



## Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to sub criterion 1b).

### Brief Measure Information

**NQF #:** 0556

**Corresponding Measures:**

**De.2. Measure Title:** INR for Individuals Taking Warfarin and Interacting Anti-Infective Medications

**Co.1.1. Measure Steward:** Centers for Medicare & Medicaid Services

**De.3. Brief Description of Measure:** Percentage of episodes with an International Normalized Ratio (INR) test performed three to seven days after a newly started interacting anti-infective medication for individuals receiving warfarin

**1b.1. Developer Rationale:** This measure focuses on International Normalized Ratio (INR) testing of patients on warfarin who are prescribed anti-infective medications that are known to interact with warfarin and result in a higher risk for adverse events. Warfarin is a vitamin K antagonist prescribed to prevent "further thromboembolism in patients with atrial fibrillation, after mechanical heart valve replacement, and following deep vein thrombosis or pulmonary embolism" (Dharmarajan, Gupta, Baig, & Norkus, 2011). Warfarin has a narrow therapeutic range and, therefore, requires regular monitoring with the INR test and dose adjustment for the patient to stay within the therapeutic range and avoid thromboembolism or bleeding complications. Since its approval by the Food and Drug Administration in 1954, warfarin has been used as an oral anticoagulant in clinical practice (Food and Drug Administration, 2011). It continues to be widely prescribed, with about 33 million prescriptions issued in the United States during 2011 (Pierson, 2012).

Several important benefits related to quality improvement are envisioned with the implementation of this measure. Specifically, the measure will help providers identify individuals on warfarin who are prescribed an anti-infective medication known to interact with warfarin. The measure will also encourage providers to conduct appropriate INR testing for those patients. An INR test within three to five days of starting the interacting anti-infective medications has been recommended (Keeling et al., 2011) to inform dose adjustment if needed and therefore would be expected to result in fewer warfarin-related adverse events and lower mortality.

Citations for Rationale Provided in 1b.1.

Dharmarajan, T. S., Gupta, A., Baig, M. A., & Norkus, E. P. (2011). Warfarin: Implementing its safe use in hospitalized patients from nursing homes and community through a performance improvement initiative. *Journal of the American Medical Directors Association*, 12(7), 518-523.

Food and Drug Administration. (2011). Warfarin (Coumadin) product labeling. Reference ID 3022954. Retrieved Oct. 16, 2013, from [http://www.accessdata.fda.gov/drugsatfda\\_docs/label/2011/009218s107lbl.pdf](http://www.accessdata.fda.gov/drugsatfda_docs/label/2011/009218s107lbl.pdf)

Keeling, D., Baglin, T., Tait, C., Watson, H., Perry, D., Baglin, C., . . . Makris, M. (2011). Guidelines on oral anticoagulation with warfarin—fourth edition. *British Journal of Haematology*, 154(3), 311-324.

Pierson, R. (2012, June 14). Insight: Top heart doctors fret over new blood thinners. Retrieved Oct. 30, 2013, from <http://www.reuters.com/article/2012/06/14/us-drugs-bloodthinners-idUSBRE85D06G20120614>

**S.4. Numerator Statement:** Number of episodes in the denominator with an INR test performed three to seven days after the start date of an anti-infective medication

**S.6. Denominator Statement:** Number of episodes with a newly started interacting anti-infective medication with an overlapping days' supply of warfarin.

**S.8. Denominator Exclusions:** We excluded the following individuals from the denominator:

- Individuals with a diagnosis of cancer
- Individuals who are monitoring INR at home

**De.1. Measure Type:** Process

**S.17. Data Source:** Claims, Electronic Health Data

<b>S.20. Level of Analysis:</b> <a href="#">Health Plan, Integrated Delivery System, Population : Regional and State</a>
<b>IF Endorsement Maintenance – Original Endorsement Date:</b> <a href="#">Aug 05, 2009</a> <b>Most Recent Endorsement Date:</b> <a href="#">Nov 10, 2014</a>
<b>IF this measure is included in a composite, NQF Composite#/title:</b>
<b>IF this measure is paired/grouped, NQF#/title:</b>
<b>De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results?</b> <a href="#">Not applicable</a>

<b>1. Evidence, Performance Gap, Priority – Importance to Measure and Report</b>
Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. <b><i>Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria.</i></b>
<b>1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form</b> <a href="#">NQF_0556_Evidence_Form.docx</a> <b>1a.1 For Maintenance of Endorsement: Is there new evidence about the measure since the last update/submission?</b> Do not remove any existing information. If there have been any changes to evidence, the Committee will consider the new evidence. Please use the most current version of the evidence attachment (v7.1). Please use red font to indicate updated evidence.
<b>1b. Performance Gap</b> Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating: <ul style="list-style-type: none"> <li>considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or</li> <li>Disparities in care across population groups.</li> </ul> <b>1b.1. Briefly explain the rationale for this measure</b> (e.g., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure) <i>If a COMPOSITE (e.g., combination of component measure scores, all-or-none, any-or-none), SKIP this question and answer the composite questions.</i> <a href="#">This measure focuses on International Normalized Ratio (INR) testing of patients on warfarin who are prescribed anti-infective medications that are known to interact with warfarin and result in a higher risk for adverse events. Warfarin is a vitamin K antagonist prescribed to prevent "further thromboembolism in patients with atrial fibrillation, after mechanical heart valve replacement, and following deep vein thrombosis or pulmonary embolism" (Dharmarajan, Gupta, Baig, &amp; Norkus, 2011). Warfarin has a narrow therapeutic range and, therefore, requires regular monitoring with the INR test and dose adjustment for the patient to stay within the therapeutic range and avoid thromboembolism or bleeding complications. Since its approval by the Food and Drug Administration in 1954, warfarin has been used as an oral anticoagulant in clinical practice (Food and Drug Administration, 2011). It continues to be widely prescribed, with about 33 million prescriptions issued in the United States during 2011 (Pierson, 2012).</a>  <a href="#">Several important benefits related to quality improvement are envisioned with the implementation of this measure. Specifically, the measure will help providers identify individuals on warfarin who are prescribed an anti-infective medication known to interact with warfarin. The measure will also encourage providers to conduct appropriate INR testing for those patients. An INR test within three to five days of starting the interacting anti-infective medications has been recommended (Keeling et al., 2011) to inform dose adjustment if needed and therefore would be expected to result in fewer warfarin-related adverse events and lower mortality.</a>  Citations for Rationale Provided in 1b.1. <a href="#">Dharmarajan, T. S., Gupta, A., Baig, M. A., &amp; Norkus, E. P. (2011). Warfarin: Implementing its safe use in hospitalized patients from nursing homes and community through a performance improvement initiative. Journal of the American Medical Directors Association, 12(7), 518-523.</a> <a href="#">Food and Drug Administration. (2011). Warfarin (Coumadin) product labeling. Reference ID 3022954. Retrieved Oct. 16, 2013, from http://www.accessdata.fda.gov/drugsatfda_docs/label/2011/009218s107lbl.pdf</a> <a href="#">Keeling, D., Baglin, T., Tait, C., Watson, H., Perry, D., Baglin, C., . . . Makris, M. (2011). Guidelines on oral anticoagulation with</a>

warfarin—fourth edition. British Journal of Haematology, 154(3), 311-324.

Pierson, R. (2012, June 14). Insight: Top heart doctors fret over new blood thinners. Retrieved Oct. 30, 2013, from <http://www.reuters.com/article/2012/06/14/us-drugs-bloodthinners-idUSBRE85D06G20120614>

**1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis.** *(This is required for maintenance of endorsement. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.*

Sample Characteristics: All Medicare Parts A, B, and D claims data during calendar years 2007 and 2008 from 8 states (Arizona, Delaware, Florida, Indiana, Iowa, Mississippi, Rhode Island, and Washington). The sample consisted of 4,789,034 Medicare beneficiaries.

All Medicare Parts A, B, and D claims data during calendar years 2011 and 2012 from 10 states (Arizona, Delaware, Florida, Iowa, Indiana, Mississippi, Missouri, Rhode Island, Texas, and Washington); the sample consisted of 14,162,440 Medicare beneficiaries, 26,182 Physician Groups, and 83 Prescription Drug Plans (Part D plans). For the states-level performance, results are calculated using the 2007-2008 and 2010-2011 data. For the plan-level performance, results are calculated using the 2010-2011 data. Results for physician groups are not presented because measure rates are not reliable at the physician group level.

#### State

Year / n	Mean	Median	Min	Max	STD	IQR	P10	P25	P50	P75	P90
2008 / 8	22.52%	22.00%	15.83%	31.88%	4.59%	3.16%	15.83%	20.53%	22.00%	23.70%	31.88%
2012 / 10	21.98%	21.52%	16.09%	32.04%	4.21%	3.41%	17.14%	19.92%	21.52%	23.33%	27.70%

#### Prescription Drug Plan

Plan with at least 2,500 episodes (minimum denominator for reliability >0.7):

Year / n	Mean	Median	Min	Max	STD	IQR	P10	P25	P50	P75	P90
2012 / 10	20.69%	20.65%	17.82%	23.79%	1.59%	1.40%	18.73%	19.78%	20.65%	21.18%	23.00%

Sample Characteristics: Parts A, B, and D data for 682,036 beneficiaries (9,344) attributed to 31 ACOs from calendar year 2011:

#### ACO

Year / n	Mean	Median	Min	Max	STD	IQR	P10	P25	P50	P75	P90
2011 / 31	21.69%	21.41%	13.04%	32.86%	5.52%	8.12%	14.81%	17.36%	21.41%	25.48%	29.66%

**1b.3. If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.**

Please see Section 1b.2. for performance data on the measure.

**1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability.** *(This is required for maintenance of endorsement. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included.) For measures that show high levels of performance, i.e., “topped out”, disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.*

The summary of data on disparities by population group is discussed in the overview of disparities by population group, summary of published studies on disparities by population group, and testing results based on Medicare data.

This measure was stratified for disparities by age, race/ethnicity, and dual-eligibility (beneficiaries covered by both Medicare and Medicaid). The results/scores are presented for these categories/cohorts.

Rates by age and race/ethnicity for the entire 10-state sample:

Category or Cohort	Denominator	Numerator	Measure Rate
All Ages	103,025	21,345	20.7%

White / 90,748 / 18,998 / 20.9%  
 African American / 7,862 / 1,541 / 19.6%  
 Hispanic / 2,650 / 460 / 17.4%  
 Other / 1,765 / 346 / 19.6%

18 - 24 / 77 / 11 / 14.3%  
 White / 40 / 6 / 15.0%  
 African American / 21 / 2 / 9.5%  
 Hispanic / 8 / 1 / 12.5%  
 Other / 8 / 2 / 25.0%

25 - 44 / 2,740 / 474 / 17.3%  
 White / 1,768 / 306 / 17.3%  
 African American / 753 / 127 / 16.9%  
 Hispanic / 155 / 33 / 21.3%  
 Other / 64 / 8 / 12.5%

45 - 64 / 13,973 / 2,457 / 17.6%  
 White / 10,447 / 1,817 / 17.4%  
 African American / 2,722 / 493 / 18.1%  
 Hispanic / 452 / 90 / 19.9%  
 Other / 352 / 57 / 16.2%

65 - 74 / 32,473 / 6,419 / 19.8%  
 White / 29,118 / 5,769 / 19.8%  
 African American / 2,054 / 419 / 20.4%  
 Hispanic / 662 / 109 / 16.5%  
 Other / 639 / 122 / 19.1%

75 - 84 / 35,952 / 7,750 / 21.6%  
 White / 32,995 / 7,156 / 21.7%  
 African American / 1,576 / 342 / 21.7%  
 Hispanic / 850 / 143 / 16.8%  
 Other / 531 / 109 / 20.5%

85+ / 17,810 / 4,234 / 23.8%  
 White / 16,380 / 3,944 / 24.1%  
 African American / 736 / 158 / 21.5%  
 Hispanic / 523 / 84 / 16.1%  
 Other / 171 / 48 / 28.1%

Rates by age and dual-eligible status for the entire 10-state sample:

Category or Cohort / Denominator / Numerator / Measure Rate

Dual-Eligible / 31,050 / 6,518 / 21.0%

18 - 24 / 73 / 11 / 15.1%

25 - 44 / 2,081 / 374 / 18.0%

45 - 64 / 8,546 / 1,554 / 18.2%

65 - 74 / 7,909 / 1,620 / 20.5%

75 - 84 / 7,972 / 1,774 / 22.3%

85+ / 4,469 / 1,185 / 26.5%

Not Dual-Eligible / 71,975 / 14,827 / 20.6%

18 - 24 / 4 / 0 / 0%

25 - 44 / 659 / 100 / 15.2%

45 – 64 / 5,427 / 903 / 16.6%  
 65 – 74 / 24,564 / 4,799 / 19.5%  
 75 – 84 / 27,980 / 5,976 / 21.4%  
 85 + / 13,341 / 3,049 / 22.9%

The measure rates for White, African American, or Hispanic race/ethnicity groups are statistically different from all groups except for Other (p-value<0.011).

Measure rates for patients ages 25 to 64 are significantly lower than the measure rates for patients 65 or older (p-value=<0.002). There is no difference between age groups for patients less than 65. However, the measure rate increases as the age increases (p-value<0.0001) for all age groups 65 or older.

There is no statistical difference in the measure rate between dually eligible and non-dually eligible patients.

**1b.5. If no or limited data on disparities from the measure as specified is reported in 1b.4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in 1b.4**

Please see Section 1b.5. for disparities data on the measure.

## 2. Reliability and Validity—Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. **Measures must be judged to meet the sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.**

**2a.1. Specifications** The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

**De.5. Subject/Topic Area** (check all the areas that apply):

Cardiovascular

**De.6. Non-Condition Specific**(check all the areas that apply):

Safety, Safety : Medication

**De.7. Target Population Category** (Check all the populations for which the measure is specified and tested if any):

Elderly, Populations at Risk

**S.1. Measure-specific Web Page** (Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)

Not applicable

**S.2a. If this is an eMeasure**, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)

This is not an eMeasure Attachment:

**S.2b. Data Dictionary, Code Table, or Value Sets** (and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)

Attachment Attachment: NQF0556\_-\_Codes\_Table-635254586561790739.xls

**S.2c.** Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

Attachment:

**S.2d.** Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

**S.3.1. For maintenance of endorsement:** Are there changes to the specifications since the last updates/submission. If yes, update the specifications for S1-2 and S4-22 and explain reasons for the changes in S3.2.

**S.3.2. For maintenance of endorsement,** please briefly describe any important changes to the measure specifications since last measure update and explain the reasons.

The age requirement for the target population was changed from 18 years or older at the end of the measurement period to 18 years or older at the beginning of the measurement period to harmonize with other measures in the portfolio. ICD-9-CM, ICD-10-CM, and National Drug Codes have been updated annually. The new drugs on the market that are applicable to the measure have been added to the medication list, and agents that have been discontinued for more than three years have been removed. The drug selection criteria have been simplified, and the optional exclusion for individuals monitoring INR at home is now a required exclusion.

**S.4. Numerator Statement** (Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome) DO NOT include the rationale for the measure.

IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

Number of episodes in the denominator with an INR test performed three to seven days after the start date of an anti-infective medication

**S.5. Numerator Details** (All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

Hospitalizations of more than 48 hours are counted as an INR test.

Table 1. Codes Used to Identify INR Monitoring

Prothrombin Time CPT: 85610

Source: American Medical Association (AMA) (2006). Updated: AMA (2009).

**S.6. Denominator Statement** (Brief, narrative description of the target population being measured)

Number of episodes with a newly started interacting anti-infective medication with an overlapping days' supply of warfarin.

**S.7. Denominator Details** (All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)

IF an OUTCOME MEASURE, describe how the target population is identified. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

Target population meets the following conditions:

1. Continuously enrolled in Part D with no more than a one-month gap in enrollment during the measurement year;
2. Continuously enrolled in Part A and Part B with no more than a one-month gap in Part A enrollment and no more than a one-month gap in Part B enrollment during the measurement year;
3. No more than one month of HMO (Health Maintenance Organization) enrollment during the measurement year; and,
4. Individuals must have at least two claims for warfarin on different dates of service.
  - a. If more than one prescription for warfarin with the same date of service overlaps an interacting anti-infective medication, then keep the prescription with the greatest days' supply.
  - b. If more than one prescription for warfarin with different dates of service overlaps an interacting anti-infective medication,

then keep the episode with the greatest number of overlapping days.

Table 2. Anti-Infective Medications

Aminoglycosides

Active ingredients: neomycin, paromomycin

Anticoagulant effect: Increased

Antifungal Agents

Active ingredients: fluconazole, voriconazole, miconazole

Anticoagulant effect: Increased

Active ingredients: griseofulvin

Anticoagulant effect: Decreased

Active ingredients: itraconazole, ketoconazole

Anticoagulant effect: Increased

Active ingredients: terbinafine

Anticoagulant effect: Increased/decreased

Antiviral

Active ingredients: interferon-alfa, interferon-beta

Anticoagulant effect: Increased

Active ingredients: ribavirin

Anticoagulant effect: Decreased

Active ingredients: oseltamivir

Anticoagulant effect: Increased

Active ingredients: atazanavir, darunavir, fosamprenavir, indinavir, nelfinavir, ritonavir, saquinavir, tipranavir

Anticoagulant effect: Increased/decreased

Active ingredients: nevirapine

Anticoagulant effect: Decreased

Cephalosporins

Active ingredients: cefotetan

Anticoagulant effect: Increased

Fluoroquinolones

Active ingredients: ciprofloxacin, levofloxacin, moxifloxacin, norfloxacin, ofloxacin,

Anticoagulant effect: Increased

Macrolides

Active ingredients: azithromycin, clarithromycin, erythromycin

Anticoagulant effect: Increased

Penicillin

Active ingredients: nafcillin, dicloxacillin

Anticoagulant effect: Decreased

Active ingredients: ampicillin, oxacillin, penicillin G, piperacillin, ticarcillin, amoxicillin, amoxicillin/clavulanic acid

Anticoagulant effect: Increased

#### Tetracycline

Active ingredients: demeclocycline, doxycycline, minocycline, tetracycline, oxytetracycline

Anticoagulant effect: Increased

#### Others

Active ingredients: rifabutin, rifapentine

Anticoagulant effect: Decreased

Active ingredients: rifampin

Anticoagulant effect: Decreased

#### Anti-Infective Agents – Misc

Active ingredients: sulfamethoxazole, chloramphenicol, telithromycin, metronidazole, tinidazole

Anticoagulant effect: Increased

Active ingredients: sulfisoxazole, isoniazid

Anticoagulant effect: Increased

Active ingredients: rifaximin

Anticoagulant effect: Decreased

#### Anti-Malarial

Active ingredients: atovaquone, mefloquine, proguanil

Anticoagulant effect: Increased

Active ingredients: quinine

Anticoagulant effect: Increased

Note: Drugs listed were selected based on a severity rating of either “severe or moderate” and a documentation rating of “Probable, Possible, or Suspected” according to Drug Interaction Facts; excludes the following routes of administration: external (EX), inhalation (IN), irrigation (IR), ophthalmic (OP), otic (OT), mouth/throat preparations (MT), and route does not apply (XX) unless otherwise noted. All other formulations and combination products of the active ingredients listed are included unless otherwise noted. Obsolete drug products are excluded from NDCs with an inactive date more than three years prior to the beginning of the measurement period or look-back period, if applicable. Updated: First Databank and Medi-Span, 2013.

#### Citations

Drug Facts and Comparisons. Facts & Comparisons [database online]. St. Louis, MO: Wolters Kluwer Health, Inc.; December 2013. Accessed December 13, 2013.

#### **S.8. Denominator Exclusions** *(Brief narrative description of exclusions from the target population)*

We excluded the following individuals from the denominator:

- Individuals with a diagnosis of cancer
- Individuals who are monitoring INR at home

**S.9. Denominator Exclusion Details** *(All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*

#### Exclusion One

Table 3. Codes Used to Identify Cancer

ICD-9-CM: 210.0-228.1, 273.3, 288.3, V10.00-V10.89, V10.90, V10.91, V87.41

ICD-10-CM: C88.0, D10.0, D10.1, D10.2, D10.30, D10.39, D10.4, D10.5, D10.6, D10.7, D10.9, D11.0, D11.7, D11.9, D12.0, D12.1, D12.2, D12.3, D12.4, D12.5, D12.6, D12.7, D12.8, D12.9, D13.0, D13.1, D13.2, D13.30, D13.39, D13.4, D13.5, D13.6, D13.7, D13.9, D14.0, D14.1, D14.2, D14.30, D14.31, D14.32, D14.4, D15.0, D15.1, D15.2, D15.7, D15.9, D16.00, D16.01, D16.02, D16.10, D16.11,



D16.12, D16.20, D16.21, D16.22, D16.30, D16.31, D16.32, D16.4, D16.5, D16.6, D16.7, D16.8, D16.9, D17.0, D17.1, D17.20, D17.21, D17.22, D17.23, D17.24, D17.30, D17.39, D17.4, D17.5, D17.6, D17.7, D17.9, D18.00, D18.01, D18.02, D18.03, D18.09, D18.1, D19.0, D19.1, D20.0, D20.1, D21.0, D21.10, D21.11, D21.12, D21.20, D21.21, D21.22, D21.3, D21.4, D21.5, D21.6, D21.9, D22.0, D22.10, D22.11, D22.12, D22.20, D22.21, D22.22, D22.30, D22.39, D22.4, D22.5, D22.60, D22.61, D22.62, D22.70, D22.71, D22.72, D22.9, D23.0, D23.10, D23.11, D23.12, D23.20, D23.21, D23.22, D23.30, D23.39, D23.4, D23.5, D23.60, D23.61, D23.62, D23.70, D23.71, D23.72, D23.9, D24.1, D24.2, D24.9, D25.0, D25.1, D25.2, D25.9, D26.0, D26.1, D26.7, D26.9, D27.0, D27.1, D27.9, D28.0, D28.1, D28.2, D28.7, D28.9, D29.0, D29.1, D29.20, D29.21, D29.22, D29.30, D29.31, D29.32, D29.4, D29.8, D29.9, D30.00, D30.01, D30.02, D30.10, D30.11, D30.12, D30.20, D30.21, D30.22, D30.3, D30.4, D30.8, D30.9, D31.00, D31.01, D31.02, D31.10, D31.11, D31.12, D31.20, D31.21, D31.22, D31.30, D31.31, D31.32, D31.40, D31.41, D31.42, D31.50, D31.51, D31.52, D31.60, D31.61, D31.62, D31.90, D31.91, D31.92, D32.0, D32.1, D32.9, D33.0, D33.1, D33.2, D33.3, D33.4, D33.7, D33.9, D34, D35.00, D35.01, D35.02, D35.1, D35.2, D35.3, D35.4, D35.5, D35.6, D35.7, D35.9, D36.10, D36.11, D36.12, D36.13, D36.14, D36.15, D36.16, D36.17, D72.1, K31.7, K63.5, Z85.00, Z85.01, Z85.020, Z85.028, Z85.030, Z85.038, Z85.040, Z85.048, Z85.05, Z85.060, Z85.068, Z85.07, Z85.09, Z85.110, Z85.118, Z85.12, Z85.20, Z85.21, Z85.22, Z85.230, Z85.238, Z85.29, Z85.3, Z85.40, Z85.41, Z85.42, Z85.43, Z85.44, Z85.45, Z85.46, Z85.47, Z85.48, Z85.49, Z85.50, Z85.51, Z85.520, Z85.528, Z85.53, Z85.59, Z85.6, Z85.71, Z85.72, Z85.79, Z85.810, Z85.818, Z85.819, Z85.820, Z85.821, Z85.828, Z85.830, Z85.831, Z85.840, Z85.841, Z85.848, Z85.850, Z85.858, Z85.89, Z85.9, Z92.21

#### Exclusion Two

Table 4. INR Monitoring at Home: HCPCS Codes

G0248 - DEMONSTRATE USE HOME INR MON

G0249 - PROVIDE TEST MATS & EQUIP HOME INR

G0250 - MD INR TEST REVIEW INTER MGMT

**S.10. Stratification Information** (Provide all information required to stratify the measure results, if necessary, including the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b.)

Depending on the operational use of the measure, measure results may be stratified by:

- State
- Plan
- Accountable Care Organizations (ACOs)
- Age- Divided into six categories: 18-24, 25-44, 45-64, 65-74, 75-84, and 85+ years
- Race/Ethnicity
- Dual Eligibility Status

**S.11. Risk Adjustment Type** (Select type. Provide specifications for risk stratification in measure testing attachment)

No risk adjustment or risk stratification

If other:

**S.12. Type of score:**

Rate/proportion

If other:

**S.13. Interpretation of Score** (Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)

Better quality = Higher score

**S.14. Calculation Algorithm/Measure Logic** (Diagram or describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period for data, aggregating data; risk adjustment; etc.)

Create Denominator

1. Pull individuals who are 18 years of age or older as of January 1 of the measurement period.
2. Include individuals who were continuously enrolled in Part D coverage during the measurement year, with no more than a one-month gap in enrollment during the measurement year.
3. Include individuals who had no more than a one-month gap in Part A enrollment, no more than a one-month gap in Part B enrollment, and no more than one month of HMO enrollment during the current measurement year (FFS individuals only).
4. Identify and delete individuals with cancer, based on Part A and B claims.

5. Identify and delete individuals who are monitoring INR at home, based on Part A and B claims.
6. Pull all warfarin claims from the Part D claims data for the individuals still eligible in Step 4.
7. From the dataset created in Step 5, include those individuals with at least two claims for warfarin on different dates of service.
8. Using the dataset from Step 6, calculate the warfarin start date and warfarin end date.
9. Pull all anti-infective claims from the Part D claims data.
10. From the dataset in Step 8, keep the anti-infective prescription with the highest days' supply for each unique date for each individual.
11. From the dataset in Step 9, keep only the "newly-started" anti-infectives (no other anti-infective in the prior 30 days).
12. Using the dataset from Step 10, calculate the anti-infective start date and anti-infective end date.
13. Merge the warfarin claims dataset from Step 7 and the anti-infective dataset from Step 11, keeping only the individuals' episodes where there are overlapping days' supply of warfarin therapy and anti-infective therapy. If there is more than one anti-infective started on the same date, keep the overlap episode with the largest overlapping period.

#### Create Numerator

1. Pull all individuals who had an INR test performed, identified using a CPT code, or who had a hospitalization of more than 48 hours during the measurement period from the Part A and Part B claims data.
2. Of the individuals identified in Step 1, keep those who are also included in the denominator.
3. Compare start date of anti-infective medication with the INR/hospitalization date.
4. Keep only the claims where the INR/hospitalization date occurred at least three days after the start of the anti-infective therapy.
5. Keep unique episodes of anti-infective date and first occurring INR test/hospitalization.
6. Keep the episodes in which the first INR/hospitalization occurred within three to seven days after the start of the anti-infective.

**S.15. Sampling** *(If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)*

IF an instrument-based performance measure (e.g., PRO-PM), identify whether (and how) proxy responses are allowed.  
This measure does not use a sample or survey.

**S.16. Survey/Patient-reported data** *(If measure is based on a survey or instrument, provide instructions for data collection and guidance on minimum response rate.)*

Specify calculation of response rates to be reported with performance measure results.

Not applicable

**S.17. Data Source** *(Check ONLY the sources for which the measure is SPECIFIED AND TESTED).*

If other, please describe in S.18.

Claims, Electronic Health Data

**S.18. Data Source or Collection Instrument** *(Identify the specific data source/data collection instrument (e.g. name of database, clinical registry, collection instrument, etc., and describe how data are collected.)*

IF instrument-based, identify the specific instrument(s) and standard methods, modes, and languages of administration.

For measure calculation, the following Medicare files were required:

- Denominator tables
- Prescription drug benefit (Part D) coverage tables
- Beneficiary file
- Institutional claims (Part A)
- Non-institutional claims (Part B) —physician carrier/non-DME
- Prescription drug benefit (Part D) claims

For ACO attribution, the following were required:

- Denominator tables for Parts A and B enrollment
- Prescription drug benefit (Part D) coverage tables
- Beneficiary file
- Institutional claims (Part A)
- Non-institutional claims (Part B)—physician carrier/non-DME

- [Prescription drug benefit \(Part D\) claims](#)

**S.19. Data Source or Collection Instrument** (available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

[No data collection instrument provided](#)

**S.20. Level of Analysis** (Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)

[Health Plan, Integrated Delivery System, Population : Regional and State](#)

**S.21. Care Setting** (Check ONLY the settings for which the measure is SPECIFIED AND TESTED)

[Outpatient Services](#)

If other:

**S.22. COMPOSITE Performance Measure** - Additional Specifications (Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.)

[Not applicable](#)

## 2. Validity – See attached Measure Testing Submission Form

[NQF\\_0556\\_Measure\\_Testing\\_Form.docx](#)

### 2.1 For maintenance of endorsement

*Reliability testing: If testing of reliability of the measure score was not presented in prior submission(s), has reliability testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.*

### 2.2 For maintenance of endorsement

*Has additional empirical validity testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.*

### 2.3 For maintenance of endorsement

*Risk adjustment: For outcome, resource use, cost, and some process measures, risk-adjustment that includes social risk factors is not prohibited at present. Please update sections 1.8, 2a2, 2b1,2b4.3 and 2b5 in the Testing attachment and S.140 and S.11 in the online submission form. NOTE: These sections must be updated even if social risk factors are not included in the risk-adjustment strategy. You MUST use the most current version of the Testing Attachment (v7.1) -- older versions of the form will not have all required questions.*

## 3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

### 3a. Byproduct of Care Processes

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

#### 3a.1. Data Elements Generated as Byproduct of Care Processes.

[Coded by someone other than person obtaining original information \(e.g., DRG, ICD-9 codes on claims\)](#)

If other:

### 3b. Electronic Sources

The required data elements are available in electronic health records or other electronic sources. If the required data are not in

electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

**3b.1. To what extent are the specified data elements available electronically in defined fields** (*i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields*) Update this field for **maintenance of endorsement**.

ALL data elements are in defined fields in electronic claims

**3b.2. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources.** For **maintenance of endorsement**, if this measure is not an eMeasure (eCQM), please describe any efforts to develop an eMeasure (eCQM).

**3b.3. If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL. Please also complete and attach the NQF Feasibility Score Card.**

Attachment:

### 3c. Data Collection Strategy

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

**3c.1. Required for maintenance of endorsement.** Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.

IF instrument-based, consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.

Testing demonstrated that the measure was feasible to specify and calculate using CMS administrative claims data. Data sources needed to implement the measure are readily available, accessible, and timely. No threats to the validity of this measure were identified using a limited analysis designed to address missing data.

**3c.2. Describe any fees, licensing, or other requirements to use any aspect of the measure as specified** (*e.g., value/code set, risk model, programming code, algorithm*).

The administrative data (collected by CMS primarily for billing purposes) are used as the data source for this measure. Therefore, the cost of data collection is negligible.

## 4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

### 4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

#### 4.1. Current and Planned Use

NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.

Specific Plan for Use	Current Use (for current use provide URL)
Not in use	

**4a.1.1 For each CURRENT use, checked above (update for maintenance of endorsement), provide:**

- Name of program and sponsor
- Purpose
- Geographic area and number and percentage of accountable entities and patients included
- Level of measurement and setting

Not Applicable

**4a1.2. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons?** (e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?)

The measure was previously reported in the Quality and Resource Use Report (QRUR) program but was not reliable at the physician level due to sample size limitations.

**4a1.3. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement.** (Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.)

The measure has been submitted to the Measures under Consideration list for the Medicare Shared Savings Program. Results from testing suggest that the measure is reliable at the ACO level.

**4a2.1.1. Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.**

How many and which types of measured entities and/or others were included? If only a sample of measured entities were included, describe the full population and how the sample was selected.

**4a2.1.2. Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.**

**4a2.2.1. Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1.**

Describe how feedback was obtained.

**4a2.2.2. Summarize the feedback obtained from those being measured.**

**4a2.2.3. Summarize the feedback obtained from other users**

**4a2.3. Describe how the feedback described in 4a2.2.1 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.**

#### Improvement

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

**4b1. Refer to data provided in 1b but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included.)**

If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-

**quality, efficient healthcare for individuals or populations.**

Not applicable

**4b2. Unintended Consequences**

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

**4b2.1. Please explain any unexpected findings (positive or negative) during implementation of this measure including unintended impacts on patients.**

Not applicable

**4b2.2. Please explain any unexpected benefits from implementation of this measure.**

## 5. Comparison to Related or Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

**5. Relation to Other NQF-endorsed Measures**

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.

Yes

**5.1a. List of related or competing measures (selected from NQF-endorsed measures)**

0555 : INR Monitoring for Individuals on Warfarin

0586 : Warfarin\_PT/ INR Test

**5.1b. If related or competing measures are not NQF endorsed please indicate measure title and steward.**

None identified

**5a. Harmonization of Related Measures**

The measure specifications are harmonized with related measures;

**OR**

The differences in specifications are justified

**5a.1. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):**

**Are the measure specifications harmonized to the extent possible?**

No

**5a.2. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.**

The measure under review (NQF 0556) is related to two NQF-endorsed measures: • NQF 0555: Lack of Monthly INR Monitoring for Individuals on Warfarin (Centers for Medicare & Medicaid Services): Average percentage of monthly intervals in which individuals with claims for warfarin do not receive an International Normalized Ratio (INR) test during the measurement period; and, • NQF 0586: Warfarin PT/INR Test (Resolution Health, Inc.): This measure identifies the percentage of patients taking warfarin during the measurement year who had at least one PT/INR test within 30 days after the first warfarin prescription in the measurement year. These two related measures address the same measure focus (i.e., INR monitoring) as NQF 0556. However, the measures use a different denominator (i.e., individuals on warfarin) than NQF 0556 (i.e., individuals taking warfarin and interacting anti-infective medications). Below we describe the differences between NQF 0556 and the two related measures and the implications of those differences. Time Period for INR Test - Difference: NQF 0556 requires that the INR test be performed within three to seven days of the interacting anti-infective prescription. NQF 0555 requires monthly INR tests and NQF 0586 requires one INR test within 30 days of the first warfarin prescription of the measurement year. Rationale: Patients on warfarin who start an

interacting anti-infective medication are at higher risk of a warfarin-related adverse event. The INR test must be performed shortly after the interacting anti-infective prescription is started to assess the effect on the INR value and to adjust the warfarin dose if necessary. Impact on interpretability: The narrow time window for the INR test is a logical way to track the impact of the interacting anti-infective medication. Data collection burden: Because NQF 0556 and the two related measures are based on administrative claims data, identifying the INR test should require approximately the same resources. Definition of Denominator - Difference: The denominator of NQF 0556 includes patients on warfarin who start an interacting anti-infective medication. The denominators of the two related measure include all patients on warfarin. Rationale: The denominator definition used in NQF 0556 adds value because it restricts the measure to patients at higher risk of an adverse event due to warfarin to capture an acute event. Impact on interpretability: Because the rationale for restricting the denominator is clearly stated, NQF 0556 should be easy to interpret. Data collection burden: Because NQF 0556 and the two related measures are based on administrative claims data, identifying individuals for the denominator should require about the same time and resources, regardless of the definition.

#### 5b. Competing Measures

The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);

OR

Multiple measures are justified.

#### 5b.1. If this measure conceptually addresses both the same measure focus and the same target population as NQF-endorsed measure(s):

**Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)**

There are no NQF-endorsed measures that compete (i.e., conceptually addresses both the same measure focus and the same target population) with NQF 0556.

## Appendix

**A.1 Supplemental materials may be provided in an appendix.** All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.

[Attachment: NQF\\_0556\\_Algorithm.pdf](#)

## Contact Information

**Co.1 Measure Steward (Intellectual Property Owner):** Centers for Medicare & Medicaid Services

**Co.2 Point of Contact:** Helen, Dollar-Maples, [Helen.Dollar-Maples@cms.hhs.gov](mailto:Helen.Dollar-Maples@cms.hhs.gov), 410-786-7214-

**Co.3 Measure Developer if different from Measure Steward:** Centers for Medicare & Medicaid Services

**Co.4 Point of Contact:** Elizabeth, Ricksecker, [Elizabeth.Ricksecker@cms.hhs.gov](mailto:Elizabeth.Ricksecker@cms.hhs.gov), 410-786-6723-

## Additional Information

### Ad.1 Workgroup/Expert Panel involved in measure development

**Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.**

Original Technical Expert Panel (TEP) Members

Douglas Bell, MD, PhD, Associate Professor in Residence, UCLA Department of Medicine, Division of General Internal Medicine and Health Services Research

Jill S. Borchert, PharmD, BCPS, FCCP, Professor, Pharmacy Practice & PGY1 Residency Program Director, Midwestern University, Chicago College of Pharmacy

Anne Burns, RPh, Vice President, Professional Affairs, American Pharmacists Association

Jannet Carmichael, PharmD, BCPS, FCCP, FAPHA, VISN 21 Pharmacy Executive, VA Sierra Pacific Network

Marshall H. Chin, MD, MPH, Professor of Medicine, University of Chicago

Edward Eisenberg, MD, Vice President and Chief Medical Officer, Medicare, Medco Health Solutions

Jay A. Gold, MD, JD, MPH, Senior Vice President and Medicare Chief Medical Officer, MetaStar, Inc.

David Nau, PhD, MS, Senior Director of Research & Performance Measurement, PQA, Inc.

N. Lee Rucker, PhD, MS, Senior Strategic Policy Advisor, AARP - Public Policy Institute



Marissa Schlaifer, RPh, MS, Director of Pharmacy Affairs Academy of Managed Care Pharmacy  
Brad Tice, PharmD, Chief Clinical Officer, PharmMD Solutions, LLC  
Jennifer K. Thomas, PharmD, Manager, Pharmacy Services, Delmarva Foundation for Medical Care/Delmarva Foundation of the District of Columbia  
Darren Triller, PharmD, Director, Pharmacy Services, IPRO  
Neil Wenger, MD, MPH, Professor of Medicine, UCLA Department of Medicine, Division of General Internal Medicine and Health Services Research

The TEP evaluated proposed medication measures drafted by FMQAI in regard to the four primary measure evaluation criteria used in the NQF consensus endorsement process (importance, scientific acceptability, feasibility, and usability). The TEP discussed the strengths and weaknesses of the proposed measures and made recommendations regarding measure specifications, inclusion and exclusion criteria, and appropriate risk adjustment as applicable.

#### Current TEP Members

Dale W. Bratzler, DO, MPH, TEP Chair, Professor and Associate Dean, College of Public Health, University of Oklahoma Health Sciences Center  
Mary Brennan-Taylor, Adjunct Research Instructor of Family Medicine, School of Medicine and Biomedical Sciences, University of Buffalo  
Frank E. Briggs III, PharmD, MPH, Vice President, Quality and Patient Safety, West Virginia University Healthcare  
Daniel Castillo, MD, MBA, Medical Director, Healthcare Quality Evaluation, The Joint Commission  
Joan Ching, RN, MN, CPHQ, Administrative Director, Hospital Quality & Safety, Virginia Mason Medical Center  
Edward S. Eisenberg, MD, FACP, Senior Vice President, Performance Measurement and Strategic Alliances, Pharmacy Quality Alliance  
Floyd Eisenberg, MD, MPH, FACP, President, iParsimony, LLC  
Marybeth Farquhar, PhD, MSN, RN, Vice President of Research & Measurement, URAC  
Frank Federico, BS, RPh, Executive Director for Strategic Partners, Institute for Healthcare Improvement  
Robert Feroli, PharmD, FASHP, Medication Safety Officer, Johns Hopkins Hospital  
Tejal Gandhi, MD, MPH, President, National Patient Safety Foundation  
P. Michael Ho, MD, PhD, FACC, Staff Cardiologist, VA Eastern Colorado Health Care System  
Mark L. Holtsman, PharmD, Co-Director, Inpatient Pain Service and Pain Management Service Pharmacist, UC Davis Medical Center  
Clifford Ko, MD, MS, MSHS, FACS, Director, ACS Division of Research and Optimal Patient Care  
Janet Maurer, MD, MBA, FCCP, Operations Medical Director, National Imaging Associates, Health Dialog  
Michael N. Neuss, MD, Chief Medical Officer, Vanderbilt-Ingram Cancer Center  
N. Lee Rucker, MSPH, Senior Advisor, National Council on Patient Information and Education  
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Nathan Spell, MD, FACP, Chief Quality Officer, Emory University Hospital Sciences, University of Buffalo  
Stephen J. Traub, MD, FACEP, Chair, Department of Emergency Medicine, Mayo Clinic  
Darren M. Triller, PharmD, TEP Co-Chair, Senior Director, Quality Improvement, IPRO QIO

#### Federal Guests on TEP

Mary Andrawis, PharmD, MPH, Contract Officer Representative & Medication Safety Co-Lead, Centers for Medicare & Medicaid Services, Center for Medicare & Medicaid Innovation  
Andrew Geller, MD, LCDR USPHS, Epidemic Intelligence Service Officer, Medication Safety Program, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention  
Sherriann Moore, MS, Deputy Director, U.S. Department of Health and Human Services, Indian Health Service, Office of Urban Indian Health Programs  
Nadine Shehab, PharmD, MPH, Senior Service Fellow, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention



The current TEP reviewed the measure specifications through a work group process. Members of the work group included the following:

**TEP Work Group Members**

1. Daniel Castillo, MD, MBA, Medical Director, Healthcare Quality Evaluation, The Joint Commission
2. Edward S. Eisenberg, MD, FACP, Senior Vice President, Performance Measurement and Strategic Alliances, Pharmacy Quality Alliance
3. Marybeth Farquhar, PhD, MSN, RN, Vice President of Research & Measurement, URAC
4. Frank Federico, BS, RPh, Executive Director for Strategic Partners, Institute for Healthcare Improvement
5. Tejal Gandhi, MD, MPH, President, National Patient Safety Foundation
6. Janet Maurer, MD, MBA, FCCP, Operations Medical Director, National Imaging Associates, Health Dialog
7. N. Lee Rucker, MSPH, Senior Advisor, National Council on Patient Information and Education
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**Measure Developer/Steward Updates and Ongoing Maintenance**

**Ad.2 Year the measure was first released:** 2009

**Ad.3 Month and Year of most recent revision:** 01, 2013

**Ad.4 What is your frequency for review/update of this measure?** Annually

**Ad.5 When is the next scheduled review/update for this measure?** 12, 2014

**Ad.6 Copyright statement:** Limited proprietary coding is contained in the measure specifications for user convenience. Use of these codes may require permission from the code owner or agreement to a license.

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**Ad.7 Disclaimers:** This performance measure does not establish a standard of medical care and has not been tested for all potential applications.

**Ad.8 Additional Information/Comments:** Not applicable