

**2018 Quality Outcomes Database (QOD-Spine Care)
Qualified Clinical Data Registry (QCDR)
Non-MIPS 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, 0423, 0424 modification

Measure Type (Process/Outcome): Outcome

DESCRIPTION:

Percentage of patients aged 18 years and older undergoing index spine therapy (-ies) 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: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Percentage of patients aged 18 years and older undergoing index spine therapy(-ies) 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 society¹, 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 patients scheduled to undergo elective spine surgery (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, which represents the most common indication for surgery in patients over 65 years old.¹¹ In an as-treated analysis of 654 patients with 4-year follow-up, functional disability was found to be significantly reduced in patients who underwent 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 before and after therapy is essential to assess the impact of interventions and make appropriate plans for continuing care.

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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 therapy(-ies) 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: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Percentage of patients aged 18 years and older undergoing index spine therapy(-ies) 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.^{1,2} 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 patients scheduled to undergo elective spine surgery.⁵ Improvements in quality-of-life measures following spine surgery have been demonstrated in a number of conditions.⁶⁻¹² One multicenter study investigated the outcomes of treatment for lumbar spinal stenosis, which represents the most common indication for surgery in patients over 65 years old.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 before and after therapy is essential to assess the impact of interventions and make appropriate plans for continuing care.

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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 index spine therapy(-ies) 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: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Number of patients aged 18 years and older undergoing index spine therapy(-ies) 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 it has emerged as a common outcome measure following spine surgery.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 4970 patients enrolled in the QOD Spine Registry found significant improvements in patient-reported satisfaction after elective spine surgery, although almost 20% of patients reported less than satisfactory experiences.⁴ While there is some evidence that patient satisfaction may not be a valid means of assessing quality health care², other studies have found positive correlations between patient satisfaction and other measures of pain and disability.^{5,6} Given the increased interest in patient satisfaction, studies have more recently sought to determine what factors contribute to these scores. At least 2 such studies have now found that 1 important factor in improving patient satisfaction following surgery is accurately establishing realistic patient expectations prior to surgery.^{7,8} Given the increasing relevance of satisfaction metrics in advancing patient-centered measures health-care services, along with improvement opportunities identified in a large national clinical data program, accurate assessment of patients' self-reported satisfaction with care before and after therapy is essential to assess the impact of interventions and make appropriate plans for continuing individual care along with improving systemic aspects of care.

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NPA6

Spine-Related Procedure Site Infection

NQS Domain: Effective Clinical Care

MIPS No./NQF No.: Non- MIPS; NQF 0130 MIPS 357, modification of MIPS 165

Measure Type (Process/Outcome): Outcome

DESCRIPTION:

Percentage of patients aged 18 years and older who had a surgical-site infection (SSI) within 30 days of the index spine procedure.

DENOMINATOR: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Number of patients aged 18 years and older who had an SSI within 30 days of the index spine procedure.

RATIONALE:

Surgical-site infection (SSI) following spine surgery is associated with significant morbidity and economic burden that can require extended hospital stays, long-term intravenous antibiotic therapy, increased pain requirements, and delayed return to activity and work¹. Care processes that influence the incidence of spinal SSI span the first 3 major phases of care. In the preoperative phase, certain high-risk modifiable risk factors, such as diabetes, smoking, steroid and opioid use, and obesity, should be identified and corrected^{2,3}. Additionally, identification of active preexisting infections and routine patient decontamination are key elements. In the intraoperative phase, impeccable surgical aseptic technique,

the timing and selection of antibiotic prophylaxis, and minimizing blood transfusions are key processes⁴⁻⁹. In the postoperative phase, aseptic wound care and early detection of wound inflammation or breakdown contribute to prevention of delayed contamination and subsequent infection.

The 30-day surveillance window was chosen based on common patient presentations for spinal SSI. The most common spinal infectious microorganisms are *Staphylococcus* species resulting in non-indolent infections that present with wound swelling, tenderness, erythema, drainage, or dehiscence within this time frame^{10,11}. Furthermore, all patients in the registry receive active follow-up at the 3-month time frame, including assessment for SSI, with documented data completeness of 98.1% with follow-up of 85% at that time point¹².

In summary, tracking rates of SSI in spinal surgery is essential to help determine causes of and to reduce the incidence of spine-related SSI.

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NPA11

Unplanned Readmission Following Spine Procedure within the 30-Day Postoperative Period

NQS Domain: Patient Safety (also Efficiency and Cost Reduction)

MIPS No./NQF No.: Non-MIPS; modification of MIPS 356

Measure Type (Process/Outcome): Outcome

DESCRIPTION:

Percentage of patients aged 18 years and older who had any unplanned readmission for spine-related procedure within the 30-day postoperative period.

DENOMINATOR: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Number of patients aged 18 years and older who had any unplanned readmission for spine-related procedure within the 30-day postoperative period.

RATIONALE:

Unplanned postoperative readmissions contribute significantly to excessive resource utilization and drive health care cost. Consequently, readmissions have been under increasing scrutiny by CMS. Their prevalence is high in spine surgery, and we believe our proposed metric captures their magnitude, in accordance with national standards.

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 varied by pathology and operation, with 2.4% of patients with disc herniation, 3.4% of patients with spondylolisthesis, and 4.9% of patients with spinal stenosis requiring readmission within 30 days.³ This reflects the fact that spine surgery encompasses a variety of different pathologies and procedures, and rates of readmission vary between these different entities. Subgroup analysis of 2011 ACS NSQIP data also revealed differences in unplanned readmission rates between diagnoses with 3.5% of patients with disc herniation being readmitted within 30 days, in comparison to 6.4% of patients with acquired spondylolisthesis.⁴ A study of 197 patients with primary and 164 patients with metastatic tumors of the spine revealed unplanned readmission rates of 6.1% and 16.8%, respectively.⁵

Readmissions are often associated with poor outcomes and increased hospitalization costs. Analysis of 185,954 Medicare patients undergoing spine surgery from 2005-2007 revealed that readmissions account for a substantial proportion (20-50%) of variation in cost between hospitals, even after accounting for spinal fusions.⁶

In summary, readmissions clearly represent a large driver of cost in some settings and are often the result of wound-site complications. Thus, readmission rates are important to measure for surgical quality improvement efforts by providers, payers, and administrators.

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NPA12

Selection of Prophylactic Antibiotic Prior to Spine Procedure

NQS Domain: Patient Safety

MIPS No./NQF No.: Non- MIPS; modification of MIPS 021, NQF 0268

Measure Type (Process/Outcome): Process

DESCRIPTION:

Percentage of patients aged 18 years and older undergoing an index spine-related procedure with the indications for prophylactic antibiotics who had an order for antimicrobial prophylaxis.

DENOMINATOR: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Number of patients aged 18 years and older undergoing an index spine-related procedure with the indications for prophylactic antibiotics who had an order for antimicrobial prophylaxis.

RATIONALE and CLINICAL RECOMMENDATIONS:

Surgical-site infection (SSI) is a potentially preventable cause of increased morbidity and mortality for spine patients. From a policy perspective, these complications contribute to mounting health care costs. Wound infection was found to be the most common precipitating event (38.6%) of 30-day readmissions in the 2012 ACS NSQIP data for 15,668 patients undergoing lumbar spine surgery.¹ The National Healthcare Safety Network (2006-2007) demonstrated an SSI rate of 2.8% – 9.7% for spine surgery.² Given the magnitude and the potential impact of postoperative infections on spine patients, establishing process measures to, in part, prevent these complications is of paramount importance.

Preoperative prophylactic antibiotics are central in preventing postoperative infections, and their use is an ideal quality improvement target. A meta-analysis of 6 randomized trials evaluating prophylactic antibiotic efficacy in spine surgery demonstrated that their use resulted in significantly reduced postoperative infection rates (OR 0.37, 95% CI 0.17-0.78, $p < 0.01$). The majority of these trials used a cephalosporin (such as cefazolin) or β -lactam antibiotic (such as oxacillin), though one trial used vancomycin and gentamicin.³ The most common pathogens causing postoperative infections in spinal surgery are *Staphylococcus aureus*, coagulase-negative staphylococci, β -hemolytic streptococci, and gram-negative bacilli. Cefazolin is the current agent of choice for prophylaxis in spine surgery, given its activity against *Staphylococcus* species and β -hemolytic *Streptococcus*.^{4,5} Vancomycin and clindamycin are common choices in patients who have adverse reactions or allergies to cephalosporins and β -lactam antibiotics.

However, resistance is increasingly a problem for first-and second-generation cephalosporins and β -lactam antibiotics. A study of 7529 patients undergoing any spine surgery was reported to the CDC NHSN database.⁶ In this sample the most common pathogen of postoperative spine infections was *S. aureus* (45.2%), followed by *Staphylococcus epidermidis* (31.4%). Methicillin-resistant organisms were present in 34.3% of cases, and gram-negative organisms (61.6% cefazolin resistant) were found in 30.5% of cases. This could reflect selection bias, since reported infections may predominantly represent resistant organisms in an institution that routinely uses preoperative antibiotics. Appropriate prophylactic antibiotics should be tailored to institutional patterns of antimicrobial resistance.

In summary, given the current evidence for efficacy of antibiotic prophylaxis in the prevention of postoperative infections in spine surgery, ensuring their use would likely improve surgical outcomes. Routine antibiotic prophylaxis in this patient population therefore constitutes an important quality-improvement metric. For most procedures, cefazolin is the drug of choice for prophylaxis due to its proven efficacy. It has a desirable duration of action and spectrum of activity against organisms commonly encountered in surgery, reasonable safety, and low cost. However, vancomycin or clindamycin may be effectively used in patients with serious allergy or adverse reactions to β -lactams.

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NPA14

Medicine Reconciliation Following Spine Related Procedure

NQS Domain: Communication and Care Coordination

MIPS No./ NQF No.: Non-MIPS; modification of MIPS 046

Measure Type (Process/Outcome): Process

DESCRIPTION:

Percentage of patients aged 18 years and older undergoing spine-related procedures, discharged from operative facility, and seen within 30 days following discharge in the office by the physician, prescribing practitioner, registered nurse, who had a reconciliation of the discharge medications with the current medication list documented in the outpatient medical record.

DENOMINATOR: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Number of patients aged 18 years and older undergoing spine-related procedures, discharged from operative facility, and seen within 30 days following discharge in the office by the physician, prescribing practitioner, registered nurse, who had a reconciliation of the discharge medications with the current medication list documented in the outpatient medical record.

RATIONALE:

Incomplete or inaccurate medication reconciliation is widespread^{1,2} and has been associated with adverse events, including drug interactions,³ dangerous starting or cessation of medications for chronic conditions,⁴⁻⁶ and avoidable hospital readmission.⁷ Hospitalization puts patients at high risk for medication errors after discharge at least in part because medication records are often incomplete.^{4,8} Medication reconciliation post discharge is, therefore, a critical component of care coordination. Post discharge medication reconciliation is an important opportunity to catch potentially harmful omissions or changes in prescribed medications, particularly in elderly patients who are prescribed a greater quantity and variety of medications.⁹ Although the magnitude of the effect of medication reconciliation alone on patient outcomes is not well studied, there is agreement among experts that potential benefits outweigh the harm.^{6,10-12} Post discharge medication reconciliation is an effective tool to reduce preventable adverse drug events associated with injury or death,^{11,13} and minimize duplication and complexity of a medication regimen to support adherence,¹⁴ and it has the potential to reduce emergency department visits,¹⁵ hospital readmission rates^{7,15}, and morbidity.¹⁶ Post discharge medication reconciliation is recommended by the Joint Commission patient safety goals,^{17,18} the American Geriatric Society¹⁰, and the Society of Hospital Medicine,¹⁹ and measurement of post discharge medication reconciliation is a priority area of the National Quality Forum and the National Priorities Partnership.²⁰

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NPA15

Risk Assessment for Elective Spine Procedure

NQS Domain: Communication and Care Coordination

MIPS No./NQF No.: Non-MIPS, MIPS 182, modification of MIPS 358

Measure Type (Process/Outcome): Process

DESCRIPTION:

Percentage of patients who underwent elective therapy(-ies) for spine-related disorders with documentation of risk factor assessment by their treatment team prior to therapy and who received personal discussion of those documented risks with the healthcare provider.

DENOMINATOR: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Number of patients who underwent elective therapy(-ies) for spine-related disorders with documentation of risk factor assessment by their treatment team prior to therapy and who received personal discussion of those documented risks with the healthcare provider.

RATIONALE:

Preoperative risk assessment and communication between surgeons and patients is critical for effective informed consent and shared decision making in surgical care. Shared decision making is considered an integral component of patient-centered care, especially for preference-sensitive issues.^{1,2} Evidence suggests that there is room for improving the informed consent and shared decision-making process.³⁻⁵ Use of a risk calculator helps improve the quality of the informed consent and shared decision-making process by providing a personalized, customized, empirically based estimate of a patient's risk of postoperative complications. Moreover, evidence suggests that sharing numeric estimates of patient-specific risk may enhance patients' trust in providers.

The ACS NSQIP now offers a risk calculator that can be used for operations in many surgical subspecialties including spine surgery.⁶ ACS NSQIP data have been used to identify a number of predictors of postoperative complications and mortality following spine surgery.⁷ The international spine study group demonstrated the feasibility of using a multicenter prospective database to identify predictors of surgical complications and health-related quality of life following spinal deformity surgery.⁸⁻¹¹ Others have developed models for predicting postoperative medical complications.¹² A recent analysis of the QOD Spine Registry found that certain covariates were strongly associated with patient outcomes following elective spine surgery. Among the most important variables were patient educational status, occupation, diagnosis, baseline patient-reported outcomes, and smoking status.¹³

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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: QOD QCDR patients, See Appendix 1

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 surgery. 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 aimed at treating depression and anxiety that can in turn improve outcomes after spine surgery. In one study, patients whose depression improved after spine surgery had improved outcomes resembling those of non-depressed patients.⁸ Despite the evidence for screening, only a minority of spine surgeons currently screen for psychological factors,⁹ suggesting that there is an opportunity to improve outcomes by encouraging screening.

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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 who underwent elective therapies for spine-related pain who were assessed for narcotic use/requirements at the time of discharge. The performance measure was met if the patient 1) was not receiving narcotics post-discharge or 2) was receiving narcotics for pain for less than 2 weeks post-discharge or 3) was expected to require narcotics for more than 2 weeks after the index procedure and a narcotic use management plan was documented.

DENOMINATOR: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Number of patients aged 18 years and older who underwent elective therapies for spine-related pain who were assessed for narcotic use/requirements at the time of discharge. The performance measure was met if the patient 1) was not receiving narcotics post-discharge or 2) was receiving narcotics for pain less than 2 weeks post-discharge or 3) was expected to require narcotics for more than 2 weeks after the index procedure and a narcotic use management plan was documented.

RATIONALE:

Narcotic pain medication is an important part of postoperative pain management in patients undergoing spinal surgery. 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 patients undergoing spinal procedures is integral to appropriate management. Preoperative opioid use is strongly associated with persistent opioid use after surgery, 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}

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NPA18

Smoking Assessment and Cessation Coincident With Spine-Related Therapies

NQS Domain: Community and Population Health

MIPS No./ NQF No.: Non- MIPS; modification of MIPS 226, modification of NQF 0028

Measure Type (Process/Outcome): Process

DESCRIPTION:

Percentage of patients aged 18 years and older who were assessed for tobacco use prior to spine-related therapy(-ies) and who received cessation counseling intervention if identified as a tobacco user.

DENOMINATOR: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Number of patients aged 18 years and older who were assessed for tobacco use prior to spine-related therapy(-ies) and who received cessation counseling intervention if identified as a tobacco user.

RATIONALE

There is a growing body of evidence regarding the negative impact of cigarette smoking on outcomes following spine surgery. Smoking, nicotine exposure, and tissue hypoxemia have been identified to have deleterious effects on wound healing, general spine and bone health, and bony fusion.¹⁻⁶ Clinically, smoking has been shown to increase the risk of pseudoarthrosis (nonunion), SSI, reoperation, and overall patient dissatisfaction.⁷⁻¹² These negative effects have been observed not only for fusion operations, but also simple laminectomy and across all age groups.

Interventions toward smoking cessation have been shown to decrease these complications as well as those associated with general perioperative risk from non-spine surgery.¹³⁻¹⁴ Furthermore, cessation of smoking has been shown to decrease spine pain even in medically managed patients.¹⁵

A recent analysis of the QOD database revealed that 17% of patients undergoing elective spine surgery identified themselves as active smokers. An analysis of the same database identified smoking as a significant driver of post-surgery outcomes. Smoking assessments and cessation interventions hold the potential to significantly improve outcomes following elective spine surgery.

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NPA19

Body Mass Assessment and Follow-up Coincident With Spine-Related Therapies

NQS Domain: Community and Population Health

MIPS No./ NQF No.: Non-MIPS; modification of MIPS 128, modification of NQF 0421

Measure Type (Process/Outcome): Process

DESCRIPTION:

Percentage of patients aged 18 years and older with a weight and height recorded in the medical record at the time of initial evaluation and/or treatment of spine-related disorder and, if the most recent body mass index (BMI) is outside of normal parameters (BMI \geq 23 and $<$ 30 for patients 65 years and older; BMI \geq 18.5 and $<$ 25 for patients 18-64 years of age), a follow-up plan is documented (example: “Patient referred to nutrition counseling for BMI above normal parameters”).

DENOMINATOR: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Number of patients aged 18 years and older with a weight and height recorded at time of initial evaluation and/or treatment of spine-related disorder documented in the medical record *and* if the most recent BMI is outside of normal parameters.

RATIONALE

Obesity, defined as a BMI greater than or equal to 30 kg/m² has a prevalence of approximately 34% in the United States.¹ It has long been recognized that obese patients are at increased risk for complications related to nearly all types of surgery.² Patients suffering from obesity may be more likely to present to a spine surgeon for potential treatment as obesity is a significant risk factor for spine disease.³ Spinal surgery in the obese population has also been found to be associated with higher risk for many adverse outcomes.⁴⁻⁷ These outcomes include higher volumes of blood loss during surgery, greater hospital length of stay⁷, as well as a higher incidence of inadvertent durotomy.⁸ Outside of immediate perioperative complications, obese patients have been found to have a higher rate of persistent and new symptoms (specifically, radiculopathy, and spinal neurologic deficits) following surgery as compared to a non-obese population.^{8,10}

In summary, obesity has also been shown to influence incidence of spinal disorders and also outcomes after spinal procedures. Effective co-management of obesity is integral to appropriate treatment of many of most spinal conditions.

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NPA20

Unhealthy Alcohol Use Assessment Coincident With Spine Care

NQS Domain: Community and Population Health

MIPS No./NQF No.: Non- MIPS

Measure Type (Process/Outcome): Process

DESCRIPTION:

Percentage of patients aged 18 years and older being treated for spine-related disorders who were assessed for unhealthy alcohol use prior to index therapy(-ies) for treatment of spine-related pain symptoms.

DENOMINATOR: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Number of patients aged 18 years and older being treated for spine-related disorders who were assessed for unhealthy alcohol use prior to index therapy(-ies) for treatment of spine related pain symptoms.

RATIONALE

Alcohol consumption is ubiquitous in the United States, and variability in the quantity of consumption is significant. The lifetime prevalence of any type of alcohol use disorder is in the range of 8%–18%.¹ Alcohol abuse has been associated with increased rates of postoperative complications across most major surgical procedures. These complications include postoperative wound complications (including bleeding and infections) and various cardiopulmonary complications.²⁻⁷ Preoperative intervention for patients consuming excessive alcohol on a daily basis and abstinence before surgery has been shown to abate some of these risks.^{4,7}

Although few analyses point to a direct association between outcomes of spine care and alcohol consumption, a negative correlation between chronic heavy alcohol consumption on bone mineral density (including that of the spine) has been identified.⁸ This evidence indirectly supports the benefit of screening for alcohol use prior to prescribing spine surgery.

Screening for unhealthy alcohol use can identify patients whose habits may put them at risk for adverse health outcomes due to their alcohol use. While this measure does not require counseling for those patients to be found at risk, brief counseling interventions for unhealthy alcohol use have shown to be effective in reducing alcohol use. It would be expected that if a provider found their patient to be at risk after screening that intervention would be provided.

A systematic method of assessing for unhealthy alcohol use should be used. Please refer to the National Institute on Alcohol Abuse and Alcoholism publication *Helping Patients Who Drink Too Much: A Clinician's Guide* for additional information regarding systematic screening methods.⁹

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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 index therapy(-ies) 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: QOD QCDR patients, See Appendix 1

DENOMINATOR EXCLUSIONS/EXCEPTIONS: See Appendix 1

NUMERATOR:

Number 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 index therapy(-ies) 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 is a highly prevalent and disabling condition. 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 spine pain in patients scheduled to undergo elective spine surgery (average pain score 6.5 on a scale of 1-10).³ Significant improvements in back pain have been reported following surgery for a variety of lumbar spine conditions.⁴⁻⁸ Further, these studies have established the minimum clinically important change in back pain scores following surgery, representing a threshold to distinguish meaningful patient improvements.⁴⁻⁸ Given the prevalence and debilitating nature of spine related pain, accurate assessment of patients' spine discomfort before and after therapy is essential to assess the impact of interventions and make appropriate plans for continuing care.

Extremity pain related to spinal disorders (i.e., radicular pain) is a highly prevalent and disabling condition. Lumbosacral radicular pain alone has been estimated to have an annual prevalence of 10%-25% in the general population.⁹ A recent analysis of 4970 patients enrolled in the QOD Spine Registry found significant levels of patient-reported baseline radicular pain in patients scheduled to undergo elective spine surgery (average pain score 6.9 on a scale of 1–10).¹⁰ Significant improvements in radicular pain have been reported following surgery for a variety of lumbar spine conditions.¹¹⁻¹⁵ Further, these studies have established the minimum clinically important change in radicular pain scores following surgery, representing a threshold to distinguish meaningful patient improvements.¹¹⁻¹⁵ 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.

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Appendix 1: QOD QCDR Patients Denominator

QOD QCDR Patients Denominator: The patient population includes patients aged 18 years and older eligible for, enrolled, and engaged in the Qualified Clinical Data Registry (QCDR). For the QOD QCDR, the measures apply to patients undergoing either lumbar or cervical spine surgery and the surgeon's selection of either lumbar or cervical or both lumbar and cervical registry participation. Lumbar surgery includes patients with symptomatic lumbar disc herniation, symptomatic recurrent lumbar disc herniation, lumbar spondylolisthesis, lumbar stenosis, lumbar adjacent segment disease, single level symptomatic mechanical disc collapse. Cervical spine surgery includes patients with cervical radiculopathy, cervical myelopathy, or mechanical neck pain. CPT codes listed are consistent with, and applicable to, these clinical inclusion criteria.

CPT codes consistent with the Lumbar QOD Registry include: 20930, 20931, 20932, 20936, 20937, 20938, 22558, 22585, 22612, 22614, 22840, 22842, 63005, 63012, 63030, 63035, 63042, 63044, 63047, 63048, 63056, 63087, 63088, 63102, 63103, 63267.

CPT codes consistent with the Cervical QOD Registry include: 20930, 20931, 20936, 20937, 20938, 22551, 22552, 22554, 22585, 22600, 22614, 22840, 22842, 22843, 22845, 22846, 63001, 63015, 63020, 63035, 63040, 63043, 63045, 63081, 63082.

Denominator Exclusions

Excluded are patients with circumstances that interfere with or prevent data collection or patients with conditions that confound interpretation of patient outcomes.

General Exclusions

- 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), Vertebroctomy, 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).
- 6-Cycle accrual site exclusion

Exclusions specific to Lumbar Diagnostic Categories

- Deformity (including lumbar scoliosis that is documented as > 20 degrees, i.e., moderate or severe)
- Spondylolisthesis grade 2, 3, 4, or 5 (25% or greater spondylolisthesis)
- Ossified Posterior Longitudinal Ligament (OPLL)
- Previous or current sacroiliac (SI) joint fusion
- Patients with Lumbar or Cervical surgeries or repeat lumbar surgeries.

Exclusions specific to Cervical Categories

- Deformity (cervical)
- Prior cervical surgery at the same level
- Revision Adjacent Segment Pathology: in the cervical module, when the surgeries (past and present) link up together that is a revision adjacent segment disease which should be excluded
- Patients with the presence of any neurologic condition or deficit that would cause the interpretation of outcome to be unclear; for instance: hand weakness, atrophy and numbness from a chronic ulnar neuropathy or end stage carpal tunnel syndrome with numbness, atrophy and weakness or severe peripheral neuropathy with sensory loss or weakness.
- Patients with Lumbar or Cervical surgeries or repeat lumbar surgeries.

Administrative Exclusions

- Duplicate record created and patient enrolled. All data are correctly entered in the other record.
- Patient does not meet baseline inclusion criteria.
- Unable to collect baseline patient-reported outcome data
- Follow-up or tracking is not possible (e.g., military deployment, moving from area)
- Medical records or documentation are not available or cannot be accessed
- Previous deformity exclusion