



Rural Wisconsin
Health Cooperative

Final HIT Incentive Rule Stage 1 Quality Metrics Objective Summary and Challenge Identification

Developed by Beth Dibbert and Louis Wenzlow

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Summary

The Stage 1 meaningful use quality measure objective will pose significant challenges for rural community hospitals. In addition to current hospital efforts to submit core measure data (for AMI, HF, PN, Surgical Care, and others) to CMS, hospitals that seek to earn Stage 1 incentives will need to utilize certified EHR technology to report on 15 inpatient hospital measures within 3 measure sets (ED Throughput, VTE and Stroke). For hospitals with eligible professionals, there will also be the need to report on 6 Stage 1 ambulatory meaningful use measures.

This is the first in a series of reports intended to help rural community hospitals develop strategies to meet these new requirements and then to utilize the data to achieve process and quality improvement. Additionally, it's our intention to engage rural hospitals in a dialogue to identify potential pitfalls in the Stage 1 requirements, as well as to determine what rurally relevant measures the rural hospital community believes would be appropriate to recommend to CMS for inclusion in Stage 2 of meaningful use.

While comment periods may come and go, and rules move from proposed to final, experience tells us that it's never "over." The quality and hospital community can and should expect for there to be edits, corrections, and revisions to various facets of this and future rules. While we may desire the regulations to be "final," a fluid evolution is helpful to achieve an outcome of safe and efficient care for our patients. By committing an ear to the ground and a willingness to share ideas and information, we keep an active role and stake in the process.

I. Introduction

In order to qualify for Stage 1 HIT meaningful use incentive payments, eligible professionals (EPs), eligible hospitals and CAHs must meet 14 or 15 "core" meaningful use objectives, and 5 out of 10 "menu" objectives. One of the required/core objectives is for hospitals to use certified EHR technology to report clinical quality measures to CMS (or, for providers in the Medicaid incentive program, to the States.)

For an eligible provider to meet this quality reporting objective, the provider must, for 2011, use certified EHR technology to provide aggregate level data for the numerator, denominator, and exclusions through **attestation** as specified in section II.A.3 of the final rule; and for 2012, the provider must use certified EHR technology to **electronically submit** the measures as specified in section II.A.3.

This report includes a summary of the quality reporting requirements described in section II.A.3, as well as a description of each of the hospital quality measures.

A future follow-up report will contain (1) strategies for the electronic capture of the required data elements, (2) strategies for utilizing the data output toward process and quality improvement, and (3) recommendations for quality measures relevant to rural hospitals and to be considered for the Stage 2 meaningful use requirements.

II. Summary of Clinical Quality Measures in the Final Rule

For **EPs**, the final rule requires that EPs report on 6 measures: 3 core measures (or if the denominators for any of the core measures are 0, then the EP must report on up to 3 alternate core measures), and 3 from a list of 38 non core measures.

The core and alternative core measures for EPs are:

1. **Core Measure:** Hypertension: Blood Pressure Measurement (NQF# 0013)
2. **Core Measure:** Preventive Care and Screening Measure Pair: a. Tobacco Use Assessment
b. Tobacco Cessation Intervention (NQF# 0028)
3. **Core Measure:** Adult Weight Screening and Follow-up (NQF# 0421; PQRI #128)
4. **Alternate Core Measure:** Weight Assessment and Counseling for Children and Adolescents (NQF #0024)
5. **Alternate Core Measure:** Preventive Care and Screening: Influenza Immunization for Patients _ 50 Years Old (NQF #0024; PQRI #110)
6. **Alternate Core Measure:** Childhood Immunization Status (NQF #0038)

The 38 non core measures (and more detail on the core measures), including links to electronic measure specification information, can be found in Table 6 on pages 86 through 97 of the final rule: <http://edocket.access.gpo.gov/2010/pdf/2010-17207.pdf>

For **hospitals**, the final rule requires that “eligible hospitals and CAHs” report on 15 measures.

1. Emergency Department Throughput – admitted patients Median time from ED arrival to ED departure for admitted patients (NQF #0495)
2. Emergency Department Throughput – admitted patients Admission decision time to ED departure time for admitted patients (NQF #0497)
3. Ischemic stroke – Discharge on anti-thrombotics (NQF #0435)
4. Ischemic stroke – Anticoagulation for A-fib/flutter (NQF #0436)
5. Ischemic stroke – Thrombolytic therapy for patients arriving within 2 hours of symptom onset (NQF #0437)
6. Ischemic or hemorrhagic stroke – Antithrombotic therapy by day 2 (NQF #0438)
7. Ischemic stroke – Discharge on statins (NQF #0439)
8. Ischemic or hemorrhagic stroke – Stroke education (NQF #0440)
9. Ischemic or hemorrhagic stroke – Rehabilitation assessment (NQF #0441)
10. VTE prophylaxis within 24 hours of arrival (NQF #0371)
11. Intensive Care Unit VTE prophylaxis (NQF #0372)
12. Anticoagulation overlap therapy (NQF #0373)
13. Platelet monitoring on unfractionated heparin (NQF #0374)
14. VTE discharge instructions (NQF #0375)
15. Incidence of potentially preventable VTE (NQF #376)

More detail on the 15 hospital measures, including links to electronic measure specification information, can be found in Table 10 on pages 106 to 108 of the final rule: <http://edocket.access.gpo.gov/2010/pdf/2010-17207.pdf>. Our description of each of the hospital measures can be viewed in Section V. of this report, titled “Stage 1 Hospital Clinical Quality Measures.”

Note: CMS only requires hospitals to submit information that can be automatically calculated by their certified EHR technology. As long as a hospital collects and reports on the required data, even if numerators or denominators are displayed in certified EHR as 0, the hospital will meet the Stage 1 meaningful use clinical quality reporting objective.

III. Reporting Methods

Since CMS doesn't expect to be capable of accepting electronic submission of quality summary data until 2012, the final rule has distinctive reporting methods for 2011 (attestation method) and for beginning with the 2012 Payment Year (electronic submission method):

For Payment Year 2011, the final rule requires that EPs, eligible hospitals and CAHs attest to the following information:

- The information submitted with respect to clinical quality measures was generated as output of an identified certified electronic health record.
- The information submitted is accurate to the best of the knowledge and belief of the EP or the official submitting on behalf of the “eligible hospital or CAH.”
- The information submitted includes information on all patients to whom the clinical quality measure applies for all patients included in the certified EHR technology.
- The identifying information for the “eligible hospital or CAH,” or the NPI and TIN of the EP submitting the information.
- The numerators, denominators, and exclusions for each clinical quality measure result reported, providing separate information for each clinical quality measure including the numerators, denominators, and exclusions for all applicable patients contained in the certified EHR technology irrespective of third party payer or lack thereof.
- The beginning and end dates for which the numerators, denominators, and exclusions apply (the Medicare EHR reporting period in payment year 1 is 90 days, and for payment year 2 is the beginning and end date of a 12 month EHR reporting period. For Medicaid providers whose first payment year is for adopting, implementing or upgrading certified EHR technology, their second payment year will have a 90-day EHR reporting period; and their third payment year will have a 12 months EHR reporting period.)

Starting in Payment Year 2012, the final rule requires that “EPs, eligible hospitals, and CAHs electronically submit clinical quality measures results (numerators, denominators, exclusions) as calculated by certified EHR technology.”

The primary method for submission will be through a CMS-designated portal. Providers will “be required to submit, through an upload process, data payload based on specified structures, such as Clinical Data Architecture (CDA), and accompanying templates produced as output from certified EHR technology.” Additionally, “electronic specifications will need to utilize standards that the certified EHR can support. ONC’s final (certification) rule limits this to PQRI Registry XML specifications.”

Alternatives to this primary method, “contingent on feasibility,” may include submission through Health Information Exchanges/Health Information Organizations and registries. However, for 2012, “submission through a portal is the only mechanism that is feasible and practical.”

Technical requirements for portal submission for Medicare EPs will be posted on or before July 1st 2011, and for Medicare eligible hospitals and CAHs on or before April 1st, 2011.

Providers eligible for the **Medicare** incentive program must submit the above information to CMS, and providers eligible for the **Medicaid** incentive program must submit the information to their State. States must propose in their State Medicaid HIT Plans how they will accept provider attestations in the first year of their Medicaid incentive program, and how they will accept electronic reporting in their second and subsequent years.

IV. Future Stage Quality Measures

The final rule indicates that the quality measures for which eligible providers will need to electronically submit information will rapidly expand in 2013 and beyond. A discussion of numerous potential future stage measures can be found on pages 110 through 118: http://www.ofr.gov/OFRUpload/OFRData/2010-17207_PL.pdf.

As indicated above, RWHC and WORH intend to work with rural hospitals and organizations to help develop a unified recommendation to CMS for Stage 2 metrics that are relevant to small-volume rural hospitals.

V. Stage 1 Hospital Clinical Quality Measures

Emergency Department Throughput Measure Set: Admitted Patients – the initial population for these measures will be determined by whether (1) the Patient Class is an inpatient encounter **and** (2) the Admission Source identifies the patient as an ED patient.

1. Measure ED-1: Emergency Department Throughput – Median time from ED arrival to ED departure for admitted patients (NQF #0495). This measure will be aggregated/stratified for three subpopulations:

- All ED patients admitted to the facility from the ED, excluding observation and mental health patients
- All ED Observation patients admitted to the facility from the ED
- All ED patients with a diagnosis of Psychiatric/Mental Health admitted to the facility from the ED

In addition to the data elements that need to be captured to identify the initial population (described above), the following data elements further define the sub-populations and calculation of this measure:

- Facility Location
- Arrival Date and Time
- ED Departure Date and Time
- Observation Services – whether the patient was admitted to the hospital as acute inpatient or observation status
- Principal Diagnosis Code
- Diagnosis Priority
- Problem Status

The final calculation for this measure will be expressed in terms of minutes (ED Arrival to ED Departure) for each of these sub-populations. The median value will ultimately be reported.

Challenges:

1. Data elements may or may not be discretely located within the electronic medical record (“Diagnosis Priority” and “Problem Status,” for instance). Additionally, some data elements are “derived,” in that the electronic medical record needs to calculate a value for use in a second calculation. Assuring the presence of the data and the accuracy of the derived data calculations will be a key to the process. Presumably certified EHR vendors will be required to incorporate the appropriate discrete fields and make the required calculations. However, there may be significant workflow issues involved in entering the required data.
2. If the medical record is “missing” data element dates or times, the record will be rejected and not able to be calculated successfully. If the record is “unable to determine” data element dates or times, the measure will not be calculable. Both of these scenarios will require a collaborative “drill-down” by the facility and the vendor to determine whether the missing or undeterminable data is a result of workflow, technical, or a combination of causes.
3. The updates to data definitions have historically been a source of constant vigilance for vendors and hospitals alike. Care will need to be taken that the vendor applies the updates appropriately and in a timely manner.
4. Without appropriate vendor tools/reports that optimize the use of the data for internal purposes, hospitals personnel will find it difficult to apply quality improvement strategies and interventions to improve ED arrival to departure time.

2. Measure ED-2: Emergency Department Throughput – Median time from admission decision time to ED departure for admitted patients (NQF #0497). This measure will be aggregated/stratified for three subpopulations:

- All ED patients admitted to the facility from the ED, excluding observation and mental health patients
- All ED Observation patients admitted to the facility from the ED
- All ED patients with a diagnosis of Psychiatric/Mental Health admitted to the facility from the ED

In addition to the data elements that need to be captured to identify the initial population (described above), these elements further define the sub-population and calculation of the measure:

- Arrival Date and Time
- Order to Admit Date/Time (Note: ED Admit Decision is based upon Admit Order Time)
- ED Departure Date and Time
- Observation Services – whether the patient was admitted to the hospital as acute inpatient or observation status
- Principal Diagnosis Code
- Diagnosis Priority
- Problem Status

The final calculation for this measure will be expressed in terms of minutes (Admission Decision Time to ED Departure Time) for each of these sub-populations. The median value will be ultimately reported.

Challenges:

1. The same challenges associated with ED-1 apply. Particular to this measure, hospitals will need to consider how they will electronically capture “order to admit” time.
2. There appears to be an inconsistency with this measure in that NQF 0497 describes ED-2 as “median time from admit decision time to time of departure from the emergency department of emergency department patients **admitted to inpatient status**” (Final Rule, p.303), but the stratification requires that observation patients (i.e. not inpatients) be included in the subpopulation. Presumably this discrepancy will be addressed in future CMS comments.

Stroke Measure Set

The stroke process measures describe clinical decision-making and care for two adult inpatient populations: ischemic (caused by thrombosis or embolism) stroke or hemorrhagic (rupture of a blood vessel with bleeding into the tissue of the brain) stroke. Some measures apply to both populations, while others focus specifically on the care process for ischemic stroke patients. The identification of the **stroke initial patient population** for all of the Stroke Measures will include the following data elements:

- Principal Diagnosis Codes for ischemic or hemorrhagic stroke, (which is derived from the specific value set within the diagnosis codes having an active problem status and first priority)
- Patient Age (which is derived from a calculation of Admission Date minus Birthdate. Patients under the age of 18 on admission will be excluded)
- Length of Stay (which is a calculation derived from the Discharge Date minus Admission Date. Patients with a length of stay greater than 120 days are excluded from these measures)

1. Measure Stroke-2: Ischemic stroke – Discharge on anti-thrombotics (Ischemic stroke patients prescribed anti-thrombotic therapy at discharge: NQF #0435).

In addition to the data elements that identify the stroke initial patient population, the following data elements will be used to exclude patients to create a smaller **denominator** for this measure:

- Patients with Comfort Measures Only documented (Data elements required: procedure performed, problem code, diagnosis code, problem status)
- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Patients admitted for Elective Carotid Intervention (Data elements required: procedure performed, admission type)
- Patients discharged/transferred to another hospital for inpatient care (Data elements required: discharge disposition)
- Patients that left against medical advice, or discontinued care (Data elements required: discharge disposition)

- Patients expired (Data elements required: discharge disposition, time of death)
- Patients discharged/transferred to a federal healthcare facility (Data elements required: discharge disposition)
- Patients discharged/transferred to hospice (Data elements required: discharge disposition)
- Patients with a documented reason for not prescribing antithrombotic therapy at discharge (Data elements required: procedure performed, problem code, diagnoses, discharge medication, tense, reason)

The numerator includes only those patients in the denominator population who were prescribed antithrombotic therapy at hospital discharge. Numerator capture will require that the patient’s discharge medications be compared to a value set of anti-thrombotic medications to determine whether anti-thrombotic therapy was prescribed.

Challenges:

1. As with the ED Throughput measures, some of the required data elements may or may not be discretely located within the electronic medical record (“Reason patients were not prescribed antithrombotic therapy at discharge,” for instance). Presumably certified EHR vendors will be required to incorporate the appropriate discrete fields and make the required calculations. However, there may be significant workflow issues involved in entering the required data.
2. As with the ED Throughput measures, if the medical record is “missing” data element dates or times, the record will be rejected and not able to be calculated successfully. If the record is “unable to determine” data element dates or times, the measure will not be calculable. Both of these scenarios will require a collaborative “drill-down” by the facility and the vendor to determine whether the missing or undeterminable data is a result of workflow, technical, or a combination of causes.
3. As with the ED Throughput measures, the updates to data definitions have historically been a source of constant vigilance for vendors and hospitals alike. Care will need to be taken that the vendor applies the updates appropriately and in a timely manner. Updates to value sets, including medications value sets, will also need to be considered.
4. As with the ED Throughput measures, without appropriate vendor tools/reports that optimize the use of the data for internal purposes, hospitals personnel will find it difficult to apply quality improvement strategies and interventions to improve outcomes.
5. QI Abstractors are used to finding these elements in the “suggested data sources” listed in the national specifications manual. How certified EHRs will capture the many judgments, inferences and nuances that abstractors have been trained to interpret remains an open question.

2. Measure Stroke-3: Ischemic stroke – Anticoagulation for A-fib/flutter (Ischemic stroke patients with atrial fibrillation/flutter who are prescribed anti-coagulation therapy at hospital discharge: NQF #0436)

In addition to the data elements that identify the stroke initial patient population, the following data elements will be used to exclude patients to create a smaller **denominator** for this measure:

- Patients with Comfort Measures Only documented (Data elements required: procedure performed, problem code, diagnosis code, problem status)

- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Patients admitted for Elective Carotid Intervention (Data elements required: procedure performed, admission type)
- Patients discharged/transferred to another hospital for inpatient care (Data elements required: discharge disposition)
- Patients that left against medical advice, or discontinued care (Data elements required: discharge disposition)
- Patients expired (Data elements required: discharge disposition, time of death)
- Patients discharged/transferred to a federal healthcare facility (Data elements required: discharge disposition)
- Patients discharged/transferred to hospice (Data elements required: discharge disposition)
- Patients with a documented reason for not prescribing anticoagulation therapy at discharge (Data elements required: procedure performed, problem code, diagnoses, discharge medication, tense, reason)

The denominator population will now **also** include those ischemic stroke patients who have a diagnosis of Atrial Fibrillation/Flutter (Data elements required: problem code, diagnoses, procedure performed)

The numerator includes only those patients in the denominator population who were prescribed anticoagulation therapy at hospital discharge. Numerator capture will require that the patient’s discharge medication information be compared to a value set of anticoagulation medications to determine whether anticoagulation therapy was prescribed.

Challenges:

1. The same challenges associated with Stroke-2 apply.
2. Abstracting the “documented reason for not prescribing anticoagulation therapy” will likely be the greatest data collection challenge.

3. Measure Stroke-4: Ischemic stroke – Thrombolytic therapy for patients arriving within 2 hours of symptom onset (ischemic stroke patients who arrive at this hospital within 2 hours of the time last known well and for whom IV t-PA was initiated at this hospital within 3 hours of the time last known well: NQF #0437).

In addition to the data elements that identify the stroke initial patient population, the following data elements will be used to exclude patients to create a smaller **denominator** for this measure:

- Patients with Comfort Measures Only documented (Data elements required: procedure performed, problem code, diagnosis code, problem status)
- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Patients admitted for Elective Carotid Intervention (Data elements required: procedure performed, admission type)
- Time last known well to arrival in the emergency department greater than 2 hours (problem date/time, diagnosis date/time, arrival date/time, problem code, discharge diagnosis code)

- Patients with documented reason for not initiating IV Thrombolytic (Data elements required: procedure performed, problem code, diagnoses, medications administered, tense, reason)

The numerator includes only those patients in the denominator population who were given IV thrombolytic therapy within 3 hours (180 minutes) of time last known well. Numerator capture will require that the patient’s medication information (medication administered date/time, medications administered, medications administered route) be compared to a value set of thrombolytic medications to determine whether thrombolytic therapy was administered within the 3 hours.

1. The same challenges associated with Stroke-2 apply.
2. Calculating this measure involves greater complexity, due to the two “date/time last known well” calculations, and the requirement for additional medication information.
3. Establishing “date/time last known well” requires protocols that solicit the best possible information from EMS, family members, and others. This is a challenge whether the data needs to be entered into the certified EHR or not.
4. Abstracting the “documented reason for not initiating IV Thrombolytic” will likely be the greatest data collection challenge.

4. Stroke-5: Ischemic stroke – Antithrombotic therapy by day 2 (Ischemic stroke patients administered antithrombotic therapy by the end of hospital day 2: NQF #0438).

In addition to the data elements that identify the stroke initial patient population, the following data elements will be used to exclude patients to create a smaller **denominator** for this measure:

- Patients discharged by end of hospital day 2 (Data elements required: admission date/time, discharge date/time)
- Patients with Comfort Measures Only documented on day of or day after arrival (Data elements required: procedure performed, problem code, diagnosis code, problem status, procedure date, admit date/time)
- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Patients admitted for Elective Carotid Intervention (Data elements required: procedure performed, admission type)
- Patients with IV or IA Thrombolytic (t-PA) Therapy administered at this hospital or within 24 hours prior to arrival (Data elements required: arrival date/time, medications administered, medications administered route, medications administered date/time)
- Patients with documented reason for not initiating antithrombotic therapy by end of hospital day 2 (Data elements required: procedure performed, problem code, diagnoses, discharge medication, tense, reason)

The numerator includes only those patients in the denominator population who were given antithrombotic therapy by end of hospital day 2. Numerator capture will require that the patient’s medication information (medication administered date/time, medications administered, admit date/time) be compared to a value set of antithrombotic medications to determine whether antithrombotic therapy was administered by day 2.

Challenges:

1. The same challenges associated with Stroke-2 apply.
2. With this measure there is an additional calculation for “duration of stay,” and Comfort Measures Only must be linked to an order date.
3. Abstracting the “documented reason for not prescribing antithrombotic therapy” will likely be the greatest data collection challenge.
4. The final rule includes “hemorrhagic stroke” patients as being included in this measure, however, only ischemic stroke patients are listed in the description. We believe that this is a typographical error in the final rule measure title, and that the measure applies to ischemic stroke patients only.

5. Stroke-6: Ischemic stroke – Discharge on statins (Ischemic stroke patients with LDL greater than or equal to 100mg/dL, or LDL not measured, or, who were on a lipid-lowering medication prior to hospital arrival are prescribed statin medication at hospital discharge (NQF #0439).

In addition to the data elements that identify the stroke initial patient population, the following data elements will be used to exclude patients to create a smaller **denominator** for this measure:

- Patients with pre-arrival lipid-lowering agent (Data elements required: arrival date/time, medications administered,)
- Patients with LDL-c not measured¹ (Data elements required: arrival date/time, result type, report date/time)
- Patients with LDL-c greater than or equal to 100 mg/dL (Data elements required: result type, result value)
- Patients with Comfort Measures Only documented (Data elements required: procedure performed, problem code, diagnosis code, problem status)
- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Patients admitted for Elective Carotid Intervention (Data elements required: procedure performed, admission type)
- Patients without evidence of Atherosclerosis² (Data elements required: problem code, diagnoses)
- Patients discharged/transferred to another hospital for inpatient care (Data elements required: discharge disposition)
- Patients who left against medical advice or discontinued care (Data elements required: discharge disposition)
- Patient expired (Data elements required: discharge disposition, time of death)
- Discharged/transferred to a federal healthcare facility (Data elements required: discharge disposition)
- Discharged/transferred to hospice (Data elements required: discharge disposition)
- Patients with a documented reason for not prescribing statin medication at discharge (Data elements required: problem code, diagnoses, discharge medication, tense, reason)

¹ LDL-c data element can be derived from information as far back as 30 days prior to hospital arrival. How do hospitals obtain this data now, and how will implementation towards meaningful use incorporate and modify this workflow?

² We are listing these specifications as they are written in HITSP, which is referenced on the CMS website. Note that the specifications are already being revised for October 2010, and that this data element does not exist for the purposes of calculating this measure.

The **numerator** includes only those patients in the denominator population who were prescribed statin medication at discharge. Numerator capture will require that the patient’s medication information (discharge medications orders) be compared to a value set of statin medications.

Challenges:

1. The same challenges associated with Stroke-2 apply.
2. Abstracting the pre-arrival statin use information, as well as the “documented reason for not prescribing statin medication at discharge,” will likely be the greatest data collection challenges.

6. Stroke-8: Ischemic or hemorrhagic stroke – Stroke education (Ischemic or hemorrhagic stroke patients or their caregivers who were given educational materials during the hospital stay addressing all of the following: (1) Activation of EMS, (2) Need for follow-up after discharge, (3) Medications prescribed at discharge, (4) Risk factors for stroke, (5) Warning signs and symptoms of stroke NQF #0440).

Ischemic stroke patients as well as hemorrhagic stroke patients make up the denominator population. In addition to the data elements that identify the stroke initial patient population, the following data elements will be used to exclude patients to create a smaller **denominator** for this measure:

- Patients with Comfort Measures Only documented (Data elements required: procedure performed, problem code, diagnosis code, problem status)
- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Patients admitted for Elective Carotid Intervention (Data elements required: procedure performed, admission type)
- Patients not discharged to home or homecare (Data elements required: discharge disposition)

The **numerator** includes only those patients in the denominator with documentation that they or their caregivers were given educational material addressing all of the critical elements listed in the measure description above. Numerator capture will require that procedures performed be compared to value sets for documentation of findings/procedures.

Challenges:

1. The same challenges associated with Stroke-2 apply.
2. This is an “all-or-nothing” measure, which means each element of education (EMS activation AND need for follow-up AND medications, etc...) must be present in order for the patient to be included in the numerator. Currently the core measures specifications allow for abstractors to use situational inference and exclusions that are not found in HITSP specifications. For instance, if the patient was not given EMS activation information because they have a cognitive impairment and has no caregiver, the abstractor is allowed to select “yes” on an abstraction form, as if the patient had received the educational material. How will such decision making be accommodated by automated programming?

7. Stroke-10: Ischemic or hemorrhagic stroke – Rehabilitation assessment (Ischemic or hemorrhagic stroke patients or their caregivers who were assessed for rehabilitation services: NQF #0441).

Ischemic stroke patients as well as hemorrhagic stroke patients make up the denominator population. In addition to the data elements that identify the stroke initial patient population, the following data elements will be used to exclude patients to create a smaller **denominator** for this measure:

- Patients with Comfort Measures Only documented (Data elements required: procedure performed, problem code, diagnosis code, problem status)
- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Patients admitted for Elective Carotid Intervention (Data elements required: procedure performed, admission type)
- Patients discharged/transferred to another hospital for inpatient care (Data elements required: discharge disposition)
- Patients that left against medical advice or discontinued care (Data elements required: discharge disposition)
- Patients expired (Data elements required: discharge disposition, time of death)
- Patients discharged/transferred to a federal healthcare facility (Data elements required: discharge disposition)
- Patients discharged/transferred to hospice (Data elements required: discharge disposition)

The **numerator** includes only those patients in the denominator who received an assessment for rehabilitation services. Data elements required for numerator capture will include problem code, diagnoses, and procedure performed, all of which will need to be compared to “documentation of findings” value sets.

Challenges:

1. The same challenges associated with Stroke-2 apply.
2. As with Stroke-8, abstractor guidance now allows a “yes” response (indicating that an assessment was done or rehab services took place) in the event documentation exists for not completing an assessment. Examples of such documentation include patient/family refusal, notes that the patient was unable to tolerate rehab therapy, etc. Will MU automation disallow such exceptions or will abstractors be able to use guidance from the “manual version” to override programming?

Venous Thromboembolism (VTE) Measure Set

The 6 VTE process measures describe clinical decision-making and care for three adult inpatient populations: patients who have no VTE, patients who have a principal diagnosis of VTE, and patients who have an “other” diagnosis of VTE.

The measures which apply to the “No VTE” subpopulation focus on prophylaxis (or prevention) of a VTE developing during hospitalization, while the measures for the other 2 sub-populations reflect VTE best practice diagnostic, treatment, and education. As with the other measure sets we

have described, population denominators exclusions by measure apply, and we will summarize these for you in the following sections.

Each of the measures applies to either one or two of the sub-populations, and identifying the sub-populations and calculating the correct measures will present unique challenges over and above the challenges associated with the ED Throughput and Stroke measure sets described previously.

All three VTE sub-populations will include the following data elements:

- Admission date
- Birthdate
- Discharge Date

ICD-9- CM Principal and Other Diagnosis Codes will further define a patient's inclusion into one of the three sub-populations.

1. Measure VTE-1: VTE prophylaxis within 24 hours of arrival (This measure assesses the number of patients who received VTE prophylaxis or have documentation why no VTE prophylaxis was given the day of or the day after hospital admissions or surgery end date for surgeries that start the day of or the day after hospital admission: NQF #0371)

“No-VTE” patients make up the denominator population. The following data elements will be used to exclude patients to create the **denominator** for this measure:

- Patient Age (which is derived from a calculation of Admission Date minus Birthdate. Patients under the age of 18 on admission will be excluded)
- Length of Stay (which is a calculation derived from the Discharge Date minus Admission Date). Patients with a length of stay less than 2 days are excluded
- Length of Stay (which is a calculation derived from the Discharge Date minus Admission Date). Patients with a length of stay greater than 120 days are excluded
- Patients with Comfort Measures Only documented on day of or day after hospital arrival (Data elements required: procedure performed, problem code, diagnosis code, problem status)
- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Patients who are direct admits to the Intensive Care Unit (ICU), or transferred to the ICU the day of or the day after hospital admission with ICU Length of Stay (LOS) greater than or equal to one day (Data elements required: Facility Location value, Admit date/time, ICU admit date, ICU discharge date).
- Patients with a principal diagnosis of Mental Disorders (Data element: Treatment Location value)
- Patients with a principal diagnosis code of Hemorrhagic or Ischemic Stroke (Data elements: diagnosis code, diagnosis priority)
- Patients with a principal diagnosis code of Obstetrics (Data element: Treatment Location value)
- Patients with a principal diagnosis of VTE (Data element: VTE Confirmed Value Set definitions, diagnosis priority, problem status)

There are two methods of VTE prophylaxis, pharmacological and mechanical, and several types of prophylaxis within each method that are on the list of allowable values. The numerator will not only need to capture which type of prophylaxis was received by the patient, but also if there was documentation of a reason for the patient not receiving one or both types of prophylaxis.

The **numerator** includes only those patients in the denominator who received VTE prophylaxis within the appropriate timeframe unless there was an acceptable reason documented for not performing VTE prophylaxis. Data elements for numerator capture will include:

- VTE Prophylaxis (Data elements: Medications administered [to be compared to the VTE Prophylaxis Medications Value Set], procedure performed)
- VTE Prophylaxis Hospital Admission (Data elements: Admit date/time, medications administered [to be compared to a medication value set], medication administered date/time, procedure date/time, procedure performed [to be compared to a VTE mechanical device value set])
- VTE Prophylaxis Hospital Admission Surgery (Data elements: Admit Date/Time, Procedure Date/time, medications administered [to be compared to a medication value set], medication administered date/time, procedure performed [to be compared to a VTE mechanical device value set])
- Reasons for No VTE Prophylaxis – Hospital Admission (Data elements: Problem code and diagnoses [to be compared to a value set of reasons for no pharmacological VTE prophylaxis as well as a value set of reasons for no mechanical VTE prophylaxis], problem date/time, admit date/time, procedure declined [which is derived from procedure performed and the VTE application of mechanical device value set and Tense Act Mood Intent and the predetermined value sets for allowable medical and patient reasons].
- Medication Declined (Data elements: Medication administered, value set for VTE prophylaxis medications, Tense Act Mood Intent, and Reason [to be compared to the predetermined value sets for allowable medical and patient reasons])
- Reasons for No VTE Prophylaxis – Hospital Admission Surgery (Data elements: Problem code and diagnoses [to be compared with a value set of reasons for no pharmacological VTE prophylaxis as well as a value set of reasons for no mechanical VTE prophylaxis], problem date/time, diagnosis date/time, admit date/time, procedure end date, procedure start date,
- Procedure declined (which is derived from procedure performed and the VTE application of mechanical device procedure value set and Tense Act Mood Intent and the predetermined value sets for allowable medical and patient reasons)
- VTE Prophylaxis Date (Data elements: medication administration date/time, procedure date/time, medications administered, procedure performed)

Challenges:

1. As with the ED and Stroke measures, some of the required data elements may or may not be discretely located within the electronic medical record (“Medication Declined” or “Reason for no VTE prophylaxis,” for instance). Presumably certified EHR vendors will be required to incorporate the appropriate discrete fields and make the required calculations. However, there may be significant workflow issues involved in entering the required data.
2. As with the ED and Stroke measures, if the medical record is “missing” data element dates or times, the record will be rejected and not able to be calculated successfully. If the

record is “unable to determine” data element dates or times, the measure will not be calculable. Both of these scenarios will require a collaborative “drill-down” by the facility and the vendor to determine whether the missing or undeterminable data is a result of workflow, technical, or a combination of causes.

3. As with the ED and Stroke measures, the updates to data definitions have historically been a source of constant vigilance for vendors and hospitals alike. Care will need to be taken that the vendor applies the updates appropriately and in a timely manner. Updates to the value sets will also need to be considered.
4. As with the ED and Stroke measures, without appropriate vendor tools/reports that optimize the use of the data for internal purposes, hospital personnel will find it difficult to apply quality improvement strategies and interventions to improve outcomes.
5. QI Abstractors are used to finding these elements in the “suggested data sources” listed in the national specifications manual. How certified EHRs will capture the many judgments, inferences and nuances that abstractors have been trained to interpret remains an open question.
6. Specific to VTE: this measure re-visits certain data elements throughout the calculations for the numerator. One reason is that the denominator includes both surgical and medical patients. Additionally, it needs to be established whether the patient had no existing contraindications for either one or both types of VTE prophylaxis and then determined whether the patient who had no contraindications received VTE prophylaxis. This is a complexity that will characterize this measure set, and setting the logic checks correctly will be critical to attaining an accurate calculation.
7. Currently the chart-abstracted VTE Core Measure set excludes inpatients with certain surgical procedure codes. The prophylaxis quality measure is reported in the Surgical Care Improvement Project (SCIP) Core Measure Set. The SCIP VTE measures not only measure the proportion of eligible patients who received VTE prophylaxis, but also measures whether the patient received the appropriate prophylaxis. Presumably HITSP does not exclude these patients in order to capture all appropriate surgical patients in the denominator for this MU measure.

2. Measure VTE-2: Intensive Care Unit (ICU) VTE Prophylaxis (This measure assesses the number of patients who received VTE prophylaxis or have documentation that no VTE prophylaxis was given the day of or the day after the initial admission (or transfer) to the Intensive Care Unit (ICU) or surgery end date for surgeries that start the day of or the day after ICU admission (or transfer): NQF 0372).

“No-VTE” patients make up the denominator population. The following data elements will be used to exclude patients to create the **denominator** for this measure:

- Patient Age (which is derived from a calculation of Admission Date minus Birthdate. Patients under the age of 18 on admission will be excluded)
- Length of Stay (which is a calculation derived from the Discharge Date minus Admission Date). Patients with a length of stay less than 2 days are excluded
- Length of Stay (which is a calculation derived from the Discharge Date minus Admission Date). Patients with a length of stay greater than 120 days are excluded
- Patients with Comfort Measures Only documented on day of or day after hospital arrival (Data elements required: procedure performed, problem code, diagnosis code, problem status)

- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Patients with ICU Length of Stay (LOS) less than one day without VTE prophylaxis administered and without documentation for no VTE prophylaxis.
- Patients with a principal diagnosis code of Obstetrics (Data element: Treatment Location value)
- Patients with a principal diagnosis of VTE (Data element: VTE Confirmed Value Set definitions, diagnosis priority, problem status)

There are two methods of VTE prophylaxis, pharmacological and mechanical, and several types of prophylaxis within each method that are on the list of allowable values. The numerator will not only need to capture which type of prophylaxis was received by the patient, but also if there was documentation of a reason for the patient not receiving one or both types of prophylaxis.

The **numerator** includes only those patients in the denominator who received VTE prophylaxis within the appropriate timeframe unless there was an acceptable reason documented for not performing VTE prophylaxis. Data elements for numerator capture will include:

- VTE Prophylaxis (Data elements: Medications administered [to be compared to the VTE Prophylaxis Medications Value Set], procedure performed)
- Reasons for No VTE Prophylaxis-ICU Admission (Data elements: Facility location linked to the value set for VTE Prophylaxis ICU Surgery, Problem code and diagnoses [to be compared to a value set of reasons for no pharmacological VTE prophylaxis as well as a value set of reasons for no mechanical VTE prophylaxis], problem date/time, admit date/time)
- Procedure Declined (VTE Prophylaxis-Mechanical Intervention Procedure Declined) (Data elements: procedure performed [to be compared to Joint Commission VTE Prophylaxis-Application of Mechanical Device Value Set], Tense Act Mood Intent, and Reason [to be compared to the predetermined value sets for allowable medical and patient reasons])
- Medication Declined (VTE Prophylaxis Medications Value Set) (Data elements: Tense Act Mood Intent, and Reason [to be compared to the predetermined value sets for allowable medical and patient reasons])
- Reasons for No VTE Prophylaxis-ICU Surgery (Data elements: Facility location linked to the value set for VTE Prophylaxis ICU Surgery, Problem code and diagnoses [to be compared to the value set of reasons for no pharmacological VTE prophylaxis as well as a value set of reasons for no mechanical VTE prophylaxis], problem date/time, diagnosis date/time, ICU admit date/time, procedure end and start date)
- VTE Prophylaxis Date (Data elements: medication administration date/time, procedure date/time, medications administered [to be compared to the VTE prophylaxis medications value set], procedure performed)
- VTE Prophylaxis - ICU Surgery (Data elements: Facility location linked to the value set for VTE Prophylaxis ICU Surgery, procedure end and start date, VTE Prophylaxis Date/Time [itself a derived data element], ICU Admit Date, ICU Transfer Date)
- VTE Prophylaxis – ICU Admission (Data elements: Facility location linked to the value set for VTE Prophylaxis ICU Surgery, VTE Prophylaxis Date/Time [itself a derived data element], ICU Admit Date, ICU Transfer Date)

Challenges:

1. The same challenges associated with VTE-1 apply.

3. Measure VTE-3: Anticoagulation Overlap Therapy (This measure assesses the number of patients diagnosed with confirmed VTE who received an overlap of parenteral (intravenous [IV] or subcutaneous [subcu]) anticoagulation and warfarin therapy. For patients who received less than five days of overlap therapy, they must be discharged on both medications. Overlap therapy must be administered for at least five days with an international normalized ratio (INR) ≥ 2 prior to discontinuation of the parenteral anticoagulation therapy or the patient must be discharged on both medications. NQF 0373)

For VTE 3, two distinct subpopulations will need to be determined.

- In addition to the general population criteria (Admission date, Birthdate, Discharge Date), sub-population 2 (Principal VTE) inclusions will now add principal code for confirmed VTE.
- Sub population 3 is defined as “Other VTE Only” and will include those patients that have a confirmed VTE as an “other” diagnosis code.
- Additionally, there will be exclusions that will require the identification of patients (1) without warfarin (an anticoagulant drug) therapy during hospitalization, (2) patients without warfarin prescribed at discharge, and (3) patients without VTE confirmed by diagnostic testing.

The following data elements will be used to exclude patients to create the **denominator** for this measure:

- Patient Age (which is derived from a calculation of Admission Date minus Birthdate. Patients under the age of 18 on admission will be excluded)
- Length of Stay (which is a calculation derived from the Discharge Date minus Admission Date). Patients with a length of stay greater than 120 days are excluded
- Patients with Comfort Measures Only (Data elements required: procedure performed, problem code, diagnosis code, problem status)
- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Warfarin Administration (Data element: medications administered [to be compared to the Warfarin medication value set])
- Warfarin Prescribed at Discharge (Data element: Discharge medication ordered [to be compared to the Warfarin medication value set])
- VTE Diagnostic Test (Data Element: procedure performed [to be compare to the VTE diagnostic test value set])

The **numerator** statement for this measure will include patients who received warfarin and parenteral anticoagulation:

- Five or more days, with an INR ≥ 2 prior to discontinuation of parenteral therapy OR
- Five or more days, with an INR < 2 and discharged on overlap therapy OR
- Less than five days and were discharged on overlap therapy

The data elements for **numerator** capture will include:

- INR Value greater than or equal to 2 prior to discontinuing anticoagulation therapy (Data elements: result type [to be compared to a lab result data value set], result value, report date/time, discontinue order date/time, medications [to be compared to an anticoagulant medication value set], discontinue medication)
- INR Value less than 2 prior to discontinuing anticoagulation therapy (Data elements: result type which will be a lab result data value set, result value, report date/time, discontinue order date/time, medications [to be compared to an anticoagulant medication value set], discontinue medication)
- Patients who received warfarin and parenteral anticoagulation greater than or equal to 5 days (data elements: medications administered [to be compared to the anticoagulation VTE medicine value set], medications administered date/time,)
- Patients who received warfarin and parenteral anticoagulation less than 5 days (data elements: medications administered, medications administered date/time,)
- Discharged on Overlap Therapy (data elements: discharge medication [to be compared to the Warfarin medication value set.])

Challenges:

1. Many of the same challenges associated with VTE-1 apply. Unlike VTE-1, there is no requirement to electronically document the reasons a therapy was not prescribed.
2. Additional challenges include the complexity of the derived data calculations and the timeliness of lab results reporting.

4. Measure VTE-4: Platelet monitoring on unfractionated heparin (This measure assesses the number of patients diagnosed with confirmed VTE who received intravenous (IV) UFH therapy dosages AND had their platelet counts monitored using defined parameters such as a nomogram or protocol. NQF 0374)

For VTE 4, two distinct subpopulations will need to be determined.

- In addition to the general population criteria (Admission date, Birthdate, Discharge Date), sub-population 2 (Principal VTE) inclusions will now add principal code for confirmed VTE.
- Sub population 3 is defined as “Other VTE Only” will include those patient that have a confirmed VTE as an “other” diagnosis code.
- Additionally, there will be exclusions that will require the identification of patients (1) without IV UFH (an anticoagulant drug) therapy during hospitalization, and (2) patients without VTE confirmed by diagnostic testing.

The following data elements will be used to exclude patients to create the **denominator** for this measure:

- Patient Age (which is derived from a calculation of Admission Date minus Birthdate. Patients under the age of 18 on admission will be excluded)
- Length of Stay (which is a calculation derived from the Discharge Date minus Admission Date). Patients with a length of stay greater than 120 days are excluded
- Patients with Comfort Measures Only (Data elements required: procedure performed, problem code, diagnosis code, problem status)

- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- UFH Therapy Administration (data element: medications administered [to be compared to a value set defining unfractionated heparin])
- VTE Diagnostic Test (Data Element: procedure performed)

The **numerator** statement for this measure will include patients who have their IV UFH dosages and platelet counts monitored according to defined parameters such as nomogram or protocol:

The data elements for **numerator** capture will include:

- Monitoring documentation (Data elements: procedure ordered, medication administered [to be compared to a value set defining unfractionated heparin], medication indication [to be compared to a “treatment adjusted by protocol” value set], result type [to be compared to “platelet count laboratory result” value set])

Challenges:

1. Many of the same challenges associated with VTE-1 apply.
2. Hospitals that have not implemented clinical pathway protocols for this or other populations will find themselves at a disadvantage.

5. Measure VTE-5: VTE Discharge Instructions (This measure assesses the number of patients diagnosed with confirmed VTE that are discharged to home, to home with home health or home hospice on warfarin with written discharge instructions that address all four criteria: compliance issues, dietary advice, follow-up monitoring and information about the potential for adverse drug reactions/interactions. NQF 0375)

For VTE 5, two distinct subpopulations will need to be determined.

- In addition to the general population criteria (Admission date, Birthdate, Discharge Date), sub-population 2 (Principal VTE) inclusions will now add principal code for confirmed VTE.
- Sub population 3 is defined as “Other VTE Only” will include those patient that have a confirmed VTE as an “other” diagnosis code.

The **denominator** statement will include the following:

- Patients with confirmed VTE discharged on warfarin therapy
- Patients with confirmed VTE who received warfarin
- Principal Diagnosis Code or Other Diagnosis Code for VTE,
- Discharged to home
- Discharged to home with home health
- Discharged to home hospice

The following data elements will be used to exclude patients to further define the **denominator** for this measure:

- Patient Age (which is derived from a calculation of Admission Date minus Birthdate. Patients under the age of 18 on admission will be excluded)
- Length of Stay (which is a calculation derived from the Discharge Date minus Admission Date). Patients with a length of stay greater than 120 days are excluded
- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Patients without Warfarin Prescribed at Discharge (Data elements: discharge medication ordered [to be compared to the Warfarin Medication value set])
- Patients without VTE confirmed by diagnostic testing (Data element: procedure performed [to be compare to the VTE diagnostic test value set])

There are no **numerator** exclusions. This is an “all or nothing measure” (i.e. if one element is missing from the discharge instruction set, the measure will not be included in the numerator count).

The data elements for **numerator** capture will include:

- Discharge Instructions Address Compliance Issues (Data element: discharge instructions)
- Discharge Instructions Address Dietary Advice (Data element: discharge instructions)
- Discharge Instructions Address Follow-up Monitoring (Data element: discharge instructions)
- Discharge Instructions Address Potential for Adverse Drug Reactions and Interactions (Data element: discharge instructions)

Each of these data elements will be compared to a specific discharge instructions value set, as well as a value set for providing material.

Challenges:

1. Many of the same challenges associated with VTE-1 apply.
2. Most hospitals are familiar with the discharge instructions concept, mostly through abstracting the Heart Failure Core Measure set. If the hospital has not participated in the VTE measure set, and has not adopted a standard set of discharge instructions for patients on warfarin, they will be at a disadvantage.
3. Another challenge is that the current Joint Commission VTE core measure set includes patients discharged to law enforcement (discharge status code 21) for this measure. As we stated in the comments on the Stroke measures, abstractors are now instructed to answer “Yes” to the question of whether the patient/caregiver received the instructions if they were refused by the patient.
4. In the current Core Measure specification manual there are 7 data sources listed from which the abstractor can gather information for answering this measure. This is especially helpful when it comes to reconciling medications at discharge. How will this issue of multiple data sources, many of which will not be machine readable, be handled in the meaningful use specification for this measure?

6. Measure VTE-6: Incidence of Potentially Preventable VTE (This measure assesses the number of patients diagnosed with confirmed VTE during hospitalization (not present on arrival) who did not receive VTE prophylaxis between hospital admission and the day before the VTE diagnostic testing order date. NQF 0376)

This measure will include patients in sub-population 3 (Other VTE Only)

The **denominator** statement includes patients who developed confirmed VTE **during** hospitalization.

The following data elements will be used to exclude patients to create the **denominator** for this measure:

- Patient Age (which is derived from a calculation of Admission Date minus Birthdate. Patients under the age of 18 on admission will be excluded)
- Length of Stay (which is a calculation derived from the Discharge Date minus Admission Date). Patients with a length of stay greater than 120 days are excluded
- Patients with Comfort Measures Only (Data elements required: procedure performed, problem code, diagnosis code, problem status)
- Patients enrolled in a Clinical Trial (Data elements required: problem code, diagnoses, problem status)
- Patients with VTE present on arrival (Data elements: arrival date/time, problem code, problem status)
- Patients with reasons for not administering mechanical and pharmacological VTE prophylaxis (Data elements: Problem code and diagnoses [to be compare with a value set of reasons for no pharmacological VTE prophylaxis as well as a value set of reasons for no mechanical VTE prophylaxis], problem date/time, admit date/time, procedure declined [which is derived from procedure performed and the VTE mechanical device value set and value sets for medical and patient reasons]. There is an additional value set that is included in the calculation of this derived data element: Tense Act Mood Intent, used to try to capture the “reason” that the prophylaxis was not, is not, or will not be indicated for the patient.)
- Patients without VTE confirmed by diagnostic testing (Data element: procedure performed)

The data elements for **numerator** capture will include:

- VTE Prophylaxis Status (Data element: admit date/time)
- VTE Diagnostic Test Order Date (Data element: procedure ordered, procedure date)
- VTE Prophylaxis Date and Time (Data element: medication administered date/time)
- VTE Prophylaxis (Data element: medications administered [to be compared to a value set for VTE prophylaxis medications], procedure performed)
- Any diagnosis of VTE Confirmed (Data elements: problem status active)

Challenges:

1. The same challenges associated with VTE-1 apply.
2. The HITSP manual appears to have an error, as it includes certain categories of patients in the denominator, which the current Core Measures specification manual excludes. We have assumed this is a typo, and have placed these categories of patients in our exclusion list.
3. This is one of the first measures that hospitals report as a “healthcare-acquired condition.” The pay-for-performance march has started. Everyone on the team: coders, QI leaders, CFOs, IT, and medical staff will rely on accurate information in and out of

the medical record to eventually avoid reporting, auditing, and payment consequences for these occurrences. Locations, content, and intent of documentation will be critical. Patients who develop a VTE during hospitalization and did not receive prophylactic treatment may be calculated and reported electronically, but the systems failures that contributed to the condition cannot. Making the actual patient safety improvements—the intended goal of meaningful use—will require humans and teams of stakeholders to connect the dots.