Please email registry@aapmr.com with any questions.
Submission Criteria 1:	All patients meeting QCDR inclusion criteria, with documentation of narcotic use/requirements at baseline (initial encounter) and at 3 months following initial assessment and interventions for treatment of spine-related pain symptoms and documentation of follow-up plan.
Denominator (Submission Criteria 1):	Patients aged 18 years and older meeting QCDR inclusion criteria for the AAPM&R Registry, with documentation of narcotic use/requirements at baseline (initial encounter) and at 3 months following initial assessment and interventions for treatment of spine-related pain symptoms and documentation of follow-up plan.
Denominator Criteria (Eligible Cases) 1:	Patients aged 18 years and older undergoing spine intervention with any of the following diagnoses: **PLEASE NOTE:** AAPM&R's Registry will use this Denominator Criteria * Please Page 44 below for a full list of diagnoses codes.

Numerator (Submission Criteria 1):	Number of patients aged 18 years and older with documentation of narcotic use/requirements at baseline (initial encounter) and at 3 months following initial assessment and intervention(s) for treatment of spine-related pain symptoms and documentation of follow-up plan. **OR**
Numerator Options:	Performance Met: Narcotic use/requirements documented at baseline (initial encounter) and at 3-months following initial assessment and intervention(s) for treatment of spine-related pain symptoms and documentation of follow- up plan. **OR**

Denominator Exceptions:	• Spinal infection (including osteomyelitis, TB, discitis)
	• Tumor: Current surgery for spinal tumor (benign/malignant); brain tumor affecting movement (e.g., parietal lobe or cerebellum); associated systemic malignancy present at the time of surgery
	• Spine fracture or spine traumatic dislocation
	• Incarceration (prisoner)
	• Hospital/Facility/Surgeon is not a participant
	• Refused Informed Consent: if informed consent is required by the local IRB, then refusal of consent
	• Age < 18yrs
	• Neurological paralysis due to pre-existing brain or spinal disease or injury (such as traumatic brain injury resulting in lower limb weakness, locked-in syndrome or cerebral palsy)
	• Surgical procedure/device on exclusion list
	  ○ Excluded procedures include laser disc ablation, Laser Discectomy, Percutaneous Endoscopic Laser Discectomy, Percutaneous Laser Discectomy, SI Joint Fusion (previous or current), Vertebrectomy, Fusion: AxiaLIF, Fusion: Mid-LIF, Fusion: OLIF, Coflex Laminectomy, Interlaminar Interspinous Fusion (ILIF), Kyphoplasty, AccuraScope, Spinous Process Fixation, Excision of Hemivertebrae, Arthroplasty, Rhizotomy Only
	  ○ Patients who have a history of or whose current surgery includes an excluded device. Excluded devices are interspinous distraction device, X-Stop at any level, Coflex Device, Aspen Clamp, Aspen Spinous Process System, Minimally Disruptive Fixation Device (DBR), spinal cord stimulator (past or present), Artificial Disc, Annulex Device, Intrathecal Pain Pump.
	• Documented severe Peripheral Neuropathy or Primary Neuropathy.
	• Chronic Regional Pain Syndrome (CRPS)
	• Severe cognitive or psychiatric impairment (advanced dementia, advanced Alzheimer's disease, severe altered mental status, or severe psychiatric condition that interferes with reliable patient reported outcomes and/or agreement for participation; patients with a health care surrogate should also be excluded).

Denominator Exclusions / Exceptions:	None

Numerator:	Number of patients aged 18 years and older with documentation of narcotic use/requirements at baseline (initial encounter) and at 3 months following initial assessment and interventions for treatment of spine-related pain symptoms and documentation of follow-up plan.
Rationale:	Narcotic medications are an important part of pain management before and after spine therapy. However, long-term use of narcotics should be avoided due to adverse effects, the risk of opioid dependence, and diminished effectiveness in treating pain.[1,2] Chronic opioid therapy places patients at risk for intolerable adverse effects, aberrant drug-related behaviors, opioid dependence, and failure to make progress toward therapeutic goals. Furthermore, total pain relief with chronic opioid therapy is rare. Trials suggest that improvement averages less than 2 to 3 points on a 0–10 scale.[3,4] Monitoring length and dose of narcotic pain medication for spine patients is integral to appropriate management. Opioid use before spine therapy is strongly associated with persistent opioid use after therapy making it feasible to predict which patients will require longer-term narcotic management.[5,6] In cases of chronic opioid therapy, it is important for clinicians to discuss a management plan prior to initiating a course of treatment and on an ongoing basis while patients are on therapy, with plans varying based on patient needs and risks.[2,7]
References:	1. Chaparro LE, Furlan AD, Deshpande A, Mailis-Gagnon A, Atlas S, Turk DC. Opioids compared with placebo or other treatments for chronic low back pain: an update of the Cochrane Review. Spine. Apr 1 2014; 39(7):556- 563. 2. Chou R, Fanciullo GJ, Fine PG, et al. Clinical guidelines for the use of chronic opioid therapy in chronic noncancer pain. The journal of pain: official journal of the American Pain Society. Feb 2009; 10(2):113-130. 3. Furlan AD, Sandoval JA, Mailis-Gagnon A, Tunks E. Opioids for chronic noncancer pain: a meta-analysis of effectiveness and side effects. CMAJ: Canadian Medical Association journal = journal de l'Association medicale canadienne. May 23 2006; 174(11):1589-1594. 4. Kalso E, Edwards JE, Moore RA, McQuay HJ. Opioids in chronic non-cancer pain: systematic review of efficacy and safety. Pain. Dec 2004; 112(3):372-380. 5. Armaghani SJ, Lee DS, Bible JE, et al. Preoperative opioid use and its association with perioperative opioid demand and postoperative opioid independence in patients undergoing spine surgery. Spine. Dec 1 2014; 39(25):E1524-1530. 6. Lawrence JT, London N, Bohlman HH, Chin KR. Preoperative narcotic use as a predictor of clinical outcome: results following anterior cervical arthrodesis. Spine. Sep 1 2008; 33(19):2074-2078. 7. Federation of State Medical Boards of the United States I. Model policy for the use of controlled substances for the treatment of pain. Journal of pain & palliative care pharmacotherapy. 2005; 19(2):73-78.

NPA23: Spine/Extremity Pain Assessment

National Quality Strategy (NQS) Domain:	Person and Caregiver-Centered Experience Outcomes
MIPS No. / NQF No:	Non-MIPS; MIPS 131, NQF 420, and modification of MIPS 109
Measure Type (Process / Outcome):	Outcome
Description:	Percentage of patients aged 18 years and older with documentation of a pain assessment through discussion with the patient including the use of a standardized back or neck pain tool(s) AND/OR leg or arm pain tool(s) at baseline and 3 months following initial assessment and intervention(s) for treatment of spine-related pain symptoms with at least 10% improvement in the pain status from the baseline and documentation of follow-up plan. This measure will be calculated with 2 performance rates: 1) Rate 1: Patient population with Follow-up/Patient population with baseline 2) Rate 2: Patient population with improvement in pain status after Follow-up/Patient population with Follow-up. Overall Rate = Rate 2
Denominator:	The listed denominator criteria is used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions allowed by the measures. The quality-data codes listed do not need to be submitted for registry-submissions.
There are two Submission Criteria for this Measure:	1) Patients who are 18 years and older meeting QCDR inclusion criteria, with documentation of a pain assessment through discussion with the patient including the use of a standardized back or neck pain tool(s) AND/OR leg or arm pain tool(s) at baseline and 3 months following initial assessment and intervention(s) for treatment of spine-related pain symptoms. **PLEASE NOTE:** AAPM&R's Registry will use Submission Criteria 1. Please email registry@aapmr.com with any questions.
Submission Criteria 1:	All patients meeting QCDR inclusion criteria, with documentation of a pain assessment through discussion with the patient including the use of a standardized back or neck pain tool(s) and/or leg or arm pain tool(s) at baseline and 3 months following initial assessment and intervention(s) for treatment of spine-related pain symptoms
Denominator (Submission Criteria 1):	Patients aged 18 years and older meeting QCDR inclusion criteria for the AAPM&R Registry, with documentation of a pain assessment through discussion with the patient including the use of a standardized back or neck pain tool(s) AND/OR leg or arm pain tool(s) at baseline and 3 months following initial assessment and intervention(s) for treatment of spine-related pain symptoms.

Denominator Criteria (Eligible Cases) 1:	Patients aged 18 years and older undergoing spine intervention with any of the following diagnoses: * Please Page 44 below for a full list of diagnoses codes.
Numerator (Submission Criteria 1):	Number of patients with documentation of a pain assessment through discussion with the patient including the use of a standardized back or neck pain tool(s) AND/OR leg or arm pain tool(s) at baseline and 3 months following initial assessment and intervention(s) for treatment of spine-related pain symptoms with at least 10% improvement in the pain status from the baseline and documentation of follow-up plan. **OR**
Numerator Options:	Performance Met: Documented pain assessment through discussion with the patient including the use of a standardized back or neck pain tool(s) AND/OR leg or arm pain tool(s) at baseline and 3 months following initial assessment and intervention(s) for treatment of spine-related pain symptoms with at least 10% improvement in the pain status from the baseline and documentation of follow-up plan. This measure will be calculated with 2 performance rates: 1) Rate 1: Patient population with Follow-up/Patient population with baseline 2) Rate 2: Patient population with improvement in pain status after Follow-up/Patient population with Follow- up. Overall Rate = Rate 2 **OR**
Denominator Exceptions:	• Spinal infection (including osteomyelitis, TB, discitis) • Tumor: Current surgery for spinal tumor (benign/malignant); brain tumor affecting movement (e.g., parietal lobe or cerebellum); associated systemic malignancy present at the time of surgery • Spine fracture or spine traumatic dislocation • Incarceration (prisoner) • Hospital/Facility/Surgeon is not a participant • Refused Informed Consent: if informed consent is required by the local IRB, then refusal of consent • Age < 18yrs • Neurological paralysis due to pre-existing brain or spinal disease or injury (such as traumatic brain injury resulting in lower limb weakness, locked-in syndrome or cerebral palsy) • Surgical procedure/device on exclusion list o Excluded procedures include laser disc ablation, Laser Discectomy, Percutaneous Endoscopic Laser Discectomy, Percutaneous Laser Discectomy, SI Joint Fusion (previous or current), Vertebrectomy, Fusion: AxiaLIF, Fusion: Mid-LIF, Fusion: OLIF, Coflex Laminectomy, Interlaminar Interspinous Fusion (ILIF), Kyphoplasty, AccuraScope, Spinous Process Fixation, Excision of Hemivertebrae, Arthroplasty, Rhizotomy Only o Patients who have a history of or whose current surgery includes an excluded device. Excluded devices are interspinous distraction device, X-Stop at any level, Coflex Device, Aspen Clamp, Aspen Spinous Process System, Minimally Disruptive Fixation Device (DBR), spinal cord stimulator (past or present), Artificial Disc, Annulex Device, Intrathecal Pain Pump. • Documented severe Peripheral Neuropathy or Primary Neuropathy. • Chronic Regional Pain Syndrome (CRPS) • Severe cognitive or psychiatric impairment (advanced dementia, advanced Alzheimer's disease, severe altered mental status, or severe psychiatric condition that interferes with reliable patient reported outcomes and/or agreement for participation; patients with a health care surrogate should also be excluded).

Denominator Exclusions / Exceptions:	None
Numerator:	Number of patients with documentation of a pain assessment through discussion with the patient including the use of a standardized back or neck pain tool(s) AND/OR leg or arm pain tool(s) at baseline and 3 months following initial assessment and intervention(s) for treatment of spine-related pain symptoms with at least 10% improvement in the pain status from the baseline and documentation of follow-up plan.
Rationale:	Spine-related pain and extremity pain related to spinal disorders (i.e., radicular pain) are highly prevalent and disabling conditions. Approximately one-quarter of adults in the United States reported at least 1 full day of low-back pain over a 3-month span, and low-back pain accounts for 2.3%-2.8% of all physician visits. Low-back pain alone represents the most expensive cause of work-related disability in the United States.[1] A recent analysis of 4970 patients enrolled in the QOD Spine Registry found significant levels of baseline low back pain in spine patients (average pain score 6.5 on a scale of 1- 10).[2] Several studies have established the minimum clinically important change in back pain scores following therapy, representing a threshold to distinguish meaningful patient improvements.[3-7] Lumbosacral radicular pain alone has been estimated to have an annual prevalence of 10%-25% in the general population.[8] A recent analysis of 4970 patients enrolled in the QOD Spine Registry found significant levels of patient- reported baseline radicular pain in spine patients (average pain score 6.9 on a scale of 1–10). [2] Several studies have established the minimum clinically important change in radicular pain scores following therapy, representing a threshold to distinguish meaningful patient improvements. [3-7] Given the prevalence and debilitating nature of radicular pain, accurate assessment before and after therapy is essential to assess the impact of interventions and make appropriate plans for continuing care.

References:	1. Deyo RA, Mirza SK, Martin BI: Back pain prevalence and visit rates: estimates from U.S. national surveys, 2002. Spine (Phila Pa 1976) 31: 2724-2727, 2006. 2. Asher AL, Speroff T, Dittus RS, Parker SL, Davies JM, Selden N, et al: The National Neurosurgery Quality and Outcomes Database (QOD): a collaborative North American outcomes registry to advance value-based spine care. Spine (Phila Pa 1976) 39 (22 Suppl 1):S106-16, 2014 3. Parker SL, Adogwa O, Mendenhall SK, Shau DN, Anderson WN, Cheng JS, et al: Determination of minimum clinically important difference (MCID) in pain, disability, and quality of life after revision fusion for symptomatic pseudoarthrosis. Spine J 12: 1122-1128, 2012 4. Parker SL, McGirt MJ: Determination of the minimum improvement in pain, disability, and health state associated with cost-effectiveness: introduction of the concept of minimum cost-effective difference. Neurosurgery 76 (Suppl 1):S64-S70,2015 5. Parker SL, Mendenhall SK, Shau D, Adogwa O, Cheng JS, Anderson WN, et al: Determination of minimum clinically important difference in pain, disability, and quality of life after extension of fusion for adjacent- segment disease. J Neurosurg Spine 16:61-67, 2012 6. Parker SL, Mendenhall SK, Shau DN, Adogwa O, Anderson WN, Devin CJ,et al: Minimum clinically important difference in pain, disability, and quality of life after neural decompression and fusion for same-level recurrent lumbar stenosis: understanding clinical versus statistical significance. J Neurosurg Spine 16:471-478, 2012. 7. Scheer JK, Smith JS, Clark AJ, Lafage V, Kim HJ, Rolston JD, et al: Comprehensive study of back and leg pain improvements after adult spinal deformity surgery: analysis of 421 patients with 2-year follow-up and of the impact of the surgery on treatment satisfaction. J Neurosurg Spine 22:540-553, 2015 8. Van Boxem K, Cheng J, Patijn J, et al. Lumbosacral radicular pain. Pain practice: the official journal of World Institute of Pain 2010; 10:339-58.

Denominator Criteria (Eligible Cases) 1:

Patients aged 18 years and older undergoing spine intervention with any of the following diagnoses:

M40.00, M40.03, M40.04, M40.05, M40.10, M40.12, M40.13, M40.14, M40.15, M40.202, M40.203, M40.204, M40.205, M40.209, M40.292, M40.293, M40.294, M40.295, M40.299, M40.30, M40.35, M40.36, M40.37, M40.40, M40.45, M40.46, M40.47, M40.50, M40.55, M40.56, M40.57, M41.00, M41.02, M41.03, M41.04, M41.05, M41.06, M41.07, M41.08, M41.112, M41.113, M41.114, M41.115, M41.116, M41.117, M41.119, M41.122, M41.123, M41.124, M41.125, M41.126, M41.127, M41.129, M41.20, M41.22, M41.23, M41.24, M41.25, M41.26, M41.27, M41.30, M41.34, M41.35, M41.40, M41.41, M41.42, M41.43, M41.44, M41.45, M41.46, M41.47, M41.50, M41.52, M41.53, M41.54, M41.55, M41.56, M41.57, M41.80, M41.82, M41.83, M41.84, M41.85, M41.86, M41.87, M41.9, M42.00, M42.01, M42.02, M42.03, M42.04, M42.05, M42.06, M42.07, M42.08, M42.09, M42.10, M42.11, M42.12, M42.13, M42.14, M42.15, M42.16, M42.17, M42.18, M42.19, M42.9, M43.00, M43.01, M43.02, M43.03, M43.04, M43.05, M43.06, M43.07, M43.08, M43.09, M43.10, M43.11, M43.12, M43.13, M43.14, M43.15, M43.16, M43.17, M43.18, M43.19, M43.20, M43.21, M43.22, M43.23, M43.24, M43.25, M43.26, M43.27, M43.28, M43.3, M43.4, M43.5X2, M43.5X3, M43.5X4, M43.5X5, M43.5X6, M43.5X7, M43.5X8, M43.5X9, M43.6, M43.8X1, M43.8X2, M43.8X3, M43.8X4, M43.8X5, M43.8X6, M43.8X7, M43.8X8, M43.8X9, M43.9, M45.0, M45.1, M45.2, M45.3, M45.4, M45.5, M45.6, M45.7, M45.8, M45.9, M46.00, M46.01, M46.02, M46.03, M46.04, M46.05, M46.06, M46.07, M46.08, M46.09, M46.1, M46.50, M46.51, M46.52, M46.53, M46.54, M46.55, M46.56, M46.57, M46.58, M46.59, M46.80, M46.81, M46.82, M46.83, M46.84, M46.85, M46.86, M46.87, M46.88, M46.89, M46.90, M46.91, M46.92, M46.93, M46.94, M46.95, M46.96, M46.97, M46.98, M46.99, M47.011, M47.012, M47.013, M47.014, M47.015, M47.016, M47.019, M47.021, M47.022, M47.029, M47.10, M47.11, M47.12, M47.13, M47.14, M47.15, M47.16, M47.20, M47.21, M47.22, M47.23, M47.24, M47.25, M47.26, M47.27, M47.28, M47.811, M47.812, M47.813, M47.814, M47.815, M47.816, M47.817, M47.818, M47.819, M47.891, M47.892, M47.893, M47.894, M47.895, M47.896, M47.897, M47.898, M47.899, M47.9, M48.00, M48.01, M48.02, M48.03, M48.04, M48.05, M48.06, M48.07, M48.08, M48.10, M48.11, M48.12, M48.13, M48.14, M48.15, M48.16, M48.17, M48.18, M48.19, M48.20, M48.21, M48.22, M48.23, M48.24, M48.25, M48.26, M48.27, M48.30, M48.31, M48.32, M48.33, M48.34, M48.35, M48.36, M48.37, M48.38, M48.40XA, M48.40XD, M48.40XG, M48.40XS, M48.41XA, M48.41XD, M48.41XG, M48.41XS, M48.42XA, M48.42XD, M48.42XG, M48.42XS, M48.43XA, M48.43XD, M48.43XG, M48.43XS, M48.44XA, M48.44XD, M48.44XG, M48.44XS, M48.45XA, M48.45XD, M48.45XG, M48.45XS, M48.46XA, M48.46XD, M48.46XG, M48.46XS, M48.47XA, M48.47XD, M48.47XG, M48.47XS, M48.48XA, M48.48XD, M48.48XG, M48.48XS, M48.50XA, M48.50XD, M48.50XG, M48.50XS, M48.51XA, M48.51XD, M48.51XG, M48.51XS, M48.52XA, M48.52XD, M48.52XG, M48.52XS, M48.53XA, M48.53XD, M48.53XG, M48.53XS, M48.54XA, M48.54XD, M48.54XG, M48.54XS, M48.55XA, M48.55XD, M48.55XG, M48.55XS, M48.56XA, M48.56XD, M48.56XG, M48.56XS, M48.57XA, M48.57XD, M48.57XG, M48.57XS, M48.58XA, M48.58XD, M48.58XG, M48.58XS, M48.8X1, M48.8X2, M48.8X3, M48.8X4, M48.8X5, M48.8X6, M48.8X7, M48.8X8, M48.8X9, M48.9, M49.80, M49.81, M49.82, M49.83, M49.84, M49.85, M49.86, M49.87, M49.88, M49.89, M50.00, M50.01, M50.020, M50.021, M50.022, M50.023, M50.03, M50.10, M50.11, M50.120, M50.121, M50.122, M50.123, M50.13, M50.20, M50.21, M50.220, M50.221, M50.222, M50.223, M50.23, M50.30, M50.31, M50.320, M50.321, M50.322, M50.323, M50.33, M50.80, M50.81, M50.820, M50.821, M50.822, M50.823, M50.83, M50.90, M50.91, M50.920, M50.921, M50.922, M50.923, M50.93, M51.04, M51.05, M51.06, M51.14, M51.15, M51.16, M51.17, M51.24, M51.25, M51.26, M51.27, M51.34, M51.35, M51.36, M51.37, M51.44, M51.45, M51.46, M51.47, M51.84, M51.85, M51.86, M51.87, M51.9, M53.0, M53.1, M53.2X1, M53.2X2, M53.2X3, M53.2X4, M53.2X5, M53.2X6, M53.2X7, M53.2X8, M53.2X9, M53.3, M53.80, M53.81, M53.82, M53.83, M53.84, M53.85, M53.86, M53.87, M53.88, M53.9, M54.10, M54.11, M54.12, M54.13, M54.14, M54.15, M54.16, M54.17, M54.18, M54.2, M54.30, M54.31, M54.32, M54.40, M54.41, M54.42, M54.5, M54.6, M54.81, M54.89, M54.9, M62.830,

S12.000A, S12.000B, S12.000D, S12.000G, S12.000K, S12.000S, S12.001A, S12.001B, S12.001D, S12.001G, S12.001K, S12.001S, S12.01XA, S12.01XB, S12.01XD, S12.01XG, S12.01XK, S12.01XS, S12.02XA, S12.02XB, S12.02XD, S12.02XG, S12.02XK, S12.02XS, S12.030A, S12.030B, S12.030D, S12.030G, S12.030K, S12.030S, S12.031A, S12.031B, S12.031D, S12.031G, S12.031K, S12.031S, S12.040A, S12.040B, S12.040D, S12.040G, S12.040K, S12.040S, S12.041A, S12.041B, S12.041D, S12.041G, S12.041K, S12.041S, S12.090A, S12.090B, S12.090D, S12.090G, S12.090K, S12.090S, S12.091A, S12.091B, S12.091D, S12.091G, S12.091K, S12.091S, S12.100A, S12.100B, S12.100D, S12.100G, S12.100K, S12.100S, S12.101A, S12.101B, S12.101D, S12.101G, S12.101K, S12.101S, S12.110A, S12.110B, S12.110D, S12.110G, S12.110K,

S12.110S, S12.111A, S12.111B, S12.111D, S12.111G, S12.111K, S12.111S, S12.112A, S12.112B, S12.112D, S12.112G, S12.112K, S12.112S, S12.120A, S12.120B, S12.120D, S12.120G, S12.120K, S12.120S, S12.121A, S12.121B, S12.121D, S12.121G, S12.121K, S12.121S, S12.130A, S12.130B, S12.130D, S12.130G, S12.130K, S12.130S, S12.131A, S12.131B, S12.131D, S12.131G, S12.131K, S12.131S, S12.14XA, S12.14XB, S12.14XD, S12.14XG, S12.14XK, S12.14XS, S12.150A, S12.150B, S12.150D, S12.150G, S12.150K, S12.150S, S12.151A, S12.151B, S12.151D, S12.151G, S12.151K, S12.151S, S12.190A, S12.190B, S12.190D, S12.190G, S12.190K, S12.190S, S12.191A, S12.191B, S12.191D, S12.191G, S12.191K, S12.191S, S12.200A, S12.200B, S12.200D, S12.200G, S12.200K, S12.200S, S12.201A, S12.201B, S12.201D, S12.201G, S12.201K, S12.201S, S12.230A, S12.230B, S12.230D, S12.230G, S12.230K, S12.230S, S12.231A, S12.231B, S12.231D, S12.231G, S12.231K, S12.231S, S12.24XA, S12.24XB, S12.24XD, S12.24XG, S12.24XK, S12.24XS, S12.250A, S12.250B, S12.250D, S12.250G, S12.250K, S12.250S, S12.251A, S12.251B, S12.251D, S12.251G, S12.251K, S12.251S, S12.290A, S12.290B, S12.290D, S12.290G, S12.290K, S12.290S, S12.291A, S12.291B, S12.291D, S12.291G, S12.291K, S12.291S, S12.300A, S12.300B, S12.300D, S12.300G, S12.300K, S12.300S, S12.301A, S12.301B, S12.301D, S12.301G, S12.301K, S12.301S, S12.330A, S12.330B, S12.330D, S12.330G, S12.330K, S12.330S, S12.331A, S12.331B, S12.331D, S12.331G, S12.331K, S12.331S, S12.34XA, S12.34XB, S12.34XD, S12.34XG, S12.34XK, S12.34XS, S12.350A, S12.350B, S12.350D, S12.350G, S12.350K, S12.350S, S12.351A, S12.351B, S12.351D, S12.351G, S12.351K, S12.351S, S12.390A, S12.390B, S12.390D, S12.390G, S12.390K, S12.390S, S12.391A, S12.391B, S12.391D, S12.391G, S12.391K, S12.391S, S12.400A, S12.400B, S12.400D, S12.400G, S12.400K, S12.400S, S12.401A, S12.401B, S12.401D, S12.401G, S12.401K, S12.401S, S12.430A, S12.430B, S12.430D, S12.430G, S12.430K, S12.430S, S12.431A, S12.431B, S12.431D, S12.431G, S12.431K, S12.431S, S12.44XA, S12.44XB, S12.44XD, S12.44XG, S12.44XK, S12.44XS, S12.450A, S12.450B, S12.450D, S12.450G, S12.450K, S12.450S, S12.451A, S12.451B, S12.451D, S12.451G, S12.451K, S12.451S, S12.490A, S12.490B, S12.490D, S12.490G, S12.490K, S12.490S, S12.491A, S12.491B, S12.491D, S12.491G, S12.491K, S12.491S, S12.500A, S12.500B, S12.500D, S12.500G, S12.500K, S12.500S, S12.501A, S12.501B, S12.501D, S12.501G, S12.501K, S12.501S, S12.530A, S12.530B, S12.530D, S12.530G, S12.530K, S12.530S, S12.531A, S12.531B, S12.531D, S12.531G, S12.531K, S12.531S, S12.54XA, S12.54XB, S12.54XD, S12.54XG, S12.54XK, S12.54XS, S12.550A, S12.550B, S12.550D, S12.550G, S12.550K, S12.550S, S12.551A, S12.551B, S12.551D, S12.551G, S12.551K, S12.551S, S12.590A, S12.590B, S12.590D, S12.590G, S12.590K, S12.590S, S12.591A, S12.591B, S12.591D, S12.591G, S12.591K, S12.591S, S12.600A, S12.600B, S12.600D, S12.600G, S12.600K, S12.600S, S12.601A, S12.601B, S12.601D, S12.601G, S12.601K, S12.601S, S12.630A, S12.630B, S12.630D, S12.630G, S12.630K, S12.630S, S12.631A, S12.631B, S12.631D, S12.631G, S12.631K, S12.631S, S12.64XA, S12.64XB, S12.64XD, S12.64XG, S12.64XK, S12.64XS, S12.650A, S12.650B, S12.650D, S12.650G, S12.650K, S12.650S, S12.651A, S12.651B, S12.651D, S12.651G, S12.651K, S12.651S, S12.690A, S12.690B, S12.690D, S12.690G, S12.690K, S12.690S, S12.691A, S12.691B, S12.691D, S12.691G, S12.691K, S12.691S, S12.8XXA, S12.8XXD, S12.8XXS, S12.9XXA, S12.9XXD, S12.9XXS, S13.131S, S13.140A, S13.140D, S13.140S, S13.141A, S13.141D, S13.141S, S13.150A, S13.150D, S13.150S, S13.151A, S13.151D, S13.151S, S13.160A, S13.160D, S13.160S, S13.161A, S13.161D, S13.161S, S13.170A, S13.170D, S13.170S, S13.171A, S13.171D, S13.171S, S13.180A, S13.180D, S13.180S, S13.181A, S13.181D, S13.181S, S13.20XA, S13.20XD, S13.20XS, S13.29XA, S13.29XD, S13.29XS, S13.4XXA, S13.4XXD, S13.4XXS, S13.5XXA, S13.5XXD, S13.5XXS, S13.8XXA, S13.8XXD, S13.8XXS, S13.9XXA, S13.9XXD, S13.9XXS, S14.2XXA, S14.2XXD, S14.2XXS, S14.3XXA, S14.3XXD, S14.3XXS, S14.4XXA, S14.4XXD, S14.4XXS, S14.5XXA, S14.5XXD, S14.5XXS, S14.8XXA, S14.8XXD, S14.8XXS, S14.9XXA, S14.9XXD, S14.9XXS, S16.1XXA, S22.000A, S22.009A, S22.060A, S22.080A, S23.3XXA, S23.3XXD, S23.3XXS, S23.8XXA, S24.2XXA, S24.2XXD, S24.2XXS, S32.000A, S32.010A, S32.010D, S33.0XXA, S33.0XXD, S33.0XXS, S33.100A, S33.100D, S33.100S, S33.101A, S33.101D, S33.101S, S33.110A, S33.110D, S33.110S, S33.111A, S33.111D, S33.111S, S33.120A, S33.120D, S33.120S, S33.121A, S33.121D, S33.121S, S33.130A, S33.130D, S33.130S, S33.131A, S33.131D, S33.131S, S33.140A, S33.140D, S33.140S, S33.141A, S33.141D, S33.141S, S33.2XXA, S33.2XXD, S33.2XXS, S33.30XA, S33.30XD, S33.30XS, S33.39XA, S33.39XD, S33.39XS, S33.4XXA, S33.4XXD, S33.4XXS, S33.5XXA, S33.5XXD, S33.5XXS, S33.6XXA, S33.6XXD, S33.6XXS, S33.8XXA, S33.8XXD, S33.8XXS, S33.9XXA, S33.9XXD, S33.9XXS, S34.01XA, S34.01XD, S34.01XS, S34.02XA, S34.02XD, S34.02XS, S34.21XA, S34.21XD, S34.21XS, S34.22XA, S34.22XD, S34.22XS, S34.3XXA, S34.3XXD, S34.3XXS, S34.4XXA, S34.4XXD, S34.4XXS, S34.5XXA, S34.5XXD, S34.5XXS, S39.012A,

I80.10, I80.11, I80.12, I80.13, I80.201, I80.202, I80.203, I80.209, I80.211, I80.212, I80.213, I80.219, I80.221, I80.222, I80.223, I80.229, I80.291, I80.292, I80.293, I80.299, I80.3, I80.9, I82.290, I82.401, I82.402, I82.403, I82.409, I82.411, I82.412, I82.413, I82.419, I82.421, I82.422, I82.423, I82.429, I82.431, I82.432, I82.433, I82.439, I82.4Y1, I82.4Y2, I82.4Y3, I82.4Y9, I82.890, I82.90, G96.0, G97.0, I26.02, I26.09, I26.92, I26.99, I82.220, I60.00, I60.01, I60.02, I60.10, I60.11, I60.12, I60.20, I60.21, I60.22, I60.30, I60.31, I60.32, I60.4, I60.50, I60.51, I60.52, I60.6, I60.7, I60.8, I60.9, I61.0, I61.1, I61.2, I61.3, I61.4, I61.5, I61.6, I61.8, I61.9, I63.00, I63.011, I63.012, I63.019, I63.02, I63.031, I63.032, I63.039, I63.09, I63.10, I63.111, I63.112, I63.119, I63.12, I63.131, I63.132, I63.139, I63.19, I63.20, I63.211, I63.212, I63.219, I63.22, I63.231, I63.232, I63.239, I63.29, I63.30, I63.311, I63.312, I63.319, I63.321, I63.322, I63.329, I63.331, I63.332, I63.339, I63.341, I63.342, I63.349, I63.39, I63.40, I63.411, I63.412, I63.419, I63.421, I63.422, I63.429, I63.431, I63.432, I63.439, I63.441, I63.442, I63.449, I63.49, I63.50, I63.511, I63.512, I63.519, I63.521, I63.522, I63.529, I63.531, I63.532, I63.539, I63.54.1, I63.54.2, I63.54.9, I63.59, I63.6, I63.8, I63.9, I65.21, I65.22, I65.23, I65.29, I66.01, I66.02, I66.03, I66.09, I66.11, I66.12, I66.13, I66.19, I66.21, I66.22, I66.23, I66.29, I66.3, I67.89, I21.01, I21.02, I21.09, I21.11, I21.19, I21.21, I21.29, I21.3, I21.4, I22.0, I22.1, I22.2, I22.8, I22.9,

8E0H300, 8E0H30Z, 9WB1XBZ, 9WB1XCZ, 9WB1XDZ, 9WB1XFZ, 9WB1XGZ, 9WB1XHZ, 9WB1XJZ, 9WB1XKZ, 9WB1XLZ, 9WB3XBZ, 9WB3XCZ, 9WB3XDZ, 9WB3XFZ, 9WB3XGZ, 9WB3XHZ, 9WB3XJZ, 9WB3XKZ, 9WB3XLZ,

451.11, 451.19, 451.2, 451.81, 451.9, 453.2, 453.40, 453.41, 453.87, 453.89, 453.9, 349.81, 388.61, 415.11, 415.13, 415.19, 430, 431, 433.01, 433.10, 433.11, 433.21, 433.31, 433.81, 433.91, 434.00, 434.01, 434.11, 434.91, 436, 410.00, 410.01, 410.02, 410.10, 410.11, 410.12, 410.20, 410.21, 410.22, 410.30, 410.31, 410.32, 410.40, 410.41, 410.42, 410.50, 410.51, 410.52, 410.60, 410.61, 410.62, 410.70, 410.71, 410.72, 410.80, 410.81, 410.82, 410.90, 410.91, 410.92, 412