

Health Policy Review

Physician Quality Reporting System (PQRS) for Interventional Pain Management Practices: Challenges and Opportunities

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Basing their rationale on multiple publications from Institute of Medicine (IOM), specifically Crossing the Quality Chasm, policy makers have focused on a broad range of issues, including assessment of the influence of medical practice organization structures on quality performance and development of quality measures. The 2006 Tax Relief and Health Care Act established the Physician Quality Reporting System (PQRS), to enable eligible professionals to report health care quality and health outcome information that cannot be obtained from standard Medicare claims. However, the Patient Protection and Affordable Care Act (ACA) of 2010 required the Centers for Medicare and Medicaid Services (CMS) to incorporate a combination of cost and quality into the payment systems for health care as a precursor to value-based payments. The final change to PQRS pending initiation after 2018, is based on the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) which has incorporated alternative payment models and merit-based payment systems. Recent publication of quality performance scores by CMS has been less than optimal.

When voluntary participation began in July 2007, providers were paid a bonus for reporting quality measures from 2008 through 2014, ranging from 0.5% to 2% of the Medicare Part B allowed charges furnished during the reporting period. Starting in 2015, penalties started for nonparticipation. Eligible professionals and group practices that failed to satisfactorily report data on quality measures during 2014 are subject to a 2% reduction in Medicare fee-for-service amounts for services furnished by the eligible professional or group practice during 2016. The CMS proposed rule for 2016 physician payments contained a number of provisions with proposed updates to the PQRS and Physician Value-Based Payment Modifier among other changes. The proposed rule is the first release since MACRA repealed the sustainable growth rate formula. CMS proposed to continue many existing policies regarding PQRS from 2015 to 2016. In addition, 2016 will be the year that is utilized to determine the 2018 PQRS payment adjustment. However, after 2018 the PQRS payment adjustment will be transitioned to the Merit-Based Incentive Payment System (MIPS), as required by MACRA. Overall, there will be over 280 measures in the 2016 PQRS.

Readers might be surprised to find out that despite the cost intensity including time requirements personnel, the negative payment adjustments, are only the tip of the iceberg of cost. Indeed, all of the above may only be one-third or one-fourth of the cost to completely implement the PQRS system. Thus far, data across all specialties shows participation to be around 50%. In addition, penalties for lack of reporting of PQRS measures stands to be controversial to the Supreme Court ruling that unfunded mandates must not be permitted and also lack of significant relationships with improvement in quality in the overall analysis in multiple publications.

Key words: Value-based modifier, Medicare Access and CHIP Reauthorization Act of 2015 (MACRA), alternative payment models (APMs), merit based payment systems, negative payments, bonuses

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In December 2015, for the first time since its inception in 1965, Medicare published quality performance scores for individual physicians. This has resulted in more than a degree of consternation because the list included only 40% of practicing physicians and the information was often incorrect (1). This data, published on the Physician Compare Website, scores performance on routine screening and other preventive care for common conditions such as heart disease and diabetes. The data is published for individual physicians and group practices. This information was released under the provisions of the Affordable Care Act (ACA), requiring increased reporting and the use of financial incentives tied to performance on quality metrics (2-5). Many physicians were not included because they have chosen not to submit data or due to inaccuracies and difficulties. Medicare has re-emphasized its ambitious goal to increase the amount of spending tied to financial incentives based on performance by 2018. However, the incentives under most contracts remain very small and critics continue to question whether they will be effective and survive into the future.

As of December 2015, almost 470,000 providers accepted pay cuts rather than participate in quality data or performance quality measures and electronic prescribing. However, CMS boasts that it has paid out more than \$380 million in incentive payments through its physician-quality reporting system and electronic prescribing incentive programs (6).

The new CMS measures can be considered somewhat of a preamble for the Physician Quality Reporting System (PQRS) to be rolled into what is intended to be a more cohesive approach to quality reporting and incentives under the recently enacted legislation repealing and replacing the Medicare sustainable growth rate (SGR) formula – Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) (7-9).

The majority of physicians have long complained of a disjointed and overlapping area of reporting requirements, leading many to conclude that financial bonuses and penalties tied to them aren't worth the trouble. Consequently, almost 470,000 physicians and other eligible professionals got a 1.5% reduction in 2015 payments based on their PQRS data, while almost 50,000 eligible professionals saw a reduction in 2014 through the e-prescribing program. Almost all PQRS reductions (98%) and the majority of the e-prescribing adjustments (80%) were based on refusal to participate, even though participating professionals continue to increase steadily, reaching 51.2% of eligible professionals participating. Generally it has been thought

that most primary care physicians participate in these programs, but, they are the second most eligible professionals failing to participate in the PQRS or meet its requirements with 65%, just behind psychiatrists with 67%. Apart from PQRS, electronic prescribing is also required to meet Stage 2 meaningful use requirements, which calls for 50% of prescriptions to be transmitted electronically (10).

Voluntary participation in PQRS started in July 2007, with providers being paid a bonus for reporting the quality measures, which varied from 0.5% to 2% of the providers' Part B allowed charges furnished during the reporting period.

Starting in 2015, penalties for non-participation replace the bonuses of earlier years (11-13). An array of studies assessing the effectiveness of PQRS participation have reported mixed results, supporting widely held provider beliefs of a dysfunctional and ineffective system (12,14-32). Even then, there is substantial enthusiasm from supporters of PQRS and a value-based payment system including Accountable Care Organizations (ACOs) (33-50). Further, in contrast to the philosophy of Medicare and Medicaid services and the entire health care system, which is based on evidence and medical necessity, PQRS is not supported by the present available evidence in the same manner as electronic medical records (EMRs), International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), and various other regulations (5,7,8,12,49-71). Further, the assessment of penalties for lack of reporting of PQRS measures stands in contrast to the Supreme Court ruling that unfunded mandates must not be permitted (72). The risk of penalties without financial rewards from PQRS has brought anxiety and fear to interventional pain management practices. Thus, PQRS represents an unusual type of policy initiative, starting with voluntary participation with bonuses leading to penalties – inducement opportunities and implementation with challenges.

Eligible professionals in group practices that fail to satisfactorily report data on quality measures during 2014 will be subject to a 2% reduction to Medicare fee-for-service (FFS) amounts during 2016. In November 2015, CMS released the calendar year 2016 physician fee schedule, which contained a number of provisions focused on PQRS, the physician value-based modifier (VBM) program, and the Medicare shared savings program (62). In addition, 2016 will be the payment year for the 2018 PQRS payment adjustment. The PQRS payment adjustment will transition to a merit-based incentive payment system, or MIPS, after 2018 as required by MACRA (7-9).

Thus, the PQRS, which was described as a value-based payment system, has seemingly transformed into a valueless bureaucratic nightmare. The objective of this manuscript is to describe the PQRS program and facilitate its implementation for interventional pain physicians so they may avoid deleterious penalties; financial and reputational.

BACKGROUND

The Institute of Medicine (IOM) published a series of groundbreaking reports in the early 2000s about quality of care and the influence of provider behavior (14,63,64). IOM developed a strategy to improve quality of care which was termed “pay for performance” or “financial incentives” to transform behaviors to achieve greater value (14,63,64). Into that milieu, PQRS was born. PQRS and pay for performance were linked with Value-Based Purchasing (VBP) to improve the value of care over the entire continuum of patient treatment (11,65). The strategy of VBP hinges on recognition, rewards, and sharing of accountability among providers. CMS has embraced PQRS as a component of VBP to advance its goals to transform the Medicare program from a passive payer to an active purchaser of high quality health care services by connecting payment to the quality and value of services provided (15,66-71,73). Policymakers have focused on a broad range of issues, including the development of quality measures (11,14,15,63-71,73) and the influence of medical practice organization structures on quality performance (74-79). The PQRS was established under the 2006 Tax Relief and Health Care Act (80). The PQRS is expected to enable eligible professionals to report health care quality and health outcome information that cannot be obtained from standard Medicare claims (11,66). Subsequently, the ACA of 2010 required the CMS to incorporate a combination of cost and quality into the payment systems for health care as a precursor to value-based payments (2-4). In addition, MACRA incorporated PQRS and value-based payment systems into merit-based payment systems (7-9).

PHYSICIAN QUALITY REPORTING SYSTEM

The PQRS, formerly known as Physician Quality Reporting Initiative (PQRI), is based on measures of process quality and patient health outcomes. The PQRS measures prepared by private organizations are subjected to a lengthy approval process by CMS with updating of this robust list of quality measures each year. CMS provides definitions for each measure with either general PQRS language around measures or disease specific measures. Initially, in 2008 and 2009, the most frequently reported

measures were related to adaption and use of e-prescribing and electronic health records (EHRs) (13,16). Multiple disease-specific measures include measures of process of care and health outcomes, representing either desirable or undesirable health outcomes such as adequate or inadequate control of blood sugar or blood pressure.

PQRS is a separate and distinct program from other measures. As such, successful participation in meaningful use for EHRs requires separate attestation. As an example, the 2% penalty payment adjustment for 2016 and 2017 for not satisfactorily reporting PQRS will be applied to all of the eligible Part B covered professional services under the Medicare physician fee schedule, which may result in a \$2,000 to \$10,000 penalty.

Eligible Professionals

Multiple professionals providing Medicare Part B service are eligible to participate in PQRS. These are designated as eligible professionals (EP) (81,82) including physicians, therapists, and practitioners as shown in Table 1.

Table 1. *Eligible professionals.*

• Physicians
Doctor of Medicine
Doctor of Osteopathy
Doctor of Podiatric Medicine
Doctor of Optometry
Doctor of Oral Surgery
Doctor of Dental Medicine
Doctor of Chiropractic
• Therapists
Physical Therapist
Occupational Therapist
Qualified speech-language therapist
• Practitioners
Physician Assistant
Nurse Practitioner
Clinical Nurse Specialist
Certified Registered Nurse Anesthetist (and Anesthesiologist Assistant)
Certified Nurse Midwife
Clinical Social Worker
Clinical Psychologist
Registered Dietician
Nutrition Professional
Audiologists

PQRS reporting analysis is based on each Individual National Provider Identification (NPI) and tax ID combination. For individual EPs reporting with multiple tax IDs, a PQRS payment adjustment would be applied to each unsuccessful NPI/Tax Identification Number (TIN) reporting. In addition, individual EPs within a group practice that report as individuals are free to choose which PQRS measures or measures group to report without requirement to register to participate as an individual EP. Further, when reporting PQRS as an individual in a group practice setting, analysis is based on individual NPI, but not group NPI.

Consequently, an individual EP can successfully report PQRS under one TIN and have a penalty adjustment applied for not successfully reporting under a different TIN. The penalty may be applied for some individuals in a group practice who fail to successfully report, while other individuals reporting successfully will avoid the PQRS penalty.

PQRS PARTICIPATION

PQRS participation rules have been changing since the inception. Some changes have been made from 2015 PQRS participation to 2016 PQRS participation. These include changes to the PQRS program (Table 2), changes to PQRS reporting criteria involving changes to the group practice reporting option, changes for quali-

fied clinical data registry (QCDR) vendors, changes for registry vendors, EHR changes, and EHR auditing requirements (Table 3). Individual reporting is based on available reporting mechanisms for 2016 program year as follows:

- Claims
- Registry
- EHR (Direct or Data Submission Vendor)
- QCDR

Individual Reporting

There have not been any changes to individual reporting with claims, registry and measures groups via registry, EHR (direct or DSV), and QCDR as shown in Table 4.

Group practice reporting option (GPRO), continues to be available for the 2016 program year through:

- Web interface
- Registry
- EHR (direct or DSV)
- QCDR
- Consumer Assessment of Healthcare Providers and System (CAHPS) for PQRS is:
 - **Optional** for PQRS group practices of 2-99 EPs reporting electronically through the EHR, using a QCDR, or a qualified registry
 - **Required** for all PQRS group practices of 100 or more EPs, regardless of reporting mechanism

Table 2. Changes to PQRS from 2015 to 2016.

• Definition of EP for purposes of participating in PQRS
• Changes to the requirements for the QCDR and qualified registries
• QCDRs and qualified registries have more time in which to self-nominate
• Revised auditing requirements for entities submitting PQRS quality measures data (qualified registries, QCDR, direct EHR, or direct Data Submission Vendor [DSV] product)

Table 3. Changes to PQRS reporting criteria from 2015 to 2016.

• Changes to group practice reporting option (GPRO):
- New QCDR reporting option
- Optional Consumer Assessment of Healthcare Providers and Systems (CAHPS) reporting for groups of 25-99 EPs
- Required CAHPS reporting for groups of 100 or more EPs regardless of reporting mechanism
• Changes for QCDR Vendors
- Support tax identification number (TIN)-level reporting
- New process for self-nomination and attestation
- Revised auditing requirements
• Changes Registry Vendors
- New process for self-nomination and attestation
- Revised auditing requirements
• EHR
- Revised auditing requirements

Table 4. Individual reporting requirements for 2016.

<ul style="list-style-type: none"> • Claims <ul style="list-style-type: none"> • 9 measures covering at least 3 National Quality Strategy (NQS) domains OR if < 9 measures or < 3 domains apply, report on each applicable measure • AND report each measure for at least 50% of the Medicare Part B FFS patients for which the measure applies • If an EP sees one Medicare patient in a face-to-face encounter, they must report on at least one cross-cutting measure (included in the 9 measures) • Measures with 0% performance rate will not count
<ul style="list-style-type: none"> • Registry and measures groups via registry <ul style="list-style-type: none"> • Individual measures: <ul style="list-style-type: none"> • 9 measures covering at least 3 NQS domains OR if < 9 measures or < 3 domains apply, report on each applicable measure • AND report each measure for at least 50% of the Medicare Part B FFS patients for which the measure applies • Measures with 0% performance rate will not count • Measures groups: <ul style="list-style-type: none"> • There were no changes for measures groups via registry reporting for individual EPs • One measures group for 20 applicable patients of each EP • A majority of patients (11 out of 20) must be Medicare Part B FFS patients • Measures groups containing a measure with a 0% performance rate will not be counted
<ul style="list-style-type: none"> • EHR (Direct or DSU) <ul style="list-style-type: none"> • 9 measures covering at least 3 of the NQS domains. If an EP's EHR does not contain patient data for at least 9 measures covering at least 3 domains, then the EP must report on all the measures for which there is Medicare patient data • Report on at least one measure for which there is Medicare patient data • Certified EHR Technology (CEHRT) Requirement for Electronic Clinical Quality Measures (CQM) reporting • Providers must use technology that is CEHRT • Providers must create an electronic file using CEHRT that can be accepted by CMS for reporting
<ul style="list-style-type: none"> • QCDR <ul style="list-style-type: none"> • 9 measures (PQRS measures and/or non-PQRS measures) available for reporting under a QCDR covering at least 3 NQS domains • AND each measure for at least 50% of the EP's patients • Of these measures, EP would report on at least 2 outcome measures OR • If 2 outcome measures are not available, report on at least one outcome measure and at least one resource use, patient experience of care, efficiency/appropriate use, or patient safety measure

In addition, groups must register to report via the GPRO. GPRO reporting with web interface includes practices reporting with or without CAHPS for PQRS. Based on the 2016 physician payment rule, 2 or more EPs participating in the GPRO have an option to report quality measures via a QCDR. Second, group practices of 2-99 EPs use the same criterion as individual EPs to satisfactorily participate in QCDR for the 2018 PQRS payment adjustment, and the reporting period is January 1 to December 31, 2016.

QUALITY MEASURES

Quality of care provided by physicians and other providers is indicated by quality measures. Quality measures are tools that are claimed to help CMS measure or quantify health care processes, outcome, patient perceptions, and organizational structure and/or systems that are associated with the ability to provide high quality health care. CMS describes the goals to include effective, safe, efficient, patient-centered, equitable, and timely care. EPs may choose to report individual measures or measure groups.

The PQRS measures have been described to address various aspects of care, such as prevention, chronic and acute care management, procedure-related care, resource utilization, and care coordination.

Numerator Codes for Clinical Actions

Quality measures consist of a unique numerator (clinical action) and a denominator (eligible case) that permit the calculation of the percentage of a defined population that receives a particular process of care or achieves a particular outcome.

Numerator Codes for Clinical Actions

Denominator Codes for Eligible Cases

Denominator

- Key Question: "Does this patient visit/service meet the PQRS measure criteria for the EP to report?"
- Describes eligible cases for a measure or the eligible patient population (associated with a measure's numerator)
 - ICD-10-CM, CPT Category I & HCPCS codes

- Patient demographics (age, gender, etc.) and place of service

Selecting Quality Measures

EPs must select which measures they would like to report and are not required to report on all of the measures. There are numerous measures each practitioner could select. Consequently, it is important to select appropriate measures by reviewing the measure list.

- Step 1: Review the measures list of PQRS and determine which measures, corresponding NQS domains, and reporting mechanisms may be of interest and applicable to your practice.
- Step 2: Consider important factors including clinical conditions usually treated; types of care typically provided (chronic care provided for pain patients); settings where care is usually delivered such as office, emergency department (ED), or surgical suite; quality improvement goals; and other quality reporting programs in use that are being considered by NQS.
- Step 3: Review specifications. Once the selection of potential measures is made, specifications must be reviewed.

Measures have been classified according to the 6 national quality strategy domains based on the NQS priorities in the current year. To successfully report PQRS in 2016, the reporting mechanisms typically require an EP or group practice to report 9 or more measures governing:

- At least 3 NQS domains and cross cutting measures for EPs with billable face to face encounters for satisfactory reporting. Table 5 shows the 6 NQS domains.

National Quality Strategy

The ACA required the Secretary of Health and Human Services (HHS) to establish a National Strategy for Quality Improvement in Health Care (National Quality Strategy) that sets priorities to guide efforts and include a strategic plan for how to achieve it. The following set of 3 overarching aims was developed to establish

a framework within which specific priorities could be identified and implemented:

- Better Care
- Healthy People/Healthy Communities
- Affordable Care

To advance these aims, the NQS continues to focus on 6 priority domains:

- Patient Safety: making care safer by reducing harm caused in the delivery of care
- Person and Caregiver-Centered Experience and Outcomes: strengthen persons and their families as partners in their care
- Communication and Care Coordination: promoting effective communication and coordination of care
- Effective Clinical Care: promoting the most effective prevention and treatment of chronic disease
- Community/Population Health: work with communities to promote best practices of healthy living
- Efficiency and Cost Reduction: making quality care more affordable for individuals, families, employers, and governments CMS has updated quality measures each year. With new additions, there are almost 281 quality measures for 2016.

PQRS Cross-Cutting Measures

This was a new requirement for 2015 and continues as one for 2016. Cross-cutting measures is a part of Medicare’s mission to obtain a better picture of the overall quality of care furnished by EPs, particularly for the purpose of having PQRS reporting being used to assess quality performance under the value-based modifier. The requirement of reporting a cross-cutting measure is triggered if an EP or group practice bills a face-to-face encounter. CMS defines a face-to-face encounter as an instance in which the EP or group practice billed for services that are associated with face-to-face encounters under the Physician Fee Schedule. This includes office visits and surgical procedure codes. Tele-health visits are not considered as a face-to-face encounter. The following is a link to the 2016 Cross-cutting Measures List: <http://tinyurl.com/2016-PQRSCrossCutting>

The PQRS measures for 2016 have been updated

Table 5. *The 6 NQS domains.*

Patient Safety	Person and Caregiver-Centered Experiences and Outcomes	Communication and Care Coordination
Effective Clinical Care	Community/Population Health	Efficiency and Cost Reduction

with 4 additional cross cutting measures and 37 new individual measures. Similarly, reporting method changes have been made to 18 existing measures along with the removal of 10 measures from PQRS. Among the 2016 finalized new measures by domain include 18 for effective clinical care, 9 for patient safety, 4 for efficiency and cost reduction, one for community/population health, 3 for communication and care coordination, and 2 for patient - and caregiver-centered experience and outcomes.

PQRS Measures Group(s)

A PQRS measures group is a group of measures covering patients with a specific condition or preventive service that is addressed by at least 6 measures that share a common patient/visit clinical condition or focus. Only the defined PQRS measures groups can be utilized when reporting the measures group options. All other individual measures that are included in PQRS but not defined as included in a specific PQRS measures group cannot be grouped together by EPs to define a measures group. In addition, some measures groups include PQRS performance measures that can only be reported as a group. Measures groups are only reportable by individual EPs via a qualified registry. A PQRS measure group cannot be reported via claims-based or EHR method; as well it is not a GPRO reporting option for group practices. Similar to reporting individual measures, measures groups utilize only one 12-month reporting period from January 1 – December 31, 2016. 2016 brings three new PQRS measures groups – Cardiovascular Prevention, Diabetic Retinopathy and Multiple Chronic Conditions. The Multiple Chronic Conditions measure group may be a 2016 PQRS reporting option for some interventional pain management providers. It includes the following measures:

1. Measure #47 - Care Plan
2. Measure # 110 - Preventive Care and Screening; Influenza Immunization
3. Measure #128 - Preventive Care and Screening: Body Mass Index (BMI) Screening and Follow-Up Plan
4. Measure #130 - Documentation of Current Medications in the Medical Record
5. Measure #131 - Pain Assessment and Follow-Up
6. Measure #134 - Preventive Care and Screening: Screening for Clinical Depression and Follow-Up Plan
7. Measure #154 - Falls: Risk Assessment
8. Measure #155 - Falls: Plan of Care

9. Measure #238 - Use of High-Risk Medications in the Elderly

The 20 patient sample criteria for the Multiple Chronic Conditions Measures Group are patients aged 66 years and older with at least two of the conditions as listed in the Chronic Conditions Data Warehouse (CCW) accompanied by one of the two following patient encounter codes:

99487 Complex chronic care management services, with the following required elements: multiple (two or more) chronic conditions expected to last at least 12 months, or until the death of the patient, chronic conditions place the patient at significant risk of death, acute exacerbation/decompensation, or functional decline, establishment or substantial revision of a comprehensive care plan, moderate or high complexity medical decision making, and 60 minutes of clinical staff time directed by a physician or other qualified health care professional, per calendar month

99490 Chronic care management services, at least 20 minutes of clinical staff time directed by a physician or other qualified health care professional, per calendar month, with the following required elements: multiple (two or more) chronic conditions expected to last at least 12 months, or until the death of the patient, chronic conditions place the patient at significant risk of death, acute exacerbation/decompensation, or functional decline, and comprehensive care plan established, implemented, revised, or monitored

The CCW can be reviewed at the following link: <http://tinyurl.com/PQRS-CCWdata>

REPORTING OF PQRS

For successful reporting of PQRS, clinical measures on which EPs are reporting must be documented in the medical record. In addition, there is also the issue related to satisfactory versus satisfactory participation. PQRS is a pay-for-reporting model, in that reporting of non-performance of measures potentially will count toward the prevention of payment adjustment (whether the clinical action is reported as completed or not completed via a performance measure exclusion modifier). However, note that 0% performance rate of an individual measure will not be counted toward meeting the 2015 or 2016 PQRS requirements. Reporting that the EP

did not perform the measure 100% of the time will not count toward preventing the PQRS payment adjustment. In addition, measures groups containing a measure with 0% performance rate will likewise not be considered as satisfactorily reporting the measures group.

A measure-applicability (MAV) will apply for those EPs that report less than 9 measures and/or covering less than 3 domains and/or no cross-cutting measure. MAV exists to help EPs who might practice in specialties and may have a limitation of measures for which they can report, to still avoid the payment adjustments.

To assess the reporting performance, physicians and groups of physicians under the Medicare physician feedback program are provided with confidential feedback reports. These reports can be used to compare with other physicians and groups of physicians caring for Medicare patients. The reports also contain quality of care and cost performance rates on measures used to compare value-based payment modifier. Value-based payment modifier will be implemented gradually. This is variable based on group sizes.

Satisfactory reporting is described as participating in 2015 and 2016 PQRS to avoid the 2017 and 2018 negative payment adjustment. Criteria for satisfactory reporting under PQRS using an EHR are aligned with the Medicare EHR incentive program. Satisfactory reporting of PQRS EHR quality measures will allow EPs and PQRS group practices to qualify for the CQM component of meaningful use.

Satisfactory participation through QCDR is a CMS approved entity that collects medical and/or clinical data for the purpose of patient and disease tracking to foster improvement in the quality of care provided to patients. A QCDR will complete the collection and submission of PQRS

quality measures data on behalf of EPs so that they may meet criteria for satisfactory participating in 2015 / 2016 PQRS. The data submitted to CMS via QCDR covers quality measures across multiple payers and is not limited to Medicare. Reporting via QCDR is one of the 3 reporting mechanisms that provides calculated reporting and performance rates to CMS.

VALUE-BASED PAYMENT MODIFIER

According to CMS and health care policy-makers, PQRS is meant to transition from volume to value. Consequently, a Value-Based Payment Modifier (VBPM) has been developed. The ACA requires CMS to implement a VBPM that provides for a differential payment to physicians based upon the quality of care furnished compared to cost during performance period. Under the value-based payment system, EPs are evaluated on both quality and cost of care. Thus, performance on quality and cost measures in the future can translate into value-based payment incentives for EPs who provide high quality, efficient care while for those who underperform may be subject to downward value-based payment adjustments. VBPM score is determined by PQRS reporters and non-PQRS reporters. The mechanism of work of VBPM is shown in Tables 6 and 7.

PARTICIPATION FOR INTERVENTIONAL PAIN PHYSICIANS

Participation for interventional pain management includes a selection of 9 measures covering 3 or more NQS domains with reporting of more than 50% of applicable Medicare Part B FFS patients over a period of 12 months. Thus, measures with 0% performance rate will be considered in analysis, but will not be considered satisfactorily reported. These measures are subject to claims-based MAV.

For ease of utilization for interventional pain physicians, 9 PQRS individual measures and 4 optional measures are listed in Tables 8 and 9. Of the 9 measures recommended, measures #130, and #131 are reported for each visit or more than once during reporting period and other, measures #39, #47, #128, #226, #408, and #412 are reported once per reporting period or year. Among the optional measures available, measures to be reported with each visit or more than once during reporting period includes #109. Other optional measures are reported once a year, i.e. #178, #435, and #414.

Table 6. *The mechanism of work of value-based payment modifier (VBPM).*

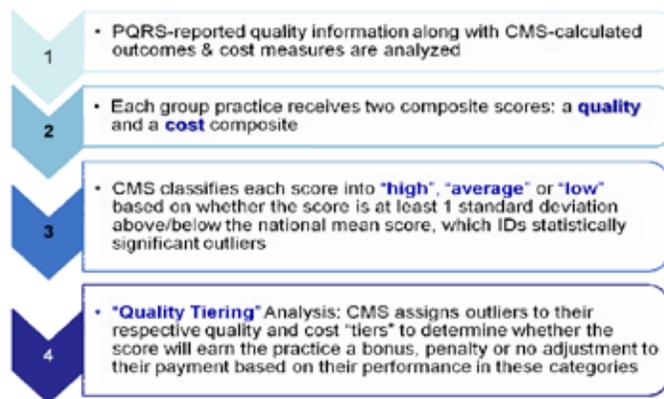


Table 7. Development of value-based payment modifier (VBPM).

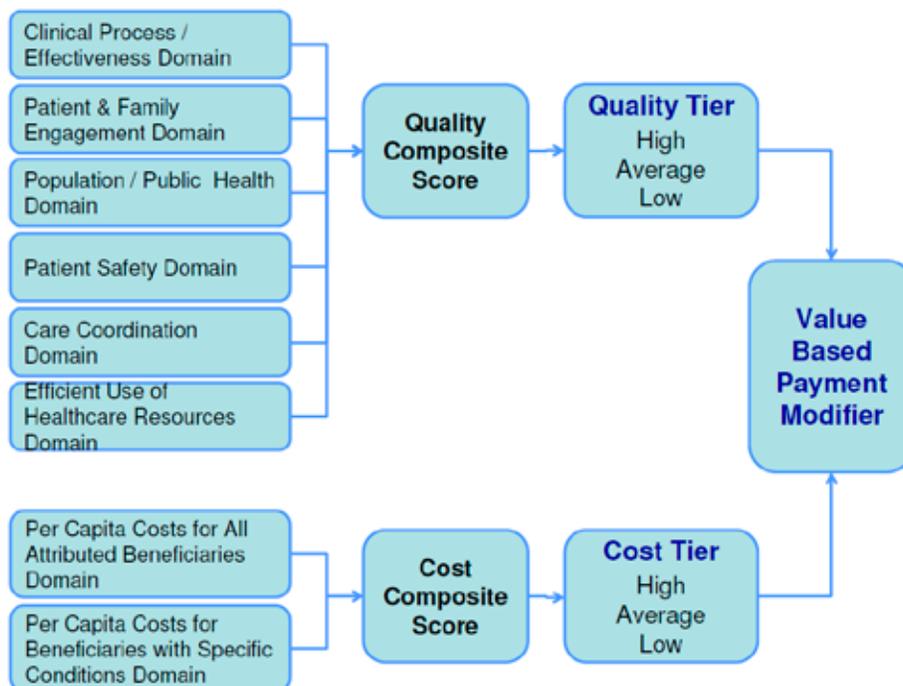


Table 8. Recommended measures for IPM providers.

1.	Measure #39 (NQF 0046): Screening for osteoporosis for women aged 65 -85 years of Age (revised for 2016)
2.	Measure #47 (NQF 0326): Care Plan – Communication and Care Coordination
3.	Measure #111 (NQF 0043): Pneumonia Vaccination Status for Older Adults
4.	Measure #226 (NQF 0028): Preventive Care and Screening: Tobacco Use: Screening and Cessation Intervention
5.	Measure #128 (NQF 0421): Preventive Care and Screening: Body Mass Index (BMI) Screening and Follow-Up Plan
6.	Measure #412: Documentation of Signed Opioid Treatment Agreement (new for 2016)
7.	Measure #130 (NQF 0419): Documentation of Current Medications in the Medical Record
8.	Measure #131 (NQF 0420): Pain Assessment and Follow-Up
9.	Measure #408: Opioid Therapy Follow-up Evaluation (new for 2016)
OPTIONAL	
10.	Measure #178: Rheumatoid Arthritis (RA): Functional Status Assessment
11.	Measure #109: Osteoarthritis (OA): Function and Pain Assessment
12.	Measure #435: Quality of Life Assessment For Patients With Primary Headache Disorders (new for 2016)
13.	Measure #414: Evaluation of Interview for Risk of Opioid Misuse (new for 2016)

NQS Measures to be Reported Once during the 12-month Reporting Period

- Measure #39 (NQF 0046): Screening for osteoporosis for women aged 65 - 85 years of age [NQS Domain: Effective Clinical Care]

Denominator

- All female patients aged 65-85 years on date of

encounter AND patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215

- Reported a minimum of once per reporting period.

Numerator

- The number of women who have documentation in their medical record of having received a DXA

Table 9. 2016 PQRS monitoring sheet with 9 recommended measures and 4 optional measures.

Measures to be Assessed During Each Visit or More Than Once									
#130 Medication documented ICD-10 N/A	G8427	documented							
	G8430	not eligible for assess							
	G8428	NOT DOCUMENTED							
#131 Pain Assessment & F/U ICD-10 N/A	G8730	pos assess f/u documented							
	G8731	neg assess no f/u							
	G8442	not eligible for assess							
	G8939	pos assess f/u NOT documented pt NOT eligible							
	G8732	pain assess not documented							
	G8509	pos pain assess f/u not doc							
Measures to be Reported Once during the 12-month Reporting Period									
#412 Documentation of Signed Opioid Treatment Agreement: ICD-10 N/A	G9578	Opioid Treatment Agreement signed							
	G9579	Opioid Treatment Agreement NOT DOCUMENTED							
#39 Screening for Osteoporosis Women 65-85 Years of Age ICD-10 N/A	G8399	results documented central DXA performed							
	G8401	Not an eligible candidate for screening (reason documented)							
	G8400	central DXA results not documented (reason NOT documented)							
#128 BMI Screening Age 65 and older BMI > 23 and < 30 Age 18-64 BMI > 18.5 and < 25 ICD-10 N/A	G8420	BMI documented WITHIN normal and NO f/u plan required							
	G8417	BMI documented ABOVE normal and f/u plan documented							
	G8418	BMI documented BELOW normal and f/u documented							
	G8422	BMI NOT documented/not eligible							
	G8938	BMI documented OUTSIDE normal, f/u plan NOT documented/NOT eligible							
	G8421	BMI NOT documented-Reason not given							
	G8419	BMI documented normal, f/u plan NOT documented, Reason not given							
# 226 Tobacco Use: Screening AND Cessa- tion: Age 18 and older ICD-10 N/A	4004F	screened AND received cessation intervention							
	1036F	screened and identified as non-user							
	4004F-1P	screening not performed for medical reasons							
	4004F-8P	screening OR cessation intervention NOT performed reason not specified							
# 47 Advance Care Plan >65 AND OLDER ICD-10 N/A	1123F	Documented							
	1124F	Documented not specified by patient							
	1123F-8P	NOT DOCUMENTED							
#111 Pneumonia Vaccination Status for 65 AND OLDER ONLY ICD-10 N/A	4040F	vaccine has been administered							
	4040F-8P	vaccine has NEVER been received							
#408 Opioid Therapy Follow-up Evaluation ICD-10 N/A	G9562	f/u eval at least every 3 months during opioid therapy							
	G9563	Did NOT have f/u eval at least every 3 months during opioid therapy							

PQRS for Interventional Pain Management Practices

Table 9. 2016 PQRS monitoring sheet with 9 recommended measures and 4 optional measures.

Optional									
#414 Evaluation or Interview for Risk of Opioid Misuse ICD-10 N/A	G9584	Eval for risk of opiate misuse							
	G9585	NOT eval for risk of opiate misuse							
#109 OA: Function and Pain Assessment Age 21 and older ICD-10: M15.-, M16.-, M17.-, M18.-, M19.-	1006F	OA symptoms and functional status assessed							
	1006F-8P	OA symptoms and functional status NOT assessed, reason not specified							
#178: Rheumatoid Arthritis Assessment Age 18 and older ICD-10: M15.-, M16.-, M17.-, M18.-, M19.-	1170F	functional status assessed							
	1170F-8P	functional status NOT assessed							
#435 Primary Headache Disorder ICD-10 G43.00- to G44.89-	G9634	health related quality of life assessed during at least 2 visits							
	G9635	health related quality of life not assessed due to lack of patient cognition or lack of patients ability to read, write, etc.							
	G9636	health related quality of life not assessed with tool during at least 2 visits or quality of life score declined							

test of the hip or spine or clinician documented that patient was not an eligible candidate for screening

- Patient with central dual energy x-ray ABSO or PTIO metry the DXA results not documented, reason not given.

Rationale

- There is convincing evidence that bone marrow density tests predict short-term risk for osteoporosis fractures.
- There is also evidence that osteoporosis treatment reduces the incidence of fracture in women who are identified to be at risk of an osteoporotic fracture.
- Fractures, especially in older population, can cause significant health issues, decline in function, and in some cases lead to mortality.

2. **Measure #47 (NQF 0326):** Care Plan [NQS domain: Communication and Care Coordination]

Denominator

- All patients aged ≥ 65 years on date of encounter AND patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215, and multiple additional codes.
- Reported a minimum of once per reporting period.

Numerator

- Patients who have an advance care plan or surro-

gate decision-maker documented in the medical record or documentation in the medical record that an advance care plan was discussed but patient did not wish or was not able to name a surrogate decision-maker or provide an advance care plan.

- "The CPT Category II codes used for this measure indicate: Advance Care Planning was discussed and documented. The act of using the Category II codes on a claim indicates the provider confirmed that the Advance Care Plan was in the medical record (that is, at the point in time the code was assigned, the Advance Care Plan in the medical record was valid) or that advance care planning was discussed. The codes are required annually to ensure that the provider either confirms annually that the plan in the medical record is still appropriate or starts a new discussion.
- The provider does not need to review the Advance Care Plan annually with the patient to meet the numerator criteria, documentation of a previously developed advanced care plan that is still valid in the medical record meets numerator criteria.

3. **Measure #111 (NQF 0043):** Pneumonia Vaccination Status for Older Adults [NQS domain: Community / Population Health]

Denominator

- Pneumococcal vaccination is expected once ever for patients 65 years of age or older.
- Patients aged ≥ 65 years on date of encounter AND

patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215 and multiple additional codes

- Reported a minimum of once per reporting period.

Numerator

- Patients who have ever received a pneumococcal vaccination
- While the measure provides credit for adults 65 year of age and older who have ever received either the PCV13 or PPSV23 vaccine (or both), according to ACIP recommendations, patients should receive both vaccines.
- The order and timing of the vaccination depends on certain patient characteristics, and are detailed in ACIP recommendations.

Rationale

- Pneumonia is a common cause of illness and death in the elderly and persons with certain underlying conditions such as heart failure, diabetes, cystic fibrosis, asthma, sickle cell anemia, or chronic obstructive pulmonary disease.
- The Advisory Committee on Immunization Practices' (ACIP) Updated Recommendations for Prevention of Invasive Pneumococcal Disease Among Adults recommends pneumococcal vaccine for all immunocompetent individuals who are 65 and older or otherwise at increased risk for pneumococcal disease.

4. **Measure #226 (NQF 0028):** Preventive Care and Screening: Tobacco Use: Screening and Cessation Intervention [NQS domain: Community / Population Health]

Denominator

- All patients aged ≥ 18 years with patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215 and multiple additional codes

Numerator

- Patients who were screened for tobacco use at least once within 24 months AND who received tobacco cessation counseling intervention if defined as a tobacco user

5. **Measure #128 (NQF 0421):** Preventive Care and Screening: Body Mass Index (BMI) Screening and

Follow-Up Plan [NQS domain: Community/Population Health]

Denominator

- All patients aged ≥ 18 years on date of encounter AND patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215 and multiple additional codes

Numerator

- The measure is to be reported a minimum of once per reporting period or patients seen during the reporting report.
- Patients with a documented BMI during the encounter or during the previous 6 months, AND when the BMI is outside of normal parameters, a follow-up plan is documented during the encounter or during the previous 6 months of the current encounter
- Numerator instructions include height and weight and follow-up plan.

6. **Measure #412** Documentation of Signed Opioid Treatment Agreement [NQS domain: Effective Clinical Care]

Denominator

- Patients aged over 18 years on date of encounter and patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, and multiple additional codes.
- Patients prescribed opiates for longer than 6 weeks.
- This measure is to be reported a minimum of once per reporting period for all patients being prescribed opioids for duration longer than 6 weeks during the operating period.

Numerator

- Patients who signed an opioid treatment agreement at least once during opioid therapy.

Rationale

- The goal of consent process is to assist patients to make appropriate medical decisions that are consistent with their preference and values.
- In some states, clinicians are required to document this discussion, though specific requirements are variable for each state.
- A continuing discussion with the patient regarding

chronic opioid therapy should include goals, expectations, potential risks, and alternatives to chronic opioid therapy.

- Clinicians may consider using a written chronic opioid therapy management plan to document patient and clinician responsibilities and expectations and assist in patient education.
7. **Measure #408** Opioid Therapy Follow-up Evaluation [NQS domain: Effective Clinical Care]

Denominator

- Patients aged over 18 years on date of encounter and patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, and multiple additional codes.
- Patients prescribed opiates for longer than 6 weeks reports

Numerator

- This measure is reported a minimum of once per reporting period for all patients being prescribed opioids for duration longer than 6 weeks during the reporting period.
- However, clinicians should assess patients on chronic opioid therapy periodically and as warranted by changing circumstances.
- Monitoring should include documentation of pain intensity and level of functioning, assessment of progress toward achieving therapeutic goals, presence of adverse events, and adherence to prescribed therapies.
- In patients on chronic opioid therapy who are at high risk or who have engaged in aberrant drug related behaviors, clinicians should periodically obtain drug screens or other information to confirm adherence to the chronic opioid therapy plan of care.
- In patients on chronic opioid therapy, not at high risk and not known to have engaged in aberrant drug related behaviors, clinicians should consider periodically obtaining urine drug screens or other information to confirm adherence to the chronic opioid therapy plan of care.
- Patients with a follow-up evaluation conducted at least every 3 months during opioid therapy.
- Clinicians should periodically reassess all patients on chronic opioid therapy. Regular monitoring of patients once chronic opioid therapy is initiated is critical because therapeutic risks and benefits do not remain static and can be affected by changes

in the underlying pain condition, presence of coexisting disease, or changes in psychological or social circumstances.

- Monitoring is essential to identify patients who are benefitting from chronic opioid therapy, those who might benefit more with restructuring of treatment or receiving additional services such as treatment for addiction, and those whose benefits from treatment are outweighed by harms.

Measures to be Assessed During Each Visit or More Than Once

8. **Measure #130** (NQF 0419): Documentation of Current Medications in the Medical Record [NQS domain: Patient Safety]

Denominator

- All visits for patients aged ≥ 18 years and older AND patient encounters during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215 and multiple additional codes.

Numerator

- EP attests for documenting, updating, or reviewing a patient's current medications using all immediate resources available on the date of encounter. The current medication list must include ALL known prescriptions, over-the counters, herbals, and vitamin/mineral/dietary (nutritional) supplements AND must contain the medications' name, dosages, frequency and route of administration.
- The eligible professional must document in the medical record they obtained, updated, or reviewed a medication list on the date of the encounter.
- Eligible professionals reporting this measure may document medication information received from the patient, authorized representative(s), caregiver(s) or other available healthcare resources. G8427 should be reported if the eligible professional documented that the patient is not currently taking any medications.

9. **Measure #131** (NQF 0420): Pain Assessment and Follow-Up [NQS domain: Communication and Care Coordination]

Denominator

- All patients aged ≥ 18 years on date of encounter

ter AND patient encounters during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215 and multiple additional codes

Numerator

- Patients with a documented pain assessment using a standardized tool(s) AND documentation of a follow-up plan when pain is present.
- Documentation of a clinical assessment for the presence or absence of pain using a standardized tool is required. A multi-dimensional clinical assessment of pain using a standardized tool may include characteristics of pain; such as location, intensity, description, and onset/duration.
- The standardized tool used to assess the patient's pain must be documented in the medical record (exception: A provider may use a fraction such as 5/10 for Numeric Rating Scale without documenting this actual tool name when assessing pain for intensity)
- Standardized tools include, but are not limited to, Numeric Rating Pain Scale (NPS), Oswestry Disability Index (ODI), Verbal Descriptor Scale (VDS), Verbal Numeric Rating Scale (VNRS), and Visual Analog Scale (VAS).
- A follow-up plan is required which is a documented outline of care for a positive pain assessment. These plans may include pharmacologic, educational, interventional techniques, physical therapy, exercise program, a follow-up appointment, or a referral.

Optional Measures

10. Measure #178: Rheumatoid Arthritis (RA): Functional Status Assessment [NQS domain: Effective Clinical Care]

Denominator

- All patients aged 18 years and older with a diagnosis of rheumatoid arthritis AND patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215 and multiple additional codes

Numerator

- Patients for whom a functional status assessment was performed at least once within 12 months
- This measure is to be reported a minimum of once per reporting period.

11. Measure #109: Osteoarthritis (OA): Function and

Pain Assessment [NQS domain: Person and Caregiver-Centered Experience and Outcomes]

Denominator

- Patients aged ≥ 21 years on date of encounter AND diagnosis of osteoarthritis and patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215

Numerator

- Patient visits with assessment for level of function and pain documented (may include the use of a standardized scale or the completion of an assessment questionnaire, such as an SF-36, AOA Hip & Knee Questionnaire)
- It is not only the generalized osteoarthritis, but arthritis of various joints are included. Thus, measuring the function of each individual joint during each visit is required.

12. Measure #435: Quality of Life Assessment for Patients with Primary Headache Disorders [NQS Domain: Effective Clinical Care]

Denominator

- All patients with a diagnosis of primary headache disorder during the reporting period with at least 2 visits during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, and multiple additional codes.

Numerator

- Patients whose health related quality of life was assessed with a tool(s) during at least 2 visits during the 12 month measurement period and those health related quality of life score stayed the same or improved.
- This measure is to be reported at least once per reporting period for patients with a diagnosis of primary headache during the reporting period.
- Performance is excluded if reasons are documented for lack of cognitive or neuropsychiatric impairment that impairs ability to complete the health-related quality of life (HRQoL) survey or patient has the inability to read and write in order to complete HRQoL questionnaire.

Rationale

- The measure establishes an initial or baseline quality of life (QoL) score from which the patient should

use the same QoL tool/questionnaire at least one additional time during the measurement period. The 2 assessments must be separated by at least 90 days for Migraine Disability Assessment (MIDAS) and at least 4 weeks for any other tool.

- It is expected that the QoL score or ranking will stay the same or improve in order for this measure to be successfully completed.

13. Measure #414: Evaluation of Interview for Risk of Opioid Misuse [NQS Domain: Effective Clinical Care]

Denominator

- All patients 18 and older prescribed opiates for longer than six weeks duration and patient encounter during the reporting period (CPT): 99201, 99202, 99203, 99204, 99205, and multiple additional codes.

Numerator

- Patients evaluated for risk of misuse of opioid by using a brief validation instrument (i.e. Opioid Risk Tool, SOAAP-R) or patient interview at least once during opioid therapy.

Rationale

- A thorough history and physical examination, including an assessment of psychosocial factors and family history, is essential for adequate risk stratification.
- Clinician should obtain appropriate diagnostic test to evaluate the underlying pain condition, and should consider whether the pain condition may be treated more effectively with non-opioid therapy rather than with chronic opioid therapy.

Discussion

The PQRS uses a combination of incentive payments and payment adjustments to promote reporting of quality information by both individual EPs and group practices to the CMS. In a nutshell, EPs and group practices that failed to satisfactorily report data on quality measures during 2014 will be subject to a 2% reduction to the Medicare fee-for-service amounts for services furnished by the EP or group practices during 2016. The data on quality measures reported for 2015 will be used for 2017. The year 2016 will be the report-

ing year for the 2018 PQRS payment adjustment. After 2018, the PQRS payment adjustment will transition to a merit-based incentive payment system, as required by MACRA (7-9). CMS has proposed to compare EPs and/or group practices on the same mechanism which an EP or group practice used for reporting, thus, if an EP participates in PQR via claims, they should only be compared with other EPs who reported via claims. Further, concern has been expressed in reference to the accuracy of comparison on practices who reported the same measure but through different EHR vendors. In fact, CMS has admitted that results may vary, not only based on reporting mechanism, but also across EHR systems and that no 2 EHRs report and calculate quality measures uniformly. With the complexities of ICD-10-CM, transitioning to alternative payment models (APMs) and the MIPS program a la MACRA all accompanied by administrative burden and cost, we expect that there might be a meaningful diminution in PQRS participation rates. In 2013, only 51% of EPs participated and only 38% participated successfully.

With the present threat of 2% negative payment update for PQRS and future threat of negative payment of 4% for groups with 10 or more EPs, some physicians wonder if bonus payments are worth the time, cost, and intensity required to complete these data. An average physician may avoid in the form of penalties approximately \$2,000 to \$10,000 at best; however, the costs of meeting the PQRS criteria may rack up to be at a minimum \$30,000 to \$50,000, leading to the question of whether the PQRS policy is worth pursuing.

CONCLUSION

PQRS is a quality reporting program established by CMS under the ACA as value-based measure to provide effective, safe, efficient, patient-centered, equitable, and timely care to the patients. The program includes multiple measures and various reporting mechanisms which will require time and resource commitment from interventional pain physicians. Moreover, there are, at best, a very limited number of appropriate measures that can be utilized at the present time for specialties such as interventional pain management. However, 2016 measures bring some hope for interventional pain management. Even then, the question remains if these programs are worth the time, cost, and intensity of provider effort which may be far larger than the proposed negative payments.

REFERENCES

- Evans M. CMS posts new quality data for individual doctors over AMA protests. *Modern Healthcare*, December 10, 2015. www.modernhealthcare.com/article/20151210/NEWS/151219991
- Public Law No: 111-148: H.R. 3590. Patient Protection and Affordable Care Act. March 23, 2010.
- Manchikanti L, Hirsch JA. Patient Protection and Affordable Care Act of 2010: A primer for neurointerventionalists. *J Neurointerv Surg* 2012; 4:141-146.
- Hirsch JA, Barr R, McGinty G, Nicola GN, Silva III E, Schaefer P, Manchikanti L. Affordable Care 2014: A tale of two boards. *J Neurointerv Surg* 2014; 6:718-720.
- Manchikanti L, Hirsch JA. Regulatory burdens of the Affordable Care Act. *Harvard Health Policy Rev* 2012; 13:9-12.
- Tahir D. More docs report quality data and e-prescribe, but may prefer penalty. *Modern Healthcare*, April 24, 2015. www.modernhealthcare.com/article/20150424/NEWS/150429944
- Manchikanti L, Staats PS, Boswell MV, Hirsch JA. Analysis of the carrot and stick policy of repeal of the sustainable growth rate formula: The good, the bad, and the ugly. *Pain Physician* 2015; 18:E273-E292.
- Hirsch JA, Leslie-Mazwi TM, Patel AB, Rabinov JD, Gonzalez RG, Barr RM, Nicola GN, Klucznik RP, Prestigiacomo CJ, Manchikanti L. MACRA: Background, opportunities and challenges for the neurointerventional specialist. *J Neurointerv Surg* 2015; Published Online First July 28, 2015 doi:10.1136/neurintsurg-2015-011952.
- Manchikanti L. Sustainable growth rate repealed, MACRA revealed: Historical context and analysis of recent changes in medicare physician payment methodologies. *AJNR Am J Neuroradiol* 2015 [Epub ahead of print].
- CMS Medicare and Medicaid EHR Incentive Programs: Stage 2 Final Rule. August 23, 2012.
- Centers for Medicare and Medicaid Services. Physician quality reporting system. www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/PQRS/index.html?redirect=/pqrs
- Dowd BE, Li CH, Swenson T, Coulam R, Levy J. Medicare's Physician Quality Reporting System (PQRS): Quality measurement and beneficiary attribution. *Medicare Medicaid Res Rev* 2014; 4:mmrr2014.004.02.004.
- Centers for Medicare and Medicaid Services (CMS) 2015 Physician Quality Reporting System (PQRS): Implementation Guide 1/15/2015; Revised 2/25/2015, 4/30/2015, 6/30/2015, 7/23/2015, 10/02/2015
- Berman B, Pracilio VP, Crawford A, Behm WR, Jacoby R, Nash DB, Goldfarb NI. Implementing the physician quality reporting system in an academic multi-specialty group practice: lessons learned and policy implications. *Am J Med Qual* 2013; 28:464-471.
- Rosenstein AH, O'Daniel M, White S, Taylor K. Medicare's value-based payment initiatives: impact on and implications for improving physician documentation and coding. *Am J Med Qual* 2009; 24:250-258.
- Dowd BE, Swenson T, Parashuram S, Coulam R, Kane R. PQRS participation, inappropriate utilization of health care services, and medicare expenditures. *Med Care Res Rev* 2015; [Epub ahead of print].
- Pursel KJ, Jacobson M, Stephenson K. Paying for quality not quantity: A Wisconsin health maintenance organization proposes an incentive model for reimbursement of chiropractic services. *J Manipulative Physiol Ther* 2012; 35:472-476.
- Brunt CS, Jensen GA. Pricing distortions in Medicare's physician fee schedule and patient satisfaction with care quality and access. *Health Econ* 2014; 23:761-775.
- Stitzenberg KB, Chang Y, Smith AB, Nielson ME. Exploring the burden of inpatient readmissions after major cancer surgery. *J Clin Oncol* 2015; 33:455-464.
- Penson DF. Re: Exploring the burden of inpatient readmissions after major cancer surgery. *J Clin Oncol* 2015; 33:455-464. *J Urol* 2015; 194:1068.
- Romaire MA, Haber SG, Wensky SG, McCall N. Primary care and specialty providers: An assessment of continuity of care, utilization, and expenditures. *Med Care* 2014; 52:1042-1049.
- Harrington R, Coffin J, Chauhan B. Understanding how the Physician Quality Reporting System affects primary care physicians. *J Med Pract Manage* 2013; 28:248-250.
- Rosenkrantz AB, Hughes DR, Duszak R Jr. How do publicly reported Medicare quality metrics for radiologists compare with those of other specialty groups? *J Am Coll Radiol* 2015; Sep 1. pii: S1546-1440(15)00574-8.
- Dunn JH, Alvarez BT, Dellavelle RP, Dunnick CA. An update of dermatologist usage of the Physician Quality Reporting System in Colorado for 2011. *Dermatol Online J* 2013; 19:20018.
- McHugh M, Neimeyer J, Powell E, Khare RK, Adams JG. An early look at performance on the emergency care measures included in Medicare's hospital inpatient Value-Based Purchasing Program. *Ann Emerg Med* 2013; 61:616-623.
- Duszak R Jr, Saunders WM. Medicare's physician quality reporting initiative: Incentives, physician work, and perceived impact on patient care. *J Am Coll Radiol* 2010; 7:419-424.
- Shih A, Dewar DM, Hartman T. Medicare's quality improvement organization program value in nursing homes. *Health Care Financ Rev* 2007; 28:109-116.
- Altman SH. The lessons of Medicare's prospective payment system show that the bundled payment program faces challenges. *Health Aff (Millwood)* 2012; 31:1923-1930.
- Landon BE, O'Malley AJ, McKellar MR, Hadley J, Reschovsky JD. Higher practice intensity is associated with higher quality of care but more avoidable admissions for medicare beneficiaries. *J Gen Intern Med* 2014; 29:1188-1194.
- McWilliams JM, Landon BE, Chernew ME. Changes in health care spending and quality for Medicare beneficiaries associated with a commercial ACO contract. *JAMA* 2013; 310:829-836.
- Prevedello LM, Farkas C, Ip IK, Cohen AB, Mukundan S, Sodickson AD, Khorasani R. Large-scale automated assessment of radiologist adherence to the Physician Quality Reporting System for stroke. *J Am Coll Radiol* 2012; 9:414-420.
- Phillips RL, Blackburn B, Peterson LE, Puffer JC. Maintenance of certification, Medicare quality reporting, and quality of diabetes care. *Am J Med Qual* 2015; [Epub ahead of print].
- Evans M. Medicare's pioneer program down to 19 ACOs after three more exit. *Modern Healthcare*, September 25, 2014. www.modernhealthcare.com/article/20140925/NEWS/309259938

34. Schwartz AL, Chernew ME, Landon BE, McWilliams JM. Changes in low-value services in year 1 of the medicare pioneer accountable care organization program. *JAMA Intern Med* 2015; 175:1815-1825.
35. McWilliams JM, Chernew ME, Landon BE, Schwartz AL. Performance differences in year 1 of pioneer accountable care organizations. *N Engl J Med* 2015; 372:1927-1936.
36. Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in Medicare. *JAMA Intern Med* 2014; 174:1067-1076.
37. Graham JR. Accountable care organizations hate Medicare's final ACO rule. *NCPA Health Policy Blog*, June 9, 2015. <http://healthblog.ncpa.org/accountable-care-organizations-hate-medicare-final-aco-rule/>
38. Graham JR. Medicare accountable care organizations cut spending two thirds of one percent. *Health Policy Blog*, June 3, 2015. <http://healthblog.ncpa.org/medicare-accountable-care-organizations-cut-spending-two-thirds-of-one-percent/>
39. Mondie C. The hidden dangers of accountable care organizations. *American Thinker*, October 4, 2013. www.americanthinker.com/articles/2013/10/the_hidden_dangers_of_accountable_care_organizations.html
40. Hanfling D. Health care preparedness funding: Are we inviting disaster? *HealthAffairs Blog*, December 31, 2013. <http://healthaffairs.org/blog/2013/12/31/health-care-preparedness-funding-are-we-inviting-disaster/>
41. Accountable care organizations and the value index score. Iowa Department of Human Services. <http://dhs.iowa.gov/ime/about/iowa-health-and-wellness-plan/ACO-VIS>
42. Fitch JA. Health care report 2015: Accountable care organizations aim to decrease costs while boosting health. *Central Penn Business Journal*, June 12, 2015. www.cpbj.com/article/20150612/CPBJ01/150629811/health-care-report-2015-accountable-care-organizations-aim-to-decrease-costs-while-boosting-health
43. Glenn B. Why accountable care organizations are like vegan barbecue. *Medical Economics*, May 15, 2013. [http://medicaleconomics.modernmedicine.com/medical-economics/content/](http://medicaleconomics.modernmedicine.com/medical-economics/content/tags/accountable-care-organization/why-accountable-care-organizations-are-?page=full)
44. Menninger B. Accountable care organizations: Avoiding pitfalls of the past. *California HealthCare Foundation*, December 2010. www.chcf.org/~media/MEDIA%20LIBRARY%20Files/PDF/PDF%20A/PDF%20AccountableCareOrganizationsAvoidingPitfallsPast.pdf
45. Rice S. Healthcare safer in some areas – but not overall, patient safety foundation says. *Modern Healthcare*, December 8, 2015. www.modernhealthcare.com/article/20151208/news/151209911/healthcare-safer-in-some-areas-but-not-overall-patient-safety
46. Modern Healthcare. Q&A: Value-based payment poses challenge to rural hospitals. *Modern Healthcare*, November 28, 2015. www.modernhealthcare.com/article/20151128/magazine/311289953
47. Modern Healthcare. There's a risk that value-based payment 'is more lip service than the real thing'. *Modern Healthcare*, November 7, 2015. www.modernhealthcare.com/article/20151107/magazine/311079954
48. Dickson V. Family docs question benefits of new payment models. *Modern Healthcare*, December 1, 2015. www.modernhealthcare.com/article/20151201/news/151209982
49. Hirsch JA, Leslie-Mazwi TM, Barr RM, McGinty G, Nicola GN, Patel AB, Manchikanti L. The Burwell roadmap. *J Neurointerv Surg* 2015 Mar 5. [Epub ahead of print]
50. Meehan TM, Harvey HB, Duszak R Jr, Meyers PM, McGinty G, Nicola GN, Hirsch JA. Accountable Care Organizations: what they mean for the country and for neurointerventionalists. *J Neurointerv Surg* 2015 May 18. [Epub ahead of print]
51. Hirsch JA, Leslie-Mazwi TM, Nicola GN, Oklu R, Schoppe KA, Silva E 3rd, Manchikanti L. The ICD-10 system: A gift that keeps on taking. *J Neurointerv Surg* 2015; 7:619-622.
52. Manchikanti L, Hammer M, Boswell MV, Kaye AD, Hirsch JA. Survival strategies for tsunami of ICD-10-CM for interventionalists: Pursue or perish! *Pain Physician* 2015; 18:E685-E712.
53. Manchikanti L, Kaye AD, Singh V, Boswell MV. The tragedy of the implementation of ICD-10-CM as ICD-10: Is the cart before the horse or is there a tragic paradox of misinformation and ignorance? *Pain Physician* 2015; 18:E485-E495.
54. Manchikanti L, Falco FJE, Helm II S, Hirsch JA. First, do no harm by adopting evidence-based policy initiatives: The overselling of ICD-10 by Congress with high expectations. *Pain Physician* 2015; 18:E107-E113.
55. Manchikanti L, Falco FJE, Hirsch JA. Necessity and implications of ICD-10: Facts and fallacies. *Pain Physician* 2011; 14:E405-E425.
56. Manchikanti L, Benyamin RM, Falco FJE, Hirsch JA. Metamorphosis of medicine in the United States: A carrot and stick policy of electronic medical records. *Pain Physician* 2014; 17:E671-E680.
57. Manchikanti L, Benyamin RM, Falco FJE, Hirsch JA. Metamorphosis of medicine in the United States: Is information technology a white knight or killer whale? *Pain Physician* 2014; 17:E663-E670.
58. Manchikanti L, Falco FJE, Kaye AD, Hirsch JA. The disastrous but preventable consequences of ICD-10. *Pain Physician* 2014; 17:E111-E118.
59. Rubeinstein J. ICD-10: Are you ready? *Curr Urol Rep* 2014; 15:449.
60. Nerney C. ICD-10: A rude awakening coming? *Medical Practice Insider*, November 30, 2015. www.medicalpracticeinsider.com/news/icd-10-rude-awakening-coming
61. Supreme Court of the United States. Michigan et al v Environmental Protection Agency et al. June 29, 2015.
62. Department of Health and Human Services, Centers for Medicare & Medicaid Services. 42 CFR Parts 405, 410, 411, 414, 425, and 495. Medicare Program; Revisions to Payment Policies under the Physician Fee Schedule and Other Revisions to Part B for CY 2016 (CMS-1631-FC). Final Rule. November 16, 2015.
63. Institute of Medicine. Crossing the quality chasm: A new health system for the 21st century. The National Academies Press, Washington, DC, 2001.
64. Institute of Medicine. *Rewarding Provider Performance: Aligning Incentives in Medicare*. National Academies Press, Washington, DC, 2007.
65. Tompkins CP, Higgins AR, Ritter GA. Measuring outcomes and efficiency in Medicare value-based purchasing.

- ing. *Health Aff (Millwood)* 2009; 28:w251-w261.
66. Physician quality reporting initiative: 2007 reporting experience. www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/PQRS/downloads/PQRI2007ReportFinal12032008CSG.pdf.
 67. Hadley J, Reschovsky JD. Medicare fees and physicians' medicare service volume: Beneficiaries treated and services per beneficiary. *Int J Health Care Finance Econ* 2006; 6:131-150.
 68. Snyder C, Anderson G. Do quality improvement organizations improve the quality of hospital care for Medicare beneficiaries? *JAMA* 2005; 293:2900-2907.
 69. Stulberg J. The physician quality reporting initiative -- a gateway to pay for performance: what every health care professional should know. *Qual Manag Health Care* 2008; 17:2-8.
 70. Harrington P. Quality as a system property: Section 646 of the Medicare Modernization Act. *Health Aff (Millwood)* 2004; Suppl Variation:VAR136-9.
 71. Elliot B. To participate or not in the physician quality reporting initiative (PQRI); that is the question. *Del Med J* 2007; 79:197-204.
 72. Supreme Court of the United States. Michigan et al v Environmental Protection Agency et al. June 29, 2015.
 73. McMahon LF Jr, Chopra V. Health care cost and value: the way forward. *JAMA* 2012; 307:671-672.
 74. Dowd B, Karmarker M, Swenson T, Parashuram S, Kane R, Coulam R, Jeffrey M. Emergency department utilization as a measure of physician performance. *Am J Med Qual* 2013; 29:135-143.
 75. Scholle SH, Roski J, Dunn D, Adams JL, Dugan DP, Pawlson LG, Kerr EA. Availability of data for measuring physician quality performance. *Am J Manag Care* 2009; 15:67-72.
 76. Friedberg MW, Coltin KL, Safran DG, Dresser M, Zaslavsky AM, Schneider EC. Associations between structural capabilities of primary care practices and performance on selected quality measures. *Ann Intern Med* 2009; 151:456-463.
 77. Kralewski JE, Dowd B, Heaton A, Kaisi A. The influence of the structure and culture of medical group practices on prescription drug errors. *Med Care* 2005; 43:817-825.
 78. Kralewski JE, Dowd B, Knutson D, Savage M, Tong J. Medical group practice characteristics influencing inappropriate emergency department and avoidable hospital rates. *J Ambul Care Manage* 2013; 36:286-291.
 79. Coulam R, Kralewski J, Dowd B, Gans D. The role of medical group practice administrators in the adoption and implementation of Medicare's physician quality reporting system. *Health Care Manag Rev* 2015; [Epub ahead of print].
 80. H.R. 6111. Tax Relief and Health Care Act of 2006. P.L. 109-432, December 20, 2006.
 81. Centers for Medicare and Medicaid Services (CMS) Medicare Quality Reporting Programs: 2016 Physician Fee Schedule Final Rule, *MLN Connects*, December 8, 2015.
www.cms.gov/Outreach-and-Education/Outreach/NPC/Downloads/2015-12-08-Quality-Presentation.pdf
 82. Centers for Medicare and Medicaid Services (CMS) 2015 Physician Quality Reporting Systems (PQRS) Measure Specifications Manual for Claims and Registry Reporting of Individual Measures. 11/10/2014.
www.acr.org/~media/ACR/Documents/PDF/QualitySafety/Quality%20Measurement/2015%20PQRS/2015_PQRS_IndividualMeasureSpec_ClaimsRegistry_111014.pdf