MEASURE WORKSHEET

This document summarizes the evaluation of the measure as it progresses through NQF's Consensus Development Process (CDP). The information submitted by measure developers/stewards is included after the Brief Measure Information, Preliminary Analysis, and Pre-meeting Public and Member Comments sections.

To navigate the links in the worksheet: Ctrl + click link to go to the link; ALT + LEFT ARROW to return

Brief Measure Information

NQF #: 2083
Measure Title: Prescription of HIV Antiretroviral Therapy
Measure Steward: Health Resources and Services Administration - HIV/AIDS Bureau
Brief Description of Measure: Percentage of patients, regardless of age, with a diagnosis of HIV prescribed antiretroviral therapy for the treatment of HIV infection during the measurement year. A medical visit is any visit in an outpatient/ambulatory care setting with a nurse practitioner, physician, and/or a physician assistant who provides comprehensive HIV care.
Developer Rationale: Human immunodeficiency virus (HIV) is a communicable infection that leads to a progressive disease with a long asymptomatic period. Approximately 50,000 persons in the United States are newly infected with HIV each year. Without treatment, most persons develop acquired immunodeficiency syndrome (AIDS) within 10 years of HIV infection. HIV antiretroviral therapy delays this progression and increases the length of survival.

Current HIV treatment guidelines now recommend universal prescription of HIV antiretroviral therapy for sustained viral load suppression which in turn is directly related to reduction in disease progression and reduction in potential for transmission of HIV infection. Among persons in care, sustained viral load suppression represents the cumulative effect of prescribed therapy, ongoing monitoring, and patient adherence. The proposed measure will direct providers' attention and quality improvement efforts towards this important outcome.

In 2011, the HIV community saw the emergence of the HIV care continuum. This simple model outlines the sequential steps of medical care that people living with HIV go through from initial diagnosis to achieving the goal of viral suppression. The steps include diagnosis, linkage to care, retention in care, receipt of HIV antiretroviral therapy and viral suppression. This model has been incorporated into the National HIV/AIDS Strategy as it has focused all HIV prevention, care, and treatment efforts in the United States. As outlined in the model, all though there are five different steps, each step is dependent upon each other. For instance, you cannot become virally suppressed if you are not receiving HIV antiretroviral therapy or retained in medical care.

The most recent nationwide data from CDC dated 2014 estimates that although 86% of people living with HIV have been diagnosed, only 40% are engaged in care, 37% have been prescribed HIV antiretroviral therapy, and 30% have achieved viral suppression.

Right now, we are at a very special time and place. Many states and large metropolitan areas across the United States have developed plans to end the HIV epidemic in the communities. These jurisdictions have used the HIV care continuum and its steps as the framework by which they have developed their plans.

Numerator Statement: Number of patients from the denominator prescribed HIV antiretroviral therapy during the measurement year.
Denominator Statement: Number of patients, regardless of age, with a diagnosis of HIV with at least one medical visit in the measurement year
Denominator Exclusions: There are no patient exclusions.

Measure Type: Process
Data Source: Process
Level of Analysis: Facility

IF Endorsement Maintenance – Original Endorsement Date: Jan 07, 2013 **Most Recent Endorsement Date:** Jan 07, 2013

Maintenance of Endorsement -- Preliminary Analysis

To maintain NQF endorsement endorsed measures are evaluated periodically to ensure that the measures still meets the NQF endorsement criteria ("maintenance"). The emphasis for maintaining endorsement is focused on how effective the measure is for promoting improvements in quality. Endorsed measures should have some experience from the field to inform the evaluation. The emphasis for maintaining endorsement is noted for each criterion.

Criteria 1: Importance to Measure and Report

1a. Evidence

Maintenance measures – less emphasis on evidence unless there is new information or change in evidence since the prior evaluation.

1a. Evidence. The evidence requirements for a *process or intermediate outcome* measure is that it is based on a systematic review (SR) and grading of the body of empirical evidence where the specific focus of the evidence matches what is being measured.

The developer provides the following evidence for this measure:

- **Systematic Review of the evidence specific to this measure?** ☒ **Yes** ☐ **No**
- **Quality, Quantity and Consistency of evidence provided?** ☐ **Yes** ☒ **No**
- **Evidence graded?** ☒ **Yes** ☐ **No**

Evidence Summary or **Summary of prior review in [year]**

- Evidence and clinical guidelines state that Antiretroviral Therapy is recommended for all HIV-infected individuals in order to reduce morbidity and mortality. Evidence focuses on the percent of providers prescribing ART and the percent of patients with viral load suppression across those providers, the data suggests a positive correlation.
- As a whole, the general evidence suggests that prescription to ART for those infected with HIV will lead to viral suppression if treatment is maintained.

Changes to evidence from last review

☐ **The developer attests that there have been no changes in the evidence since the measure was last evaluated.**

☒ **The developer provided updated evidence for this measure:**

Updates:

- The rationale provided for this measure is that HIV retroviral therapy (ART) delays the progression of the disease and increases the length of survival for the patient.
- The most recent data from 2014 estimates that although 86% of people living with HIV have been diagnosed, only 40% are engaged in care and only 37% have been prescribed HIV antiretroviral therapy.

Exception to evidence

N/A

Questions for the Committee:

If the developer provided updated evidence for this measure:

- *The evidence provided by the developer is updated, directionally the same, and stronger compared to that for the previous NQF review. Does the Committee agree there is no need for repeat discussion and vote on Evidence?*
  - *What is the relationship of this measure to patient outcomes?*
  - *How strong is the evidence for this relationship?*
  - *Is the evidence directly applicable to the process of care being measured?*
- *For possible exception to the evidence criterion:*
  - *Are there, or could there be, performance measures of a related health outcome, OR evidence-based intermediate clinical outcomes, intervention/treatment?*

- *Is there evidence of a systematic assessment of expert opinion beyond those involved in developing the measure?*
- *Does the SC agree that it is acceptable (or beneficial) to hold providers accountable for prescription of HIV antiretroviral therapy without empirical evidence?*

Guidance from the Evidence Algorithm

Process measure evidence based (Box3) → Empirical Evidence is unrelated to distal process of ART prescription (BOX 7)→ Possible related process measures (Box 10)→ No exception → Rate as Insufficient

Preliminary rating for evidence: ☐ **High** ☐ **Moderate** ☐ **Low** ☒ **Insufficient**

RATIONALE: Evidence provided by the developer lacked a systematic review of the evidence and was not directly related to the process measure 2083 but to other steps in the model that lead to viral suppression in patients with HIV.

1b. Gap in Care/Opportunity for Improvement and 1b. Disparities
Maintenance measures – increased emphasis on gap and variation

1b. Performance Gap. The performance gap requirements include demonstrating quality problems and opportunity for improvement.

Provider-level performance scores for antiretroviral treatment (ART) for 2014 are presented below.

	2014	2013	2012	2011	2010
Rate	77.6	77.5	74.3	71.1	68.4
Pts w/ ≥1 medical visit (den)	316,087	327,618	335,408	327,744	324,455
Pts w/viral suppression (num)	255,342	249,436	234,505	214,650	200,584
Mean	78.0	77.5	73.4	70.1	65.9
Median	90.0	86.5	83.8	79.8	76.5
Standard Deviation	28.0	24.1	25.4	26.4	27.5
10th percentile	29.6	42.9	31.7	26.1	17.8
90th percentile	98.3	96.4	94.7	93.2	91.2
Min, Max	0.0, 100.0	0.0, 100.0	0.0, 100.0	0.0, 100.0	0.0, 100.0
Pts prescribed ART	245,400 (77.6)	253,972 (77.5)	249,094 (74.3)	233,132 (71.1)	221,908 (68.4)
# of facilities	813	823	816	811	846

Disparities

The data for measure testing were collected via the Ryan White HIV/AIDS Program Services Report (RSR), which is HRSA HIV/AIDS Bureau's primary source of annual, client-level data collected from more than 2,000 funded grant recipients and subrecipients. Descriptive characteristics are provided by the developer in the table below. The full table can be found here.

American Indian /Alaska Native	1,473	0.5	1,366	0.4	1,371	0.4	1,414	0.5	1,272	0.4
Asian	3,382	1.1	3,598	1.2	3,980	1.2	3,835	1.2	3,791	1.2
Black/African American	146,460	47.3	149,834	47.8	150,974	47.2	146,056	47.0	142,746	46.9
Hispanic/Latino[a]	71,002	22.9	71,240	22.7	75,201	23.5	74,967	24.1	74,714	24.5
Native Hawaiian /Pacific Islander	627	0.2	710	0.2	575	0.2	510	0.2	442	0.2
White	83,854	27.1	83,061	26.5	83,820	26.2	78,953	25.4	75,931	24.9
Multiple races	3,177	1.0	3,716	1.2	4,238	1.3	4,899	1.6	5,651	1.9
GENDER										
Male	219,625	69.7	223,379	69.9	230,075	70.8	221,930	70.7	216,965	70.7
Female	93,266	29.6	93,687	29.3	92,186	28.4	89,212	28.4	87,071	28.4
Transgender	2,313	0.7	2,585	0.8	2,848	0.9	2,779	0.9	2,974	1.0

Questions for the Committee:

- *Is there a gap in care that warrants a national performance measure?*

Preliminary rating for opportunity for improvement: ☐ **High** ☒ **Moderate** ☐ **Low** ☐ **Insufficient**

RATIONALE:

Committee pre-evaluation comments

Criteria 1: Importance to Measure and Report (including 1a, 1b, 1c)

1a. Evidence

*The evidence provided indicates that Antiretroviral Therapy (ART) is recommended for HIV infected (HIV+) individuals to reduce morbidity and mortality. The main "evidence" provided is Clinical Guidelines, which clearly indicate that ART is recommended for all HIV+ patients. While the evidence that the use of ART therapy improves outcomes for HIV+ individuals is implied, there is no evidence provided that patients who are prescribed (and presumably take) ART have viral load suppression and improved outcomes. Based on this fact, there is INSUFFICIENT evidence.

*There is no need for repeat discussion and vote on Evidence

1b. Performance Gap

***"**Gap: There is a clear need to improve the numbers of HIV+ patients who are prescribed ART. The currently most available data from the data provided about the population studied, shows that in 2014, 77.6% receive ART, leaving 22.4% who do not receive ART. This is much higher than stated by CDC in the estimates that although 86% of people living with HIV have been diagnosed, only 40% are engaged in care, 37% have been prescribed HIV antiretroviral therapy, and 30% have achieved viral suppression.

Disparities: There was evidence that the population characteristics represented a diverse group of people, including age groups, race/ethnicity, and gender (including gender orientation), however I do not see any data about the performance rates by these variables. As a result I cannot say that there is a disparity gap, unless I am misunderstanding the data which were presented.

There is in general a moderate performance gap."

*there is a gap in care that warrants a national performance measure

Criteria 2: Scientific Acceptability of Measure Properties

2a. Reliability

2a1. Reliability Specifications

Maintenance measures – no change in emphasis – specifications should be evaluated the same as with new measures

2a1. Specifications requires the measure, as specified, to produce consistent (reliable) and credible (valid) results about the quality of care when implemented.

Data source(s):

- Abstracted from paper records and electronic health records

Specifications:

- This measure is specified at hospital/facility/agency level
- Patients are included in the numerator if they were prescribed HIV antiretroviral therapy during the measurement year
- The denominator includes the number of patients, regardless of age, with a diagnosis of HIV with at least one medical visit in the measurement year
- There are no patient exclusions
- The measure calculates a rate where a higher score is associated with better performance. The rate is calculated by dividing the numerator population by the denominator population and then multiplying by 100.

Questions for the Committee:

- *Are all the data elements clearly defined? Are all appropriate codes included?*
- *Is the logic or calculation algorithm clear?*
- *Is it likely this measure can be consistently implemented?*

2a2. Reliability Testing Testing attachment
Maintenance measures – less emphasis if no new testing data provided

2a2. Reliability testing demonstrates if the measure data elements are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period and/or that the measure score is precise enough to distinguish differences in performance across providers.

For maintenance measures, summarize the reliability testing from the prior review:

- Each year from 2010-2014 more than 91% of providers had reliability scores of 0.9 or greater. Therefore, the reliability of viral suppression can be considered to be sufficient to identify real differences in performance across providers. Median reliability was consistently 0.99 during 2010-2014, supporting the conclusion that the reliability of this measure can be considered very good.

SUMMARY OF TESTING

Reliability testing level ☒ **Measure score** ☐ **Data element** ☐ **Both**

Reliability testing performed with the data source and level of analysis indicated for this measure ☒ **Yes** ☐ **No**

Method(s) of reliability testing

- The developer used the a beta binomial model to estimate reliability, this method was calculated using the NCQA technical report "The reliability of Provider Profiling: A tutorial". The beta binomial model is appropriate for pass/fail measures according to the developer. Reliability scores vary from 0.0 to 1.0, with a score of zero indicating that all variation is attributable to measurement error (noise, or individual accountable entity variance) whereas a reliability of 1.0 implies that all variation is caused by real difference in performance across accountable entities.

Results of reliability testing

- Median reliability was consistently 0.99 during 2010-2014, supporting the conclusion that the reliability of this measure can be considered very good.

Questions for the Committee:

- *No updated testing information is presented. The prior testing demonstrated good reliability. Does the Committee think there is a need to re-discuss and re-vote on reliability?*
- *Is the test sample adequate to generalize for widespread implementation?*
- *Do the results demonstrate sufficient reliability so that differences in performance can be identified?*

Guidance from the Reliability Algorithm Precise specifications (Box 1) → Empirical testing (Box 2) → Testing of the measure score (Box 4) → Appropriate method (Box 5) → High certainty (Box 6a) → High

Preliminary rating for reliability: ☒ **High** ☐ **Moderate** ☐ **Low** ☐ **Insufficient**

2b. Validity
Maintenance measures – less emphasis if no new testing data provided

2b1. Validity: Specifications

2b1. Validity Specifications. This section should determine if the measure specifications are consistent with the evidence.

Specifications consistent with evidence in 1a. ☒ **Yes** ☐ **Somewhat** ☐ **No**

Question for the Committee:

- *Are the specifications consistent with the evidence?*

2b2. Validity testing

2b2. Validity Testing should demonstrate the measure data elements are correct and/or the measure score correctly reflects the quality of care provided, adequately identifying differences in quality.

For maintenance measures, summarize the validity testing from the prior review:

- Face validity for the measure was established through a technical work group empaneled for the development of the measure.

Describe any updates to validity testing:

- **N/A**

SUMMARY OF TESTING

Validity testing level ☒ **Measure score** ☐ **Data element testing against a gold standard** ☐ **Both**

Method of validity testing of the measure score:

☒ **Face validity only**

☐ **Empirical validity testing of the measure score**

Validity testing method:

- The technical work group was represented of the Ryan White HIV/AIDS Program grant recipients, subrecipients, and stakeholders and included clinical providers, researchers, and clinical quality management staff.
- The developer assessed Face validity through a technical work group empaneled for the development of the measure. The work group voted on importance, ability to assess quality care, feasibility to implement measure, and use in quality improvement activities.
- NQF guidance states, "Face validity of the measure score as a quality indicator may be adequate if accomplished through a systematic and transparent process, by identified experts, and explicitly addresses whether performance scores resulting from the measure as specified can be used to distinguish good from poor quality.
- The developer stated that "the technical work group developed a measure that could be implemented to assess and improvement quality of care by Ryan White HIV/AIDS Program grant recipients and subrecipients." - this is insufficient per NQF criteria.

Validity testing results:

- The technical work group agreed upon a measure that could assess and improvement the quality of HIV care.
- No comments were received that the measure should be discontinued.

Questions for the Committee:

- *No updated testing information is presented. The prior testing demonstrated good validity. Does the Committee think there is a need to re-discuss [and re-vote] on validity [testing for validity]?*

2b3-2b7. Threats to Validity

2b3. Exclusions: No exclusions

2b4. Risk adjustment: **Risk-adjustment method** ☒ **None** ☐ **Statistical model** ☐ **Stratification**

2b5. Meaningful difference *(can statistically significant and clinically/practically meaningful differences in performance measure scores can be identified)*:

- The Data represents variability across providers, In 2014, the bottom 10% of providers had ART prescription rates of 29.6% or lower; the top 90% of providers had rates of 98.3% or higher. These differences demonstrate the continued value of the measure in identifying sites based on poor performance relative to the top performers.

% patients with viral suppression across providers							Providers with ≥80% patients prescribed ART		
Year	Mean	SD	Median	10th %ile	90th %ile		N	n	%
2010	65.9%	27.5%	76.5%	17.8%	91.2%		846	353	41.7
2011	70.1%	26.4%	79.8%	26.1%	93.2%		811	402	49.6
2012	73.4%	25.4%	83.8%	31.7%	94.7%		816	471	57.7
2013	77.5%	24.1%	86.5%	42.9%	96.4%		823	532	64.6
2014	78.0%	28.0%	90.0%	29.6%	98.3%		813	565	69.5

Question for the Committee:

- *Does this measure identify meaningful differences about quality?*

2b6. Comparability of data sources/methods:

- N/A

2b7. Missing Data

- Based on the method used to calculate the ART performance score, conducting missing data analysis is not applicable for this measure.

Guidance from the Validity Algorithm Specifications consistent with evidence (Box 1) → Relevant potential threats to validity assessed empirically assessed (Box 2) → Empirical validity testing was not conducted using the measure as specified (Box 3) → Face validity was not systematically assessed by recognized experts to determine agreement on whether the computed measure score from the measure as specified can be used to distinguish good and poor quality. Face validity focused on importance, ability to assess quality care, feasibility to implement measure, and use in quality improvement activities (e.g. ability to improve measure score). (Box 4) → Insufficient (highest eligible rating is MODERATE)

Preliminary rating for validity: ☐ **High** ☐ **Moderate** ☐ **Low** ☒ **Insufficient**

RATIONALE: Face validity was not systematically assessed by recognized experts to determine agreement on whether the computed measure score from the measure as specified can be used to distinguish good and poor quality per NQF criteria. Face validity focused on importance, ability to assess quality care, feasibility to implement measure, and use in quality improvement activities (e.g. ability to improve measure score).

Committee pre-evaluation comments

Criteria 2: Scientific Acceptability of Measure Properties (including all 2a, 2b, and 2d)

2a1. Reliability Specifications

*"No concerns. I believe there is a HIGH level of reliability.

All date elements well defined. The evidence presented is adequate in my minds eye, for these purposes. Test sample is adequate. There is sufficient reliability based on the information provided."

*All the data elements are clearly defined

the logic or calculation algorithm is clear
It is likely this measure can be consistently implemented"

2a2. Reliability Testing
*N/A

*there is no need to re-discuss and re-vote on reliability
the test sample is adequate to generalize for widespread implementation
the results demonstrate sufficient reliability so that differences in performance can be identified

2b1. Validity Specifications
*No Empirical validity testing was performed on the measure score, so this is rated as INSUFFICIENT. Only Face Validity was performed.

*It is necessary that antiretroviral therapy be prescribed, but it is not clear that patients actually receive that therapy from this measure.

2b2. Validity Testing
*N/A

*There is no need to re-discuss [and re-vote] on validity [testing for validity].

2b3-7 Threats to Validity
*N/A

*2b.5 the measure identifies meaningful differences about quality
"

Criterion 3. Feasibility
Maintenance measures – no change in emphasis – implementation issues may be more prominent

3. Feasibility is the 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.

- The developer reports that the required data elements are available in electronic health records or other electronic sources and are in defined fields.
- The operational use of this measure are readily available within patient health records and provided annually to the Ryan White HIV/AIDS Program. Because of availability, sampling is not performed.

Questions for the Committee:

- *Are the required data elements routinely generated and used during care delivery?*
- *Are the required data elements available in electronic form, e.g., EHR or other electronic sources?*
- *Is the data collection strategy ready to be put into operational use?*

Preliminary rating for feasibility: ☒ **High** ☐ **Moderate** ☐ **Low** ☐ **Insufficient**

Committee pre-evaluation comments
Criteria 3: Feasibility

3. Feasibility
*All elements are available. All available in electronic form, as of 2014. No concerns. HIGH Feasibility.

*The required data elements are routinely generated and used during care delivery
the required data elements are available in electronic form, e.g., EHR or other electronic sources?
The data collection strategy is ready to be put into operational use"

Criterion 4: Usability and Use
Maintenance measures – increased emphasis – much greater focus on measure use and usefulness, including both impact /improvement and unintended consequences

4. Usability and Use evaluate the extent to which audiences (e.g., consumers, purchasers, providers, policymakers) use or could use performance results for both accountability and performance improvement activities.

Current uses of the measure
Publicly reported? ☒ **Yes** ☐ **No**

Current use in an accountability program? ☒ **Yes** ☐ **No** ☐ **UNCLEAR**

Accountability program details

- Ryan White HIV/AIDS Program
  - Sponsor: Federal government
  - Geographic area: Nationwide
  - Accountable entities: Approximately 600 Ryan White HIV/AIDS Program grant recipients and their providers
  - Patients: Approximately 316,000 patients
- Physician Quality Report System (PQRS) and Value Based Modifier
  - Sponsor: Federal government
  - Geographic area: Nationwide
  - Accountable entities: Physicians and practitioners
  - Patients: Unknown
- National HIV/AIDS Strategy
  - Sponsor: Federal government
  - Geographic area: Nationwide
  - Accountable entities: Federal agencies and service providers
  - Patients: All people living with HIV in the United States

Improvement results

- The developer reports that the percent of patients being prescribed ART from 2010 to 2014 has increased from 68.4 to 77.6 percent. The Ryan White HIV/AIDS Program has experienced a 10 + point increase in viral suppression from 65.9% in 2010 to 78.0% in 2014. Prescription of HIV antiretroviral therapy has increased across all demographic groups and subpopulations.

Unexpected findings (positive or negative) during implementation

- This measure has been adopted by Centers for Medicare and Medicaid measurement programs, Department of Health and Human Service Secretary as a one of the core HIV indicators, countless outpatient/ambulatory care settings, and health departments. National learning collaborates have used this measure to focus the improvement efforts of grant recipients and subrecipients. Additionally, prescription of HIV antiretroviral therapy is one of five stages of the HIV care continuum. This measure has become the standard when measuring prescription of HIV antiretroviral therapy.

Potential harms

- The developer did not identify any potential harms in the testing of this measure.

Vetting of the measure

- Health Resources and Services Administration worked diligently to release the annual data report in the same year it was collected (collected in April and released in December of the same year). The report is publically available on the Health Resources and Services Administration website (http://hab.hrsa.gov/data/data-reports) and is released via an accompanying webinar (recorded and archived).
- Ryan White HIV/AIDS Program national partners (national organizations that represent grant recipients, subrecipients, and patients) has provided antidotal feedback regarding the timeliness, feasibility, and usability of the release of the Ryan White HIV/AIDS Program Annual Client-Level Data Report, supplemental reports, slide decks, fact sheets, and infographics. The national partners encourage the continued release of the data in all its formats.
- During the initial development of the chart-abstracted measure, formal feedback was gathered. The measures were modified during the development phase and have not been modified since. A concerted effort was made to develop a measure that would likely stand the test of time from a scientific, clinical, and patient perspective. On an annual basis, the measures are reviewed for clinical relevance, change in scientific acceptability, and consistency with guidelines. The chart-abstracted measure has not been modified as a result of the annual reviews.

Feedback:

- Anecdotal feedback has been received from Ryan White HIV/AIDS Program grant recipients and subrecipients regarding the feasibility and usefulness of the data presented in the Ryan White HIV/AIDS Program Annual Client-Level Data Report. The national partners encourage the continued release of the data in all its formats.

- Significant feedback has been provided about the timeliness and expansions of the data release. Grant recipient report using the data for benchmarking their program, setting goals/targets, and gaining a fuller understanding of all aspects of the Ryan White HIV/AIDS Program (i.e. other regions of the country). Grant recipients and subrecipients have also requested additional analyses. Health Resources and Services Administration responded with supplemental reports (Ryan White HIV/AIDS Program Supplemental Client-Level Data Report, Eligible Metropolitan Areas and Transitional Grant Areas; special population reports); slide decks for the overall client population and special populations; grant recipient reports; and infographics – all of which will be updated and released annually. Health Resources and Services Administration plans to release additional analyses and special reports this year based on feedback from Ryan White HIV/AIDS Program grant recipients and subrecipients.

***Questions for the Committee**:*

- *How can the performance results be used to further the goal of high-quality, efficient healthcare?*
- *How has the measure been vetted in real-world settings by those being measure or others?*

Preliminary rating for usability and use: ☐ **High** ☒ **Moderate** ☐ **Low** ☐ **Insufficient**

Committee pre-evaluation comments

Criteria 4: Usability and Use

4. Usability and Use

*Vetter in "real world" settings; public reporting of data; feedback solicited; Feedback was considered though. Feedback has been anecdotal. - MODERATE Usability and Use.

Criterion 5: Related and Competing Measures

Related or competing measures

- The following measures are listed as related or competing:
  - 2080 Gap in HIV Medical Visits – population but different measurement periods
  - 2082 HIV viral suppression
  - 2083 Prescription of HIV Antiretroviral Therapy
  - 3211 Prescription of HIV Antiretroviral Therapy (newly submitted eMeasure)
  - 3210 HIV viral suppression (newly submitted eMeasure)
  - 3010 HIV Medical Visit Frequency
  - 0405 HIV/AIDS: Pneumocystis Jiroveci Pneumonia (PCP) Prophylaxis – related population only
  - 0409 HIV/AIDS: Sexually Transmitted Disease Screening for Chlamydia, Gonorrhea, and Syphilis – related population only
  - 2079 HIV Medical Visit Frequency

Harmonization

- Harmonized with all measures except 405 and 409. Plans to harmonize with 405 and 409.

Endorsement + Designation

The "Endorsement +" designation identifies measures that exceed NQF's endorsement criteria in several key areas. After a Committee recommends a measure for endorsement, it will then consider whether the measure also meets the "Endorsement +" criteria.

This measure is a candidate for the "Endorsement +" designation IF the Committee determines that it: meets evidence for measure focus without an exception; is reliable, as demonstrated by score-level testing; is valid, as demonstrated by score-level testing (not via face validity only); and has been vetted by those being measured or other users.

Eligible for Endorsement + designation: ☐ **Yes** ☒ **No**

RATIONALE IF NOT ELIGIBLE: The measure is not eligible for Endorsement+ because empirical reliability and validity testing of the measure score was not conducted and the measure has not been vetted in real world settings by those being measured and other users.

Pre-meeting public and member comments

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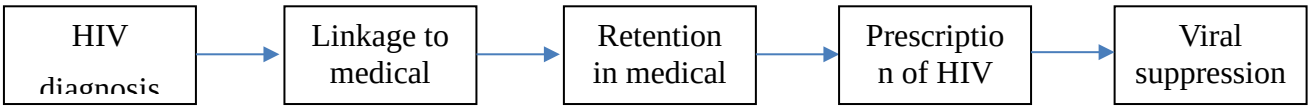
Measure Title: Prescription of HIV Antiretroviral Therapy

1a.12 LOGIC MODEL



Although the above diagram outlines the sequential septs of medical care that people living with HIV go through form initial diagnosis to achieving the goal of viral suppression (also known as the HIV care continuum). For some patients,

this is a linear path with sustained viral suppression for many years. For other patients, there may be years between diagnosis and linkage. Yet still for others, retention in medical care is not consistent, which results in missed visits, no prescription for or adherence to HIV antiretroviral therapy (ART), and lack of viral suppression.

1a.2 FOR OUTCOME MEASURES including PATIENT REPORTED OUTCOMES State the rationale supporting the relationship between the health outcome (or PRO) to at least one healthcare structure, process (e.g., intervention, or service).

Regularly attending medical visits (retention) is paramount to monitoring patient's health status, screenings, and laboratory values. Providers need this information to make an informed decision in order to prescribe HIV antiretroviral therapy (ART). ART reduces HIV-associated morbidity and mortality by maximally inhibiting HIV replication (as defined by achieving and maintaining plasma HIV RNA (viral load) below levels detectable by commercially available assays). Durable viral suppression improves immune function and quality of life, lowers the risk of both AIDS-defining and non-AIDS-defining complications, and prolongs life. Emerging evidence also suggests that additional benefits of ART-induced viral load suppression include a reduction in HIV-associated inflammation and possibly its associated complications.

1b.1. Briefly explain the rationale for this measure (e.g., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure)

Human immunodeficiency virus (HIV) is a communicable infection that leads to a progressive disease with a long asymptomatic period. Approximately 50,000 persons in the United States are newly infected with HIV each year. Without treatment, most persons develop acquired immunodeficiency syndrome (AIDS) within 10 years of HIV infection. HIV antiretroviral therapy delays this progression and increases the length of survival.

Current HIV treatment guidelines now recommend universal prescription of HIV antiretroviral therapy for sustained viral load suppression which in turn is directly related to reduction in disease progression and reduction in potential for transmission of HIV infection. Among persons in care, sustained viral load suppression represents the cumulative effect of prescribed therapy, ongoing monitoring, and patient adherence. The proposed measure will direct providers' attention and quality improvement efforts towards this important outcome.

In 2011, the HIV community saw the emergence of the HIV care continuum. This simple model outlines the sequential steps of medical care that people living with HIV go through from initial diagnosis to achieving the goal of viral suppression. The steps include diagnosis, linkage to care, retention in care, receipt of HIV antiretroviral therapy and viral suppression. This model has been incorporated into the National HIV/AIDS Strategy as it has focused all HIV prevention, care, and treatment efforts in the United States. As outlined in the model, all though there are five different steps, each step is dependent upon each other. For instance, you cannot become virally suppressed if you are not receiving HIV antiretroviral therapy or retained in medical care.

The most recent nationwide data from CDC dated 2014 estimates that although 86% of people living with HIV have been diagnosed, only 40% are engaged in care, 37% have been prescribed HIV antiretroviral therapy, and 30% have achieved viral suppression.

Right now, we are at a very special time and place. Many states and large metropolitan areas across the United States have developed plans to end the HIV epidemic in the communities. These jurisdictions have used the HIV care continuum and its steps as the framework by which they have developed their plans.

1a.4. CLINICAL PRACTICE GUIDELINE RECOMMENDATION

1a.4.1. Guideline citation (*including date*) and **URL for guideline** (*if available online*):

Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services Accessed November 15, 2016: http://www.aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf

World Health Organization (WHO). (2016). Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: recommendations for a public health approach. Accessed November 15, 2016: http://apps.who.int/iris/bitstream/10665/208825/1/9789241549684_eng.pdf?ua=1

International Advisory Panel on HIV Care Continuum Optimization (IAPAC). (2015). IAPAC Guidelines for Optimizing the HIV Care Continuum for Adults and Adolescents. Accessed November 15, 2016. http://www.iapac.org/uploads/JIAPAC-IAPAC-Guidelines-for-Optimizing-the-HIV-Care-Continuum-Supplement-Nov-Dec-2015.pdf

Günthard HF, Saag MS, Benson CA, del Rio C, Eron JJ, Gallant JE, Hoy JF, Mugavero MJ, Sax PE, Thompson MA, Gandhi RT, Landovitz RJ, Smith DM, Jacobsen DM, Volberding PA. Antiretroviral Drugs for Treatment and Prevention of HIV Infection in Adults 2016 Recommendations of the International Antiviral Society–USA Panel. JAMA. 2016. https://www.iasusa.org/content/antiretroviral-drugs-treatment-and-prevention-hiv-infection-adults-2016-recommendations

1a.4.2. Identify guideline recommendation number and/or page number and **quote verbatim, the specific guideline recommendation**.

Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents:

Initiation of Antiretroviral Therapy (page E-1)

- Antiretroviral therapy (ART) is recommended for all HIV-infected individuals, regardless of CD4 T lymphocyte cell count, to reduce the morbidity and mortality associated with HIV infection (AI).
- ART is also recommended for HIV-infected individuals to prevent HIV transmission (AI).
- When initiating ART, it is important to educate patients regarding the benefits and considerations regarding ART, and to address strategies to optimize adherence. On a case-by-case basis, ART may be deferred because of clinical and/or psychosocial factors, but therapy should be initiated as soon as possible.

Considerations for Antiretroviral Use in Special Patient Populations: Acute and Recent (Early) HIV Infection (page I-1)

- Antiretroviral therapy (ART) is recommended for all individuals with HIV-1 infection (AI) including those with early HIV-1 infection.

HIV-Infected Adolescents and Young Adults (page I-8):

- ART is recommended for all HIV-infected individuals (AI) to reduce morbidity and mortality. Thus, ART is also recommended for ART-naive adolescents. However, before initiation of therapy, adolescents' readiness and ability to adhere to therapy within their psychosocial context need to be carefully considered as partner of therapeutic decision making (AIII).

HIV-Infected Women (page I-20):

- Antiretroviral therapy (ART) is recommended for all HIV-infected women to improve their health and to reduce the risk of HIV transmission to HIV-uninfected sex partners (AI).

HIV/Hepatitis C Virus Coinfection (page J-6):

- Antiretroviral therapy (ART) may slow the progression of liver disease by preserving or restoring immune function and reducing HIV related immune activation and inflammation. For most HCV/HIV-coinfected patients, including those with cirrhosis, the benefits of ART outweigh concerns regarding drug-induced liver injury. Therefore, ART should be initiated in all HCV/HIV-coinfected patients, regardless of CD4 T lymphocyte (CD4) cell count (AI).

WHO:

4.3 When to start ART (page xxxi)

4.3.1 When to start ART in adults (>19 years old)

- ART should be initiated in all adults living with HIV, regardless of WHO clinical stage and at any CD4 cell count (strong recommendation, moderate-quality evidence).
- As a priority, ART should be initiated in all adults with severe or advanced HIV clinical disease (WHO clinical stage 3 or 4) and adults with a CD4 count ≤350 cells/mm3 (strong recommendation, moderate-quality evidence).

4.3.2 When to start ART in pregnant and breastfeeding women

- ART should be initiated in all pregnant and breastfeeding women living with HIV, regardless of WHO clinical stage and at any CD4 cell count and continued lifelong (strong recommendation, moderate-quality evidence).

4.3.3 When to start HIV antiretroviral therapy in adolescents (10–19 years of age)

- ART should be initiated in all adolescents living with HIV, regardless of WHO clinical stage and at any CD4 cell count (conditional recommendation, low-quality evidence).
- As a priority, ART should be initiated in all adolescents with severe or advanced HIV clinical disease (WHO clinical stage 3 or 4) and adolescents with a CD4 count ≤350 cells/mm3 (strong recommendation, moderate-quality evidence).

4.3.4 When to start HIV antiretroviral therapy in children younger than 10 years of age

- ART should be initiated in all children living with HIV, regardless of WHO clinical stage or at any CD4 cell count:
- Infants diagnosed in the first year of life (strong recommendation, moderate-quality evidence).
- Children living with HIV 1-year-old to less than 10 years old (conditional recommendation, low-quality evidence).
- As a priority, ART should be initiated in all children <2 years of age or children younger than 5 years of age with WHO clinical stage 3 or 4 or CD4 count ≤750 cells/mm³ or CD4 percentage <25% and children 5 years of age and older with WHO clinical stage 3 or 4 or CD4 count ≤350 cells/mm³ (strong recommendation, moderate-quality evidence).

4.3.5 Timing of HIV ANTIRETROVIRAL THERAPY for adults and children with TB

- ART should be started in all TB patients living with HIV regardless of CD4 count (strong recommendation, high-quality evidence).

International Advisory Panel on HIV Care Continuum Optimization (IAPAC):

Increasing HIV treatment coverage (page 3)

- The immediate offer of ART after HIV diagnosis, irrespective of CD4 count or clinical stage, is recommended. (AI)

Antiretroviral Drugs for Treatment and Prevention of HIV Infection in Adults 2016 Recommendations of the International Antiviral Society–USA Panel

Box 1. Recommendations for When to Start (page 193)

- Antiretroviral therapy (HIV ANTIRETROVIRAL THERAPY) is recommended for all viremic patients with established HIV infection, regardless of CD4 cell count (evidence rating AIa).
- Initiation of ART is recommended as soon as possible in the setting of acute HIV infection (evidence rating BIII).
- Planned discontinuation of early ART after a specific duration of treatment is not recommended outside a research setting (evidence rating AIa).
- Initiation of ART is recommended for individuals who have persistent undetectable viral load without ART but have declining CD4 cell counts (evidence rating BIII).

1a.4.3. Grade assigned to the quoted recommendation with definition of the grade:

Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents:

Basis for Recommendations

Recommendations in these guidelines are based upon scientific evidence and expert opinion. Each recommended statement includes a letter (A, B, or C) that represents the strength of the recommendation and a Roman numeral (I, II, or III) that represents the quality of the evidence that supports the recommendation (see Table 2).

Table 2. Rating Scheme for Recommendations

Strength of Recommendation	Quality of Evidence for Recommendation
A: Strong recommendation for the statement **B:** Moderate recommendation for the statement **C:** Optional recommendation for the statement	**I:** One or more randomized trials with clinical outcomes and/or validated laboratory endpoints **II:** One or more well-designed, non-randomized trials or observational cohort studies with long-term clinical outcomes **III:** Expert opinion

International Advisory Panel on HIV Care Continuum Optimization; IAPAC Guidelines for Optimizing the HIV Care Continuum for Adults and Adolescents.

Strong (A) = Almost all patients should receive the recommended course of action.
Moderate (B) = Most patients should receive the recommended course of action. However, other choices may be appropriate for some patients.
Optional (C) There may be consideration for this recommendation based on individual patient circumstances. Not recommended routinely.

Quality of the Body of Evidence and its Interpretation:

Excellent (I) = Randomized control trial (RCT) evidence without important limitations; overwhelming evidence from observational studies
High (II) = RCT evidence with important limitations; strong evidence from observational studies
Medium (III) = RCT evidence with critical limitations; observational study without important limitations
Low (IV) = Other evidence, including extrapolations from bench research, usual practice, expert opinion, consensus guidelines; observational study evidence with important or critical limitations

World Health Organization. Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection Recommendations for a public health approach - Second edition.:

The strength of a recommendation can be either strong or conditional. Process of guideline development This edition of the guidelines was revised in accordance with procedures established by the WHO Guidelines Review Committee. New clinical and operational recommendations in the guidelines are based on the GRADE (Grading of Recommendations, Assessment, Development and Evaluation) approach to reviewing evidence. Modelling, expert consultations and country case studies have all strongly informed the guidelines. The process has also identified key gaps in knowledge that will help to guide the future HIV research agenda. A strong recommendation is one for which there is confidence that the desirable effects of adherence to the recommendation clearly outweigh the undesirable effects.
A conditional recommendation is one for which the Guideline Development Group concludes that the desirable effects of adherence to the recommendation probably outweigh the undesirable effects or are closely balanced, but the Groups are not confident about these trade-offs in all situations. At implementation, monitoring and rigorous evaluation is needed to address these uncertainties, which are likely to provide new evidence that may change the calculation of the balance of trade-offs and to suggest how to overcome any implementation challenges.

Quality of evidence Definition
Table 1.1. GRADE quality of evidence

Quality of evidence	Definition
High	We are very confident that the true effect lies close to that of the estimate of the effect

Middle	We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of effect, but there is a possibility that it is substantially different
Low	Our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect
Very low	We have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of the effect

Antiretroviral Drugs for Treatment and Prevention of HIV Infection in Adults, 2016 Recommendations of the International Antiviral Society–USA Panel:

Table 1. Strength of Recommendation and Quality of Evidence Rating Scale

Rating	Definition
Strength of recommendation	
A	Strong support for the recommendation
B	Moderate support for the recommendation
C	Limited support for the recommendation
Quality of evidence	
Ia	Evidence for ≥ 1 randomized clinical trials published in the peer-reviewed literature
Ib	Evidence for ≥ 1 randomized clinical trials presented in abstract form at peer-reviewed scientific meetings
IIa	Evidence from nonrandomized clinical trials or cohorts or case-control studies published in the peer-reviewed literature
IIb	Evidence from nonrandomized clinical trials or cohorts or case-control studies published in the peer-reviewed scientific meeting
III	Recommendation based on panel's analysis of the accumulated available evidnce

1a.4.4. Provide all other grades and associated definitions for recommendations in the grading system. (*Note: If separate grades for the strength of the evidence, report them in section 1a.7.*)
All grade and definitions noted in 1a.4.3.

1a.4.5. Citation and URL for methodology for grading recommendations (*if different from 1a.4.1*)**:**
Citations noted in 1a.4.1.

1a.4.6. If guideline is evidence-based (rather than expert opinion), are the details of the quantity, quality, and consistency of the body of evidence available (e.g., evidence tables)?
X☐ Yes → ***complete section 1a.7***
☐ No → ***report on another systematic review of the evidence in sections 1a.6 and 1a.7; if another review does not exist, provide what is known from the guideline review of evidence in 1a.7***

1. Evidence, Performance Gap, Priority – Importance to Measure and Report

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. ***Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria.***

1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form

ART_evidence_NQF-636174955634964398.docx,ART_submission_form-636179052221226279.docx

1a.1 <u>For Maintenance of Endorsement:</u> Is there new evidence about the measure since the last update/submission?

Please update any changes in the evidence attachment in red. Do not remove any existing information. If there have been any changes to evidence, the Committee will consider the new evidence. If there is no new evidence, no updating of the evidence information is needed.

Yes

1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- Disparities in care across population groups.

1b.1. **Briefly explain the rationale for this measure** *(e.g., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure)*
<u>IF a PRO-PM</u> (e.g. HRQoL/functional status, symptom/burden, experience with care, health-related behaviors), provide evidence that the target population values the measured PRO and finds it meaningful. (Describe how and from whom their input was obtained.)
<u>IF a COMPOSITE</u> (e.g., combination of component measure scores, all-or-none, any-or-none), SKIP this question and provide rationale for composite in question 1c.3 on the composite tab.

Human immunodeficiency virus (HIV) is a communicable infection that leads to a progressive disease with a long asymptomatic period. Approximately 50,000 persons in the United States are newly infected with HIV each year. Without treatment, most persons develop acquired immunodeficiency syndrome (AIDS) within 10 years of HIV infection. HIV antiretroviral therapy delays this progression and increases the length of survival.

Current HIV treatment guidelines now recommend universal prescription of HIV antiretroviral therapy for sustained viral load suppression which in turn is directly related to reduction in disease progression and reduction in potential for transmission of HIV infection. Among persons in care, sustained viral load suppression represents the cumulative effect of prescribed therapy, ongoing monitoring, and patient adherence. The proposed measure will direct providers' attention and quality improvement efforts towards this important outcome.

In 2011, the HIV community saw the emergence of the HIV care continuum. This simple model outlines the sequential steps of medical care that people living with HIV go through from initial diagnosis to achieving the goal of viral suppression. The steps include diagnosis, linkage to care, retention in care, receipt of HIV antiretroviral therapy and viral suppression. This model has been incorporated into the National HIV/AIDS Strategy as it has focused all HIV prevention, care, and treatment efforts in the United States. As outlined in the model, all though there are five different steps, each step is dependent upon each other. For instance, you cannot become virally suppressed if you are not receiving HIV antiretroviral therapy or retained in medical care.

The most recent nationwide data from CDC dated 2014 estimates that although 86% of people living with HIV have been diagnosed, only 40% are engaged in care, 37% have been prescribed HIV antiretroviral therapy, and 30% have achieved viral suppression.

Right now, we are at a very special time and place. Many states and large metropolitan areas across the United States have developed plans to end the HIV epidemic in the communities. These jurisdictions have used the HIV care continuum and its steps as the framework by which they have developed their plans.

1b.2. **Provide performance scores on the measure as specified (<u>current and over time</u>) at the specified level of analysis**. *(<u>This is required for maintenance of endorsement</u>. 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 (4b) under Usability and Use.*

Please see attachment "ART submission form" for formatted data.

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.**
N/A

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 (4b) under Usability and Use.*
Please see attachment "ART submission form" for formatted data.

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**
N/A

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):*
Infectious Diseases (ID) : HIV/AIDS

De.6. **Cross Cutting Areas** *(check all the areas that apply):*
«crosscutting_area»

De.7. **Target Population Category** *(Check all the populations for which the measure is specified and tested if any):*
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.)*
http://hab.hrsa.gov/clinical-quality-management/performance-measure-portfolio

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:** ART_Data_dictionary-636179051636713033.docx

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.
No

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.
None

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 patients from the denominator prescribed HIV antiretroviral therapy during the measurement year.

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).
To be included in the numerator, patients were prescribed HIV antiretroviral therapy during the measurement year. HIV antiretroviral therapy at least one HIV antiretroviral medication.

S.6. **Denominator Statement** *(Brief, narrative description of the target population being measured)*
Number of patients, regardless of age, with a diagnosis of HIV with at least one medical visit in the measurement year

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).
To be included in the denominator, patients must meet all of the following conditions/events:
1. Patients of any age during the measurement year
2. Patients diagnosed with HIV during the first 3 months of the measurement year or prior to the measurement year
3. Patients who had at least one medical visit during the measurement year

S.8. **Denominator Exclusions** *(Brief narrative description of exclusions from the target population)*
There are no patient exclusions.

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.)*
There are no patient exclusions.

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.)*
N/A

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.)*

1. Identify the individuals who satisfy all specific criteria for inclusion in the denominator: 1.) diagnosed with HIV during the first 3 months of the measurement year or prior to the measurement year; and 2.) had at least one medical visit during the measurement year. The individuals who met these criteria are the denominator population.
2. Identify the individuals from the denominator population who meet the criterion for inclusion in the numerator: prescribed HIV antiretroviral therapy during the measurement year.
3. Calculate the percentage by dividing the numerator population by the denominator population and multiply by 100.

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

IF a PRO-PM, identify whether (and how) proxy responses are allowed.

Not applicable; not based on a sample.

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.)*

IF a PRO-PM, specify calculation of response rates to be reported with performance measure results.

This measure is not based on a survey or instrument.

S.17. **Data Source** *(Check ONLY the sources for which the measure is SPECIFIED AND TESTED).*
If other, please describe in S.18.

Other, Paper Records, Pharmacy

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 is collected.)*

IF a PRO-PM, identify the specific PROM(s); and standard methods, modes, and languages of administration.

Not applicable.

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)*

Facility

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

Clinician Office/Clinic

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.)*

This is not a composite measure.

2. Validity – See attached Measure Testing Submission Form

ART_testing.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. (Do not remove prior testing information – include date of new information in red.)

Yes

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. (Do not remove prior testing information – include date of new information in red.)

Yes

2.3 For maintenance of endorsement

Risk adjustment: For outcome, resource use, cost, and some process measures, risk-adjustment that includes SDS factors is no longer prohibited during the SDS Trial Period (2015-2016). Please update sections 1.8, 2a2, 2b2, 2b4, and 2b6 in the Testing attachment and S.14 and S.15 in the online submission form in accordance with the requirements for the SDS Trial Period. NOTE: These sections must be updated even if SDS factors are not included in the risk-adjustment strategy. If yes, and your testing attachment does not have the additional questions for the SDS Trial please add these questions to your testing attachment:

What were the patient-level sociodemographic (SDS) variables that were available and analyzed in the data or sample used? For example, patient-reported data (e.g., income, education, language), proxy variables when SDS data are not collected from each patient (e.g. census tract), or patient community characteristics (e.g. percent vacant housing, crime rate).

Describe the conceptual/clinical and statistical methods and criteria used to select patient factors (clinical factors or sociodemographic factors) used in the statistical risk model or for stratification by risk (e.g., potential factors identified in the literature and/or expert panel; regression analysis; statistical significance of p<0.10; correlation of x or higher; patient factors should be present at the start of care)

What were the statistical results of the analyses used to select risk factors?

Describe the analyses and interpretation resulting in the decision to select SDS factors (e.g. prevalence of the factor across measured entities, empirical association with the outcome, contribution of unique variation in the outcome, assessment of between-unit effects and within-unit effects)

No - This measure is not risk-adjusted

NATIONAL QUALITY FORUM—Measure Testing (subcriteria 2a2, 2b2-2b7)

Measure Number (*if previously endorsed*)**:** 2083
Measure Title: Prescription of HIV Antiretroviral Therapy
Date of Submission:
Type of Measure: Process

1. DATA/SAMPLE USED FOR ALL TESTING OF THIS MEASURE

Often the same data are used for all aspects of measure testing. In an effort to eliminate duplication, the first five questions apply to all measure testing. If there are differences by aspect of testing,(e.g., reliability vs. validity) be sure to indicate the specific differences in question 1.7.

1.1. What type of data was used for testing? (*Check all the sources of data identified in the measure specifications and data used for testing the measure. Testing must be provided for all the sources of data specified and intended for measure implementation.* ***If different data sources are used for the numerator and denominator, indicate N [numerator] or D [denominator] after the checkbox.***)

Measure Specified to Use Data From: (***must be consistent with data sources entered in S.23***)	**Measure Tested with Data From:**
☒ abstracted from paper record	☐ abstracted from paper record
☐ administrative claims	☐ administrative claims
☐ clinical database/registry	☐ clinical database/registry
☐ abstracted from electronic health record	☐ abstracted from electronic health record
☐ eMeasure (HQMF) implemented in EHRs	☐ eMeasure (HQMF) implemented in EHRs
☐ other:	☐ other:

1.2. If an existing dataset was used, identify the specific dataset (*the dataset used for testing must be consistent with the measure specifications for target population and healthcare entities being measured; e.g., Medicare Part A claims, Medicaid claims, other commercial insurance, nursing home MDS, home health OASIS, clinical registry*).

On an annual basis, Ryan White HIV/AIDS Program (RWHAP) grant recipient and subrecipients submit the Ryan White HIV/AIDS Services Report (RSR). The RSR dataset is the Health Resources and Services Administration HIV/AIDS Bureau's primary source of annual, client-level data collected from its nearly 2,000 funded grant recipients and subrecipients. Since 2010, client-level RSR data have been used to assess the numbers and types of clients receiving services and their HIV outcomes. Project Officers at the HIV/AIDS Bureau share the data with grant recipients and subrecipients to monitor and support their progress at improving care and treatment for people living with HIV. It is through the hard work of these providers and the RWHAP community that clients are helped every day.

RSR includes all clients served by the RWHAP during calendar years 2010 through 2014. RSR data do not include information about AIDS Drug Assistance Programs (ADAP); all ADAP-related information is collected through another data system. Although data presented in this report are "nonADAP," this does not imply the clients did not receive ADAP services. ADAP data will be published separately, at later time.

1.3. What are the dates of the data used in testing? 2010-2014

1.4. What levels of analysis were tested? (*testing must be provided for <u>all</u> the levels specified and intended for measure implementation, e.g., individual clinician, hospital, health plan*)

Measure Specified to Measure Performance of: (***must be consistent with levels entered in item S.26***)	**Measure Tested at Level of:**
☐ individual clinician	☐ individual clinician
☐ group/practice	☐ group/practice
☒ hospital/facility/agency	☒ hospital/facility/agency
☐ health plan	☐ health plan
☐ other:	☐ other:

1.5. How many and which <u>measured entities</u> were included in the testing and analysis (by level of analysis and data source)? (*identify the number and descriptive characteristics of measured entities included in the analysis (e.g., size, location, type); if a sample was used, describe how entities were selected for inclusion in the sample*)

The data for measure testing were collected via the Ryan White HIV/AIDS Program Services Report (RSR), which is HRSA HIV/AIDS Bureau's primary source of annual, client-level data collected from more than 2,000 funded grant recipients and subrecipients. The RSR is inclusive of the overall RWHAP client population and key priority populations served by RWHAP. Over 800 (varies by year) Ryan White HIV/AIDS Program outpatient ambulatory medical care providers representing various types, locations, and sizes were included in the testing.

Descriptive characteristics of RWHAP providers

	2010		2011		2012		2013		2014	
	N	%	N	%	N	%	N	%	N	%

Overall	846		811		816		823	--	813	--
Provider type										
Hospital or university-based clinic	355	17.5	358	18.6	349	19.1	351	19.6	338	19.4
Community based organization	1,114	54.9	1,053	54.8	993	54.3	958	53.6	921	53.0
Health department	284	14.0	274	14.3	243	13.3	233	13.0	243	14.0
Other	275	13.6	237	12.3	243	13.3	247	13.8	237	13.6
HHS Region										
Region 1	149	8.0	153	8.6	142	8.4	139	8.4	135	8.3
Region 2	368	19.7	339	19.0	323	19.1	303	18.3	293	18.1
Region 3	180	9.6	177	9.9	174	10.3	174	10.5	160	9.9
Region 4	337	18.0	335	18.8	312	18.5	301	18.1	313	19.3
Region 5	197	10.5	189	10.6	177	10.5	188	11.3	180	11.1
Region 6	150	8.0	142	8.0	133	7.9	131	7.9	132	8.2
Region 7	65	3.5	60	3.4	57	3.4	56	3.4	54	3.3
Region 8	48	2.6	43	2.4	34	2.0	35	2.1	46	2.8
Region 9	300	16.0	281	15.7	277	16.4	276	16.6	253	15.6
Region 10	78	4.2	68	3.8	60	3.6	56	3.4	52	3.2

1.6. How many and which <u>patients</u> were included in the testing and analysis (by level of analysis and data source)? (*identify the number and descriptive characteristics of patients included in the analysis (e.g., age, sex, race, diagnosis); if a sample was used, describe how patients were selected for inclusion in the sample*)

The data for measure testing were collected via the Ryan White HIV/AIDS Program Services Report (RSR), which is HRSA HIV/AIDS Bureau's primary source of annual, client-level data collected from more than 2,000 funded grant recipients and subrecipients. The RSR is inclusive of the overall RWHAP client population and key priority populations served by RWHAP. The average number of patients per provider each year ranged from 384 to 411, shown in the table below. Descriptive characteristics (e.g., age, race/ethnicity, gender) for the patient population are shown in the subsequent table by year.

Distribution of patients per provider by year, 2010-2014

Year	N patients, mean	N patients, median	Min patients	Max patients
2010	384	177	1	13,159
2011	404	182	1	13,380
2012	411	179	1	13,849

2013	398	181	1	14,755
2014	388	177	1	13,850

Descriptive characteristics of RWHAP patients by year, 2010-2014

	2010		2011		2012		2013		2014	
	No.	%	No.	%	No.	%	No.	%	No.	%
OVERALL	324,455	–	327,744	–	335,408	–	327,618	–	316,087	–
AGE GROUP										
<13	3,709	1.2	3,647	1.1	3,150	1.0	2,667	0.9	2,720	0.9
13–14	627	0.2	605	0.2	469	0.1	360	0.1	343	0.1
15–19	3,698	1.2	3,541	1.1	3,066	0.9	2,609	0.8	2,506	0.8
20–24	14,040	4.5	14,831	4.6	15,741	4.8	15,538	5.0	14,578	4.8
25–29	22,120	7.0	23,278	7.3	24,904	7.7	25,586	8.2	26,043	8.5
30–34	28,644	9.1	29,330	9.2	30,084	9.3	29,495	9.4	28,484	9.3
35–39	35,161	11.2	33,597	10.5	33,005	10.2	31,560	10.1	30,691	10.0
40–44	50,769	16.1	47,941	15.0	45,343	14.0	40,728	13.0	37,000	12.1
45–49	60,344	19.2	59,453	18.6	58,145	17.9	52,863	16.8	47,932	15.6
50–54	46,433	14.7	48,647	15.2	50,876	15.7	50,491	16.1	50,492	16.4
55–59	28,015	8.9	30,646	9.6	33,215	10.2	33,493	10.7	34,667	11.3
60–64	13,441	4.3	15,237	4.8	16,991	5.2	17,780	5.7	19,399	6.3
≥65	8,187	2.6	8,946	2.8	10,147	3.1	10,780	3.4	12,231	4.0
RACE/ETHNICITY										
American Indian/ Alaska Native	1,473	0.5	1,366	0.4	1,371	0.4	1,414	0.5	1,272	0.4
Asian	3,382	1.1	3,598	1.2	3,980	1.2	3,835	1.2	3,791	1.2
Black/ African American	146,460	47.3	149,834	47.8	150,974	47.2	146,056	47.0	142,746	46.9
Hispanic/Latino[a]	71,002	22.9	71,240	22.7	75,201	23.5	74,967	24.1	74,714	24.5
Native Hawaiian/ Pacific Islander	627	0.2	710	0.2	575	0.2	510	0.2	442	0.2
White	83,854	27.1	83,061	26.5	83,820	26.2	78,953	25.4	75,931	24.9
Multiple races	3,177	1.0	3,716	1.2	4,238	1.3	4,899	1.6	5,651	1.9
GENDER										
Male	219,625	69.7	223,379	69.9	230,075	70.8	221,930	70.7	216,965	70.7
Female	93,266	29.6	93,687	29.3	92,186	28.4	89,212	28.4	87,071	28.4
Transgender	2,313	0.7	2,585	0.8	2,848	0.9	2,779	0.9	2,974	1.0
TRANSMISSION RISK										
Male client										
Male-to-male sexual contact	117,267	59.9	120,622	60.2	128,744	61.8	127,571	62.2	127,624	62.7
Injection drug use	17,479	8.9	16,787	8.4	15,586	7.5	15,509	7.6	13,753	6.8
Male-to-male sexual contact and injection drug use	6,971	3.6	6,837	3.4	6,974	3.3	6,136	3.0	6,396	3.1
Heterosexual contact	48,903	25.0	50,814	25.4	52,266	25.1	51,174	24.9	51,155	25.1
Perinatal infection	3,830	2.0	3,919	2.0	3,604	1.7	3,419	1.7	3,456	1.7
Other	1,248	0.6	1,231	0.6	1,309	0.6	1,402	0.7	1,189	0.6
Female client										
Injection drug use	9,264	11.2	9,022	10.7	8,182	9.8	8,310	10.0	7,396	9.1
Heterosexual	68,009	82.4	69,767	82.8	70,362	84.1	69,356	83.9	69,090	84.8

contact										
Perinatal infection	4,338	5.3	4,587	5.4	4,182	5.0	4,003	4.8	4,093	5.0
Other	900	1.1	877	1.0	936	1.1	1,044	1.3	940	1.2
Transgender client										
Sexual contact	1,874	90.7	2,058	91.2	2,281	91.8	2,314	92.9	2,499	93.2
Injection drug use	38	1.8	32	1.4	35	1.4	32	1.3	31	1.2
Sexual contact and injection drug use	144	7.0	156	6.9	158	6.4	130	5.2	135	5.0
Perinatal infection	5	0.2	5	0.2	2	0.1	4	0.2	9	0.3
Other	6	0.3	5	0.2	8	0.3	10	0.4	8	0.3
HEALTH CARE COVERAGE										
Private only	35,392	12.4	37,532	12.3	39,972	12.7	37,204	12.1	–	–
Medicare only	23,245	8.1	24,279	8.0	23,538	7.5	22,840	7.5	–	–
Medicaid only	73,292	25.6	75,690	24.8	71,990	22.8	69,211	22.6	–	–
Other public	22,398	7.8	20,977	6.9	28,039	8.9	27,347	8.9	–	–
Other private	11,512	4.0	9,884	3.2	6,049	1.9	3,682	1.2	–	–
No coverage	86,220	30.1	100,001	32.8	103,150	32.7	101,524	33.1	–	–
Multiple coverages	34,276	12.0	36,330	11.9	42,969	13.6	44,578	14.6	–	–
Private employer	–	–	–	–	–	–	–	–	18,805	6.3
Private individual	–	–	–	–	–	–	–	–	16,154	5.4
Medicare	–	–	–	–	–	–	–	–	26,145	8.7
Medicaid	–	–	–	–	–	–	–	–	94,993	31.6
Medicare and Medicaid	–	–	–	–	–	–	–	–	19,207	6.4
Veterans Administration	–	–	–	–	–	–	–	–	454	0.2
Indian Health Service	–	–	–	–	–	–	–	–	71	0.0
Other plan	–	–	–	–	–	–	–	–	11,899	4.0
No coverage	–	–	–	–	–	–	–	–	90,828	30.2
Multiple coverages	–	–	–	–	–	–	–	–	22,428	7.5

1.7. If there are differences in the data or sample used for different aspects of testing (e.g., reliability, validity, exclusions, risk adjustment), identify how the data or sample are different for each aspect of testing reported below.

Ryan White HIV/AIDS Program Services Report (RSR) was the sole source of data for the testing.

1.8 What were the patient-level sociodemographic (SDS) variables that were available and analyzed in the data or sample used? For example, patient-reported data (e.g., income, education, language), proxy variables when SDS data are not collected from each patient (e.g. census tract), or patient community characteristics (e.g. percent vacant housing, crime rate).

The patient-level sociodemographic variables included in the analysis include the following: Age, race/ethnicity; gender; transmission risk; and health care coverage.

2a2. RELIABILITY TESTING

***Note**: If accuracy/correctness (validity) of data elements was empirically tested, separate reliability testing of data elements is not required – in 2a2.1 check critical data elements; in 2a2.2 enter "see section 2b2 for validity testing of data elements"; and skip 2a2.3 and 2a2.4.*

2a2.1. What level of reliability testing was conducted? (*may be one or both levels*)
☐ **Critical data elements used in the measure** (*e.g., inter-abstractor reliability; data element reliability must address ALL critical data elements*)
☒ **Performance measure score** (e.g., *signal-to-noise analysis*)

2a2.2. For each level checked above, describe the method of reliability testing and what it tests (*describe the steps—do not just name a method; what type of error does it test; what statistical analysis was used*)

Reliability was calculated according to the methods outlined in a technical report prepared by J.L. Adams for the National Committee for Quality Assurance titled "The Reliability of Provider Profiling: A Tutorial" (RAND Corporation, TR-653-NCQA, 2009). In this context, reliability represents the ability of a measure to confidently distinguish the performance of one physician from another. As discussed in the report: "Conceptually, it is the ratio of signal to noise. The signal in this case is the proportion of variability in measured performance that can be explained by real differences in performance. There are 3 main drivers of reliability; sample size, differences between physicians, and measurement error."

According to this approach, reliability is estimated with a beta-binomial model. The beta-binomial model is appropriate for measuring the reliability of pass/fail measures such as those proposed here. Reliability scores vary from 0.0 to 1.0, with a score of zero indicating that all variation is attributable to measurement error (noise, or individual accountable entity variance) whereas a reliability of 1.0 implies that all variation is caused by real difference in performance across accountable entities.

2a2.3. For each level of testing checked above, what were the statistical results from reliability testing? (e*.g., percent agreement and kappa for the critical data elements; distribution of reliability statistics from a signal-to-noise analysis*)

Provider-level reliability results for the "prescribed ART" measure in 2014 are detailed below. Results for years 2010-2013 are available upon request, but were not included due to space constraints.

Provider-level "prescribed ART" reliability testing (signal to noise) results, 2014.

Site/provider ID	% suppressed	variance within	reliability
55	55.6%	0.001	0.992
63	91.7%	0.003	0.958
82	16.1%	0.001	0.980
88	88.7%	0.000	0.999
96	70.3%	0.000	0.995
101	45.7%	0.002	0.976
105	62.8%	0.002	0.978
112	91.8%	0.000	0.995
113	97.2%	0.000	0.998
117	96.7%	0.000	1.000
118	94.6%	0.000	0.998
120	92.8%	0.000	0.994

123	92.8%	0.000	0.998
124	95.3%	0.000	0.997
127	82.3%	0.001	0.993
128	77.9%	0.000	0.995
133	89.8%	0.000	0.999
135	92.9%	0.000	0.994
138	86.4%	0.003	0.965
140	100.0%	0.000	1.000
141	58.8%	0.001	0.985
143	76.6%	0.001	0.981
144	88.4%	0.000	0.996
147	82.7%	0.001	0.986
148	91.8%	0.002	0.979
149	89.6%	0.001	0.989
154	95.6%	0.000	0.999
155	100.0%	0.000	1.000
156	100.0%	0.000	1.000
158	70.9%	0.002	0.979
159	85.8%	0.001	0.992
160	97.8%	0.000	0.997
164	81.7%	0.002	0.972
168	97.8%	0.000	1.000
169	96.5%	0.000	0.997
170	97.3%	0.000	0.999
171	45.4%	0.001	0.988
172	97.9%	0.000	0.999
173	70.1%	0.001	0.982
174	96.8%	0.000	0.999
175	89.8%	0.001	0.992
176	95.7%	0.000	1.000
177	82.5%	0.002	0.970
178	80.3%	0.000	0.999
179	91.4%	0.001	0.987
181	94.6%	0.000	0.999
182	49.0%	0.000	0.996
183	92.7%	0.000	0.998
184	96.5%	0.000	0.999
186	100.0%	0.000	1.000
187	96.5%	0.000	0.999

188	100.0%	0.000	1.000
191	92.9%	0.000	0.998
192	30.5%	0.000	0.995
194	88.6%	0.000	0.994
196	95.0%	0.000	0.999
197	92.1%	0.000	0.999
199	87.2%	0.000	0.997
201	94.6%	0.000	1.000
203	97.5%	0.000	1.000
205	100.0%	0.000	1.000
207	95.7%	0.000	0.998
209	100.0%	0.000	1.000
210	95.8%	0.000	0.995
211	93.7%	0.000	0.998
212	92.3%	0.000	0.996
213	93.4%	0.000	0.999
214	97.1%	0.000	0.999
215	98.8%	0.000	1.000
216	92.9%	0.000	0.998
217	97.2%	0.000	0.998
220	95.0%	0.000	0.998
221	93.0%	0.000	0.995
222	7.1%	0.000	0.997
223	3.8%	0.000	1.000
224	96.8%	0.000	0.999
225	71.8%	0.000	0.999
227	95.6%	0.000	0.999
228	89.3%	0.001	0.993
230	95.9%	0.000	1.000
231	80.8%	0.000	0.997
232	85.7%	0.001	0.993
233	95.1%	0.000	0.999
235	93.1%	0.000	0.994
236	82.7%	0.000	0.994
238	97.9%	0.000	1.000
239	76.2%	0.000	0.997
240	83.3%	0.000	0.996
241	88.6%	0.000	1.000
242	92.7%	0.000	0.995

244	97.7%	0.000	0.999
245	91.3%	0.000	0.998
246	96.2%	0.000	1.000
248	84.5%	0.000	0.999
252	96.8%	0.000	0.999
253	96.2%	0.000	0.999
255	46.9%	0.003	0.966
256	89.7%	0.000	0.996
257	98.6%	0.000	1.000
259	55.0%	0.002	0.970
263	1.7%	0.000	1.000
265	97.8%	0.000	1.000
266	96.3%	0.000	1.000
267	0.6%	0.000	1.000
268	19.9%	0.001	0.993
269	96.4%	0.000	0.999
271	97.2%	0.000	0.995
273	76.4%	0.000	0.998
275	93.5%	0.000	0.999
276	90.3%	0.000	0.996
277	89.5%	0.000	0.999
278	2.2%	0.000	1.000
279	90.5%	0.000	0.999
280	93.8%	0.002	0.975
283	82.4%	0.000	0.998
284	97.2%	0.000	0.999
285	83.5%	0.001	0.992
286	91.8%	0.000	0.997
288	91.0%	0.001	0.992
289	84.9%	0.000	0.994
290	96.1%	0.000	0.993
291	96.7%	0.000	0.999
292	90.0%	0.000	0.994
294	17.1%	0.000	0.999
295	87.5%	0.000	0.995
298	86.8%	0.000	0.999
299	3.5%	0.000	0.999
302	90.6%	0.000	0.998
303	100.0%	0.000	1.000

304	95.0%	0.000	0.999
305	96.3%	0.000	1.000
307	94.7%	0.000	0.999
308	81.5%	0.001	0.981
310	93.8%	0.000	1.000
311	92.3%	0.000	0.995
312	92.5%	0.001	0.990
313	94.0%	0.000	0.995
314	96.4%	0.000	1.000
315	98.6%	0.000	1.000
316	89.2%	0.000	0.995
317	94.7%	0.000	0.997
318	83.8%	0.000	0.996
319	96.9%	0.000	0.997
320	97.5%	0.000	0.998
321	92.0%	0.001	0.993
322	91.4%	0.000	0.993
323	79.2%	0.000	0.994
324	97.3%	0.000	0.998
325	79.3%	0.000	0.999
326	98.1%	0.000	1.000
328	1.4%	0.000	1.000
329	96.8%	0.000	1.000
332	99.5%	0.000	1.000
333	93.9%	0.001	0.992
334	96.9%	0.000	0.999
335	94.1%	0.000	0.999
336	88.3%	0.000	0.997
340	94.5%	0.000	0.998
342	97.6%	0.000	0.999
343	97.4%	0.000	0.998
344	43.1%	0.000	0.995
345	95.0%	0.000	0.995
347	89.9%	0.000	0.999
348	96.6%	0.000	0.999
349	91.2%	0.000	0.997
351	96.3%	0.000	0.999
353	53.4%	0.000	0.995
357	94.2%	0.000	0.999

358	96.5%	0.000	0.997
360	93.8%	0.000	0.999
361	92.1%	0.000	0.998
362	97.1%	0.000	0.994
363	94.1%	0.000	0.994
365	88.1%	0.003	0.967
366	91.0%	0.000	0.994
368	94.8%	0.000	0.998
369	99.1%	0.000	1.000
370	86.5%	0.001	0.982
371	99.0%	0.000	0.999
372	89.7%	0.000	0.999
375	75.2%	0.000	0.999
378	92.3%	0.001	0.985
379	98.4%	0.000	1.000
380	84.3%	0.000	0.996
382	98.2%	0.000	1.000
384	86.6%	0.000	0.994
385	96.2%	0.000	0.998
386	95.5%	0.000	0.997
388	95.0%	0.000	1.000
389	81.1%	0.001	0.990
390	90.6%	0.000	0.997
391	87.3%	0.001	0.993
393	96.0%	0.000	0.999
394	76.6%	0.003	0.963
395	96.3%	0.000	0.999
400	95.7%	0.000	0.998
404	91.6%	0.001	0.993
407	17.6%	0.000	0.995
408	95.5%	0.000	0.999
409	96.0%	0.000	0.996
410	37.5%	0.003	0.961
412	91.4%	0.000	0.998
414	97.7%	0.000	0.998
417	61.6%	0.002	0.972
421	88.8%	0.000	0.998
422	96.6%	0.000	0.999
423	7.8%	0.000	0.997

425	94.0%	0.000	0.997
427	89.4%	0.000	0.999
438	93.1%	0.000	0.998
441	88.2%	0.001	0.981
457	97.0%	0.000	1.000
463	82.2%	0.000	0.994
469	83.6%	0.000	0.995
473	0.0%	0.000	1.000
480	79.6%	0.000	0.994
481	94.5%	0.000	0.998
483	83.6%	0.000	0.998
489	73.3%	0.000	0.996
491	4.5%	0.000	0.993
498	96.9%	0.000	0.999
504	95.9%	0.000	1.000
506	96.8%	0.000	0.999
509	95.2%	0.000	0.999
510	92.7%	0.001	0.993
517	81.1%	0.000	0.993
534	98.2%	0.000	1.000
553	65.2%	0.010	0.881
593	95.9%	0.000	0.996
598	88.1%	0.000	0.994
612	97.8%	0.000	0.997
664	97.2%	0.000	0.999
704	99.0%	0.000	0.999
710	84.3%	0.003	0.966
726	82.5%	0.000	0.993
738	72.2%	0.011	0.867
744	91.3%	0.000	0.997
753	75.2%	0.001	0.992
757	97.7%	0.000	0.998
762	84.2%	0.000	0.997
765	95.2%	0.000	0.998
775	79.2%	0.002	0.979
783	73.3%	0.004	0.944
787	97.4%	0.000	0.998
791	97.6%	0.000	0.999
793	90.5%	0.004	0.947

794	69.7%	0.003	0.958
798	48.1%	0.000	0.996
799	96.3%	0.001	0.991
800	94.1%	0.000	0.996
801	100.0%	0.000	1.000
803	85.7%	0.000	0.995
807	97.4%	0.000	0.999
818	99.2%	0.000	1.000
820	90.4%	0.001	0.988
821	98.8%	0.000	0.998
824	95.5%	0.001	0.987
841	98.9%	0.000	0.998
852	100.0%	0.000	1.000
861	100.0%	0.000	1.000
867	50.9%	0.000	0.996
871	76.9%	0.000	0.998
873	81.7%	0.001	0.993
894	89.2%	0.000	0.999
905	49.1%	0.000	0.996
907	72.9%	0.000	0.999
913	15.5%	0.000	0.999
920	20.0%	0.011	0.872
926	81.1%	0.004	0.946
927	2.7%	0.000	0.997
929	59.3%	0.002	0.977
933	8.8%	0.000	0.995
945	95.0%	0.000	0.995
980	85.9%	0.001	0.988
986	87.9%	0.001	0.990
992	94.4%	0.000	0.999
996	77.1%	0.000	0.997
1009	62.1%	0.002	0.979
1017	97.9%	0.000	0.997
1022	96.7%	0.000	0.998
1023	72.3%	0.001	0.986
1026	97.1%	0.000	0.996
1029	76.1%	0.001	0.985
1031	93.6%	0.000	0.998
1036	99.0%	0.000	1.000

1037	99.0%	0.000	0.999
1038	91.5%	0.000	0.997
1049	87.1%	0.000	0.996
1050	97.2%	0.000	1.000
1052	85.2%	0.005	0.940
1055	78.3%	0.001	0.993
1056	94.9%	0.000	0.999
1066	93.9%	0.000	0.999
1067	84.2%	0.000	0.997
1068	72.6%	0.000	0.998
1093	78.3%	0.002	0.967
1094	79.7%	0.000	0.997
1100	95.3%	0.000	0.999
1109	96.9%	0.000	1.000
1110	96.7%	0.000	0.996
1112	97.3%	0.000	1.000
1120	66.5%	0.000	0.996
1121	96.3%	0.000	1.000
1122	90.5%	0.000	0.997
1131	91.0%	0.000	0.999
1132	67.2%	0.001	0.984
1146	53.3%	0.017	0.814
1155	95.0%	0.000	0.998
1160	2.2%	0.000	1.000
1162	1.9%	0.000	0.995
1163	2.0%	0.000	0.999
1167	90.6%	0.000	1.000
1214	98.0%	0.000	0.998
1216	85.2%	0.001	0.984
1229	97.1%	0.000	0.999
1230	65.8%	0.002	0.979
1263	100.0%	0.000	1.000
1276	78.9%	0.001	0.993
1278	79.6%	0.002	0.979
1284	100.0%	0.000	1.000
1287	96.0%	0.000	0.999
1289	94.7%	0.001	0.982
1300	43.5%	0.004	0.948
1302	87.4%	0.000	0.995

1309	65.3%	0.003	0.959
1310	96.4%	0.001	0.992
1314	83.5%	0.000	0.997
1318	71.2%	0.003	0.963
1319	86.3%	0.001	0.983
1333	21.4%	0.001	0.992
1349	1.8%	0.000	0.996
1358	46.3%	0.001	0.981
1359	89.3%	0.000	0.999
1364	89.0%	0.001	0.982
1378	99.3%	0.000	0.999
1380	88.5%	0.001	0.982
1382	67.9%	0.002	0.979
1401	63.7%	0.000	0.995
1430	47.2%	0.005	0.939
1444	70.3%	0.006	0.928
1445	82.4%	0.000	0.999
1448	52.4%	0.012	0.860
1451	93.6%	0.001	0.991
1456	40.1%	0.000	0.998
1461	96.9%	0.000	0.997
1464	56.7%	0.001	0.988
1479	91.7%	0.006	0.920
1490	92.5%	0.002	0.977
1511	94.0%	0.000	0.999
1512	82.9%	0.001	0.989
1514	25.6%	0.004	0.943
1527	75.0%	0.009	0.886
1552	93.2%	0.000	0.999
1567	97.8%	0.000	0.997
1570	92.2%	0.000	0.994
1572	82.4%	0.003	0.962
1574	91.7%	0.001	0.989
1582	90.7%	0.001	0.993
1583	100.0%	0.000	1.000
1587	83.3%	0.012	0.863
1594	76.3%	0.003	0.960
1597	40.7%	0.009	0.891
1607	87.9%	0.000	0.994

1610	88.9%	0.000	0.994
1628	28.1%	0.006	0.920
1634	88.5%	0.001	0.987
1635	90.9%	0.001	0.990
1637	89.6%	0.000	0.996
1650	96.0%	0.000	0.996
1654	80.8%	0.003	0.961
1656	98.5%	0.000	0.998
1668	93.4%	0.000	0.999
1672	100.0%	0.000	1.000
1684	71.1%	0.000	0.998
1719	84.4%	0.000	0.999
1762	1.3%	0.000	1.000
1784	95.5%	0.000	0.996
1786	56.1%	0.004	0.951
1792	74.8%	0.000	0.997
1806	0.0%	0.000	1.000
1809	0.7%	0.000	1.000
1812	1.2%	0.000	1.000
1831	100.0%	0.000	1.000
1834	95.2%	0.001	0.985
1847	95.9%	0.000	0.995
1849	87.5%	0.001	0.990
1879	49.7%	0.001	0.982
1900	0.0%	0.000	1.000
1904	92.9%	0.002	0.968
1912	95.0%	0.000	0.999
1930	92.7%	0.001	0.992
1955	77.6%	0.002	0.980
1967	33.3%	0.007	0.915
1968	43.8%	0.008	0.904
1970	0.0%	0.000	1.000
1972	0.0%	0.000	1.000
1977	59.3%	0.009	0.891
1980	95.9%	0.001	0.989
1989	87.0%	0.001	0.986
2003	50.0%	0.063	0.538
2008	83.3%	0.023	0.759
2010	90.0%	0.009	0.890

2011	90.5%	0.004	0.947
2017	100.0%	0.000	1.000
2020	50.0%	0.025	0.744
2025	90.7%	0.000	0.996
2028	86.1%	0.001	0.992
2029	90.9%	0.001	0.987
2034	94.3%	0.001	0.986
2041	0.0%	0.000	1.000
2049	78.0%	0.004	0.946
2058	95.5%	0.000	0.998
2072	100.0%	0.000	1.000
2073	95.4%	0.000	0.999
2076	82.6%	0.006	0.921
2078	93.8%	0.002	0.975
2080	100.0%	0.000	1.000
2081	50.0%	0.125	0.368
2116	70.6%	0.002	0.975
2117	82.6%	0.006	0.921
2118	72.0%	0.002	0.971
2126	88.9%	0.001	0.990
2127	91.1%	0.001	0.988
2129	69.3%	0.002	0.980
2133	79.2%	0.000	0.994
2134	93.5%	0.002	0.974
2137	100.0%	0.000	1.000
2139	46.0%	0.002	0.979
2141	79.6%	0.000	0.994
2143	93.2%	0.000	0.999
2148	71.8%	0.002	0.978
2150	92.4%	0.000	0.999
2153	77.8%	0.001	0.985
2163	50.2%	0.001	0.984
2170	72.3%	0.001	0.991
2174	61.1%	0.000	0.999
2175	93.2%	0.000	0.995
2178	84.8%	0.000	0.996
2180	95.5%	0.000	0.999
2183	88.0%	0.001	0.992
2187	95.8%	0.002	0.978

2188	78.9%	0.009	0.893
2189	95.2%	0.002	0.971
2191	96.8%	0.001	0.993
2198	100.0%	0.000	1.000
2200	90.9%	0.003	0.967
2203	88.1%	0.001	0.987
2205	92.5%	0.001	0.982
2207	76.8%	0.000	0.999
2224	98.3%	0.000	1.000
2228	47.4%	0.013	0.847
2230	20.4%	0.001	0.981
2232	20.0%	0.032	0.695
2246	60.5%	0.001	0.986
2252	28.1%	0.003	0.958
2263	92.0%	0.003	0.961
2264	50.0%	0.125	0.368
2296	97.7%	0.000	0.999
2299	6.9%	0.000	0.998
2320	88.1%	0.000	0.999
2366	67.1%	0.003	0.958
2368	44.1%	0.004	0.953
2374	0.0%	0.000	1.000
2378	84.2%	0.007	0.912
2379	60.9%	0.010	0.875
2381	85.8%	0.001	0.989
2388	66.7%	0.037	0.663
2389	100.0%	0.000	1.000
2415	97.7%	0.000	0.998
2420	48.4%	0.002	0.973
2436	98.3%	0.000	0.999
2438	98.3%	0.000	0.996
2444	0.0%	0.000	1.000
2457	97.3%	0.000	0.998
2474	81.0%	0.001	0.992
2495	89.6%	0.001	0.981
2514	31.1%	0.000	1.000
2525	96.6%	0.000	0.999
2572	43.1%	0.000	0.995
2654	47.4%	0.007	0.917

2694	0.0%	0.000	1.000
2699	94.7%	0.003	0.965
2700	93.7%	0.000	0.998
2702	93.9%	0.000	0.998
2703	94.7%	0.000	0.999
2704	93.2%	0.000	0.997
2707	100.0%	0.000	1.000
2709	94.7%	0.000	0.999
2714	98.0%	0.000	0.999
2717	88.0%	0.001	0.989
2718	96.6%	0.000	1.000
2720	92.9%	0.001	0.993
2721	89.5%	0.000	0.999
2723	95.7%	0.000	0.998
2728	54.2%	0.001	0.987
2732	94.0%	0.000	0.998
2737	81.4%	0.004	0.954
2745	98.3%	0.000	0.998
2746	49.2%	0.002	0.973
2757	88.9%	0.000	0.994
2764	0.5%	0.000	1.000
2766	0.0%	0.000	1.000
2767	4.8%	0.001	0.985
2768	1.5%	0.000	1.000
2769	95.2%	0.001	0.990
2771	1.2%	0.000	1.000
2775	1.0%	0.000	1.000
2779	0.9%	0.000	0.999
2782	2.6%	0.000	0.998
2788	1.0%	0.000	0.999
2790	1.2%	0.000	1.000
2794	5.8%	0.001	0.986
2795	0.0%	0.000	1.000
2849	84.6%	0.000	0.995
2855	90.8%	0.001	0.991
2856	87.3%	0.002	0.973
2857	100.0%	0.000	1.000
2865	66.4%	0.000	0.995
2872	90.2%	0.002	0.971

2873	71.4%	0.029	0.714
2892	83.5%	0.001	0.993
2893	94.4%	0.000	0.997
2928	87.4%	0.000	0.997
2929	38.8%	0.003	0.963
2933	88.7%	0.001	0.992
2945	92.9%	0.000	0.996
2947	75.0%	0.000	0.997
2948	94.7%	0.000	0.999
2949	73.5%	0.001	0.984
2951	82.0%	0.001	0.990
2958	94.4%	0.001	0.980
2959	82.7%	0.003	0.964
2966	90.0%	0.001	0.990
2969	87.1%	0.002	0.978
2970	98.0%	0.000	0.997
2988	68.8%	0.002	0.969
2989	100.0%	0.000	1.000
2997	96.5%	0.000	0.999
3010	94.8%	0.000	0.998
3012	87.4%	0.001	0.992
3020	0.0%	0.000	1.000
3048	36.8%	0.012	0.856
3052	0.0%	0.000	1.000
3077	98.7%	0.000	0.998
3079	97.0%	0.000	0.997
3111	64.8%	0.003	0.958
3131	84.9%	0.001	0.992
3133	78.7%	0.002	0.975
3164	96.0%	0.001	0.990
3177	85.5%	0.001	0.990
3187	61.6%	0.003	0.957
3210	94.9%	0.000	0.998
3255	92.0%	0.001	0.987
3261	96.0%	0.000	0.997
3262	88.6%	0.002	0.970
3264	96.6%	0.001	0.984
3265	94.9%	0.000	0.996
3310	94.9%	0.000	0.997

3359	76.0%	0.001	0.980
3389	100.0%	0.000	1.000
3397	32.3%	0.001	0.987
3401	36.6%	0.002	0.972
3428	98.7%	0.000	1.000
3433	65.4%	0.001	0.985
3440	95.5%	0.000	0.998
3444	81.2%	0.001	0.990
3445	89.3%	0.002	0.977
3449	100.0%	0.000	1.000
3456	70.7%	0.001	0.992
3469	98.1%	0.000	0.999
3482	94.4%	0.000	0.993
3484	97.6%	0.000	0.999
3498	90.0%	0.005	0.942
3507	96.4%	0.001	0.991
3519	93.0%	0.000	0.997
3521	100.0%	0.000	1.000
3523	95.2%	0.000	0.995
3527	93.8%	0.000	0.997
3530	1.0%	0.000	0.999
3533	100.0%	0.000	1.000
3538	98.2%	0.000	0.998
3551	75.7%	0.001	0.992
3552	30.4%	0.009	0.888
3553	90.6%	0.002	0.978
3554	44.4%	0.009	0.888
3573	99.3%	0.000	0.999
3579	100.0%	0.000	1.000
3583	99.9%	0.000	1.000
3587	91.3%	0.001	0.986
3591	86.8%	0.003	0.960
3593	46.1%	0.001	0.986
3594	85.8%	0.001	0.987
3595	84.2%	0.000	0.998
3596	94.5%	0.000	0.994
3597	98.4%	0.000	0.999
3598	94.4%	0.001	0.990
3600	77.5%	0.004	0.943

3601	96.4%	0.000	0.999
3602	81.3%	0.002	0.978
3603	96.8%	0.000	0.997
3604	100.0%	0.000	1.000
3605	89.0%	0.001	0.991
3606	89.7%	0.000	0.993
3607	94.8%	0.000	0.999
3608	88.1%	0.000	0.994
3609	92.0%	0.001	0.980
3625	83.8%	0.002	0.973
3626	94.8%	0.001	0.989
3633	79.3%	0.002	0.973
3639	93.1%	0.000	0.999
3658	70.0%	0.021	0.776
3659	83.9%	0.001	0.980
3687	89.7%	0.001	0.991
3702	96.0%	0.000	0.999
3728	100.0%	0.000	1.000
3769	96.3%	0.000	0.999
3794	2.4%	0.000	0.999
3826	54.1%	0.002	0.979
3847	69.6%	0.000	0.997
3862	63.6%	0.021	0.776
3879	0.4%	0.000	1.000
3904	96.7%	0.000	1.000
3932	86.2%	0.001	0.982
3942	61.8%	0.002	0.976
3959	54.9%	0.003	0.954
3969	85.7%	0.002	0.971
3972	97.8%	0.000	0.998
3973	94.1%	0.000	0.997
3975	97.1%	0.001	0.989
3976	94.5%	0.000	0.998
3977	1.0%	0.000	1.000
3978	27.8%	0.000	0.995
3979	90.0%	0.000	0.998
3980	93.6%	0.000	0.997
3981	94.4%	0.000	1.000
3982	95.6%	0.000	0.999

3983	96.9%	0.000	0.999
3984	83.3%	0.003	0.966
3985	100.0%	0.000	1.000
3998	92.3%	0.001	0.991
4014	88.1%	0.001	0.989
4018	88.8%	0.001	0.987
4035	22.5%	0.001	0.983
4039	52.8%	0.002	0.969
4068	75.0%	0.009	0.886
4088	90.1%	0.000	0.995
4122	96.3%	0.000	0.994
4126	88.6%	0.001	0.981
4220	84.7%	0.001	0.987
4221	90.9%	0.001	0.985
4235	73.0%	0.002	0.974
7685	99.3%	0.000	0.999
7718	85.0%	0.002	0.979
7722	86.8%	0.002	0.980
7728	100.0%	0.000	1.000
7734	95.7%	0.000	0.998
7738	94.3%	0.000	0.999
7758	96.4%	0.001	0.983
7765	92.7%	0.000	0.998
7766	97.3%	0.000	0.999
7772	75.2%	0.000	0.994
7780	83.3%	0.023	0.759
7782	66.7%	0.012	0.855
7785	95.4%	0.000	0.998
7802	94.9%	0.000	0.999
7807	6.7%	0.000	0.994
7821	93.0%	0.001	0.987
7833	0.7%	0.000	0.999
7834	80.7%	0.001	0.986
7845	79.0%	0.001	0.990
7857	42.9%	0.035	0.675
7878	80.4%	0.003	0.955
7885	97.3%	0.000	0.999
7886	100.0%	0.000	1.000
7888	95.3%	0.000	0.998

7892	58.9%	0.002	0.978
7910	100.0%	0.000	1.000
7911	89.3%	0.003	0.955
7913	29.6%	0.003	0.961
7919	100.0%	0.000	1.000
7920	79.5%	0.002	0.970
7929	97.0%	0.000	0.999
7931	90.2%	0.000	0.997
7942	91.8%	0.000	0.999
7955	89.3%	0.001	0.990
7964	0.0%	0.000	1.000
7985	100.0%	0.000	1.000
7997	95.7%	0.000	0.998
7998	97.1%	0.001	0.989
8000	93.2%	0.000	0.999
8005	92.4%	0.000	0.996
8018	91.9%	0.000	0.995
8027	3.1%	0.000	0.994
8029	95.8%	0.000	0.998
8030	75.6%	0.004	0.947
8063	83.7%	0.003	0.963
8067	88.7%	0.000	0.996
8079	20.4%	0.001	0.990
8102	98.6%	0.000	0.997
8111	83.2%	0.001	0.985
8119	75.4%	0.001	0.993
8129	71.5%	0.001	0.988
8130	85.3%	0.001	0.990
8131	96.5%	0.000	0.999
8132	94.7%	0.000	0.999
8133	80.4%	0.000	0.997
8134	85.4%	0.000	0.997
8135	64.4%	0.001	0.993
8136	97.0%	0.000	0.998
8142	91.9%	0.001	0.988
8143	91.7%	0.001	0.990
8149	0.0%	0.000	1.000
8160	90.2%	0.000	0.998
8163	10.7%	0.002	0.977

8166	72.7%	0.002	0.973
8167	36.7%	0.008	0.904
8180	92.3%	0.001	0.989
8181	96.7%	0.000	0.995
8199	95.8%	0.000	1.000
8228	83.5%	0.000	0.995
8229	94.0%	0.001	0.991
8242	96.0%	0.000	1.000
8260	73.3%	0.003	0.957
8261	72.6%	0.001	0.987
8262	1.4%	0.000	0.997
8263	90.7%	0.000	0.998
8265	95.8%	0.000	0.999
8277	99.0%	0.000	0.999
8282	40.0%	0.012	0.858
8284	92.0%	0.003	0.961
8288	75.0%	0.023	0.756
8294	100.0%	0.000	1.000
8295	100.0%	0.000	1.000
8300	50.0%	0.125	0.368
8301	50.0%	0.042	0.636
8302	0.0%	0.000	1.000
8305	92.9%	0.005	0.939
8308	60.0%	0.048	0.603
8313	98.8%	0.000	1.000
8320	95.2%	0.002	0.971
8323	100.0%	0.000	1.000
8330	100.0%	0.000	1.000
8332	87.5%	0.014	0.842
8334	100.0%	0.000	1.000
8355	94.1%	0.000	0.997
8369	8.3%	0.000	0.996
8373	97.6%	0.000	0.998
8387	87.7%	0.000	0.995
8396	50.1%	0.000	0.995
8397	85.5%	0.000	0.995
8399	100.0%	0.000	1.000
8401	97.4%	0.000	0.997
8403	94.6%	0.000	0.998

8405	91.4%	0.001	0.985
8407	79.7%	0.001	0.985
8411	97.6%	0.000	1.000
8412	0.0%	0.000	1.000
8414	0.0%	0.000	1.000
8415	83.3%	0.012	0.863
8419	83.5%	0.001	0.993
8421	97.5%	0.000	0.998
8425	72.1%	0.005	0.940
8426	78.2%	0.001	0.985
8427	100.0%	0.000	1.000
8430	72.2%	0.011	0.867
8432	100.0%	0.000	1.000
8438	4.2%	0.002	0.978
8441	67.9%	0.008	0.903
8504	100.0%	0.000	1.000
8506	2.1%	0.000	1.000
8507	90.6%	0.000	0.996
8508	1.3%	0.000	0.999
8510	9.0%	0.000	0.999
8511	9.5%	0.000	0.998
8512	80.6%	0.000	0.996
8513	18.1%	0.002	0.976
8537	66.1%	0.002	0.973
8538	56.0%	0.001	0.990
8542	91.1%	0.000	0.998
8546	95.6%	0.000	0.995
8550	99.5%	0.000	1.000
8551	95.4%	0.000	0.997
8553	96.7%	0.001	0.985
8559	98.6%	0.000	0.997
8561	95.1%	0.000	0.998
8563	83.1%	0.002	0.974
8566	84.2%	0.007	0.912
8568	82.1%	0.004	0.951
8570	88.9%	0.011	0.869
8571	86.8%	0.001	0.989
8573	96.8%	0.001	0.993
8575	94.7%	0.001	0.993

8577	36.4%	0.007	0.912
8579	50.0%	0.042	0.636
8580	82.4%	0.001	0.992
8598	96.0%	0.000	1.000
8608	19.6%	0.003	0.955
8611	72.1%	0.003	0.961
8618	4.2%	0.000	0.997
8624	93.8%	0.000	0.999
8626	100.0%	0.000	1.000
8632	52.2%	0.001	0.989
8635	94.1%	0.003	0.957
8636	80.0%	0.032	0.695
8638	100.0%	0.000	1.000
8639	97.0%	0.001	0.988
8640	100.0%	0.000	1.000
8641	100.0%	0.000	1.000
8644	83.3%	0.023	0.759
8645	100.0%	0.000	1.000
8650	94.7%	0.000	0.996
8651	13.1%	0.001	0.992
8653	100.0%	0.000	1.000

Overall reliability scores (i.e., median of provider-level reliability [R_median], minimum [R_min], maximum [R_max]) by year, and the overall variance between sites, are summarized below.

Overall reliability scores by year, 2010-2014

Year	% suppressed	Var_between	R_median	R_min	R_max
2010	68.4%	0.069	0.990	0.354	1.000
2011	71.1%	0.066	0.991	0.347	1.000
2012	74.3%	0.059	0.991	0.322	1.000
2013	77.5%	0.048	0.991	0.276	1.000
2014	77.6%	0.073	0.996	0.368	1.000

Reliability varied across providers by year. The proportion of providers with reliability greater than or equal to 0.9, 0.8, and 0.7 are shown below.

Distribution of provider-level reliability scores by year, 2010-2014

Year	N	≥0.9 n (%)	≥0.8 n (%)	≥0.7 n (%)
2010	846	793 (93.7)	819 (96.8)	836 (98.8)
2011	811	752 (92.7)	788 (97.2)	792 (97.7)
2012	816	753 (92.3)	788 (96.6)	801 (98.2)
2013	823	753 (91.5)	794 (96.5)	806 (97.9)

2014	813	771 (94.8)	794 (97.7)	802 (98.7)

2a2.4 What is your interpretation of the results in terms of demonstrating reliability? (i.*e., what do the results mean and what are the norms for the test conducted?*)

There is no established cut-off for minimum reliability level. Values above 0.7 are considered sufficient to see differences between providers and the mean, and values above 0.9 are considered sufficient to see differences between pairs of providers (RAND Corporation, TR-653-NCQA, 2009).

Each year, more than 91% of providers had reliability scores of 0.9 or greater. Therefore, the reliability of viral suppression can be considered to be sufficient to identify real differences in performance across providers. As previously mentioned, sample size is another driver of reliability and likely contributed to the lowest reliability scores (e.g., in 2014 site 2081 had a reliability of 0.368, and reported 1 of 2 had been prescribed ART). However, median reliability was consistently 0.99 during 2010-2014, supporting the conclusion that the reliability of this measure can be considered very good.

2b2. VALIDITY TESTING

2b2.1. What level of validity testing was conducted? (*may be one or both levels*)

☐ **Critical data elements** (*data element validity must address ALL critical data elements*)

☐ **Performance measure score**

☐ **Empirical validity testing**

☒ **Systematic assessment of face validity of performance measure score as an indicator** of quality or resource use (*i.e., is an accurate reflection of performance on quality or resource use and can distinguish good from poor performance*)

2b2.2. For each level of testing checked above, describe the method of validity testing and what it tests (*describe the steps—do not just name a method; what was tested, e.g., accuracy of data elements compared to authoritative source, relationship to another measure as expected; what statistical analysis was used)*

1. Face validity for the measure was established through a technical work group empaneled for the development of the measure. The technical work group consisted of leading researchers and providers in HIV care and treatment as well as governmental and nongovernmental public health officials from across the country. The technical work group used a modified Delphi process whereby experts presented the most current research to the work group members. The work group members discussed each of the presentations and identified data elements for each measure. The work group members voted on the domains for the proposed measures. The vote was based on importance, ability to assess quality care, feasibility to implement measure, and use in quality improvement activities (e.g. ability to improve measure score). The votes were tallied and draft components of the measures (including data elements) were returned to the work group for additional voting via survey. Consensus was reach when a simple majority agreed on the final set of measures.

Technical work group members:
Bruce Agins, NYS DOH AIDS Institute, New York, NY
Judy Bradford, Fenway Community Health, Boston, MA
John Brooks, CDC, Atlanta, GA
Karen Brudney, Columbia University, New York, NY
Laura Cheever, HEALTH RESOURCES AND SERVICES ADMINISTRATION HAB, Rockville, MD
Nikki Cockern, Wayne State University, Detroit, MI
Chinazo Cunningham, Montefiore Medical Center, New York, NY

William Cunningham, UCLA, Los Angeles, CA
Julie Dombrowski, University of Washington, Seattle, WA
Edward Gardner, Denver Health, Denver, CO
Elvin Geng, UCSF, San Francisco, CA
Thomas Giordano, Baylor College of Medicine, Houston, TX
Barb Gripshover, Cleveland ACT UP, Cleveland, OH
Deborah Konkle Parker, University of Mississippi, Jackson, MS
Tim Long, Alliance Chicago, Chicago, IL
Cheryl Lynn-Besch, Louisiana State University, New Orleans, LA
Julio Marrero, COSSMA, San Juan, PR
Brian Montague, Brown University, Providence, RI
Michael Mugavero, University of Alabama, Birmingham, AL
Sylvia Naar King, Wayne State University, Detroit, MI
Josiah Rich, Brown University, Providence, RI
Allan Rodriguez, Miami University, Miami, FL
Amy Sitapati, UCSD, San Diego, CA
Avnish Tripathi, University of South Carolina, Charleston, SC
Gregory Winstead, Christian Community Health Center, Chicago, IL

2. Face validity of the performance score was gained through structured presentations (two identical presentations) to a national audience of Ryan White HIV/AIDS Program grant recipients, subrecipients, and stakeholders. Health Resources and Services Administration presented detailed information (e.g. work group process, numerator, denominator, exclusions, and data elements). The national audience includes organization that would use the measure on a routine basis for assessing quality of care and quality improvement purposes; providers of HIV health care; measurement experts and researchers; and people living with HIV. Four hundred and forty-five individuals participated in the webinars. Ryan White HIV/AIDS Program grant recipients, subrecipients, and stakeholders were invited to provide feedback about the implement the measure within their clinical quality management program including ability of the measure to assess quality care and feasibility of implementing the measure. Written feedback was submitted and reviewed.

2b2.3. What were the statistical results from validity testing? (*e.g., correlation; t-test*)

1. The technical work group developed a measure that could be implemented to assess and improvement quality of care by Ryan White HIV/AIDS Program grant recipients and subrecipients.
2. Sixty-nine individuals/organizations submitted 239 pieces of comments. Eight comments were received regarding this measure. The comments included continuing efforts to align this measure across federal programs; availability of benchmarking data; clarification on measure details; and use in special populations (e.g. youth and young adults). Heath Resources and Services Administration did not receive any comments encouraging the discontinuation of the measure, inability of measure to assess quality of care; or inability to implement the measure.

2b2.4. What is your interpretation of the results in terms of demonstrating validity? (i.*e., what do the results mean and what are the norms for the test conducted?*

- The technical work group was represented of the Ryan White HIV/AIDS Program grant recipients, subrecipients, and stakeholders and included clinical providers, researchers, and clinical quality management staff. The technical work group agreed upon a measure that could assess and improvement the quality of HIV care.
- Health Resources and Services Administration provided detailed information about this measure to a large portion of the Ryan White HIV/AIDS Program grant recipients, subrecipients, and national partners (445 participants). Many comments (239) were received as a result of the presentations, which indicated a high

degree of engagement with Health Resource and Services Administration regarding performance measures. Eight comments were directly in response to this measure. None of the comments indicated that the measure should be discontinued, could not assess quality of care, or could not be implemented. No changes to the measure were made based on the feedback receive. Frequently asked questions were developed based on the feedback (available at http://hab.Health Resources and Services Administration .gov/clinical-quality-management/performance-measure-portfolio).

2b3. EXCLUSIONS ANALYSIS (FOR MEASURS WITH EXCLUSIONS --- gap in visits and medical visit frequency)
NA ☒ no exclusions — *skip to section 2b4*

2b3.1. Describe the method of testing exclusions and what it tests (*describe the steps—do not just name a method; what was tested, e.g., whether exclusions affect overall performance scores; what statistical analysis was used*)

N/A

2b3.2. What were the statistical results from testing exclusions? (*include overall number and percentage of individuals excluded, frequency distribution of exclusions across measured entities, and impact on performance measure scores*)
N/A

2b3.3. What is your interpretation of the results in terms of demonstrating that exclusions are needed to prevent unfair distortion of performance results? (*i.e., the value outweighs the burden of increased data collection and analysis. Note: **If patient preference is an exclusion**, the measure must be specified so that the effect on the performance score is transparent, e.g., scores with and without exclusion*)
N/A

2b4. RISK ADJUSTMENT/STRATIFICATION FOR OUTCOME OR RESOURCE USE MEASURES
If not an intermediate or health outcome, or PRO-PM, or resource use measure, skip to section 2b5.

2b4.1. What method of controlling for differences in case mix is used?
☒ **No risk adjustment or stratification**
☐ **Statistical risk model with risk factors**
☐ **Stratification by risk categories**
☐ **Other,**

2b4.1.1 If using a statistical risk model, provide detailed risk model specifications, including the risk model method, risk factors, coefficients, equations, codes with descriptors, and definitions.

N/A

2b4.2. If an outcome or resource use component measure is not risk adjusted or stratified, provide rationale and analyses to demonstrate that controlling for differences in patient characteristics (case mix) is not needed to achieve fair comparisons across measured entities.

The Ryan White HIV/AIDS Program provides a comprehensive system of care that includes primary medical care and essential support services for people living with HIV who are uninsured or underinsured. The Program works with cities, states, and local community-based organizations to provide HIV care and treatment services

to more than half a million people each year. The Program reaches approximately 52% of all people diagnosed with HIV in the United States.

As indicated in data presented earlier, the Ryan White HIV/AIDS Program is a public health, safety net program providing care to a high proportion of racial/ethnic minority, transgender, unstable housing, and low income people living with HIV. Many of people served by the Ryan White HIV/AIDS Program represent sociodemographic factors incorporate in risk adjusting models by many measures stewards. As a result, the Ryan White HIV/AIDS Program does not adjust for risk in its performance measures. Rather, it is a fundamental aspect of the Ryan White HIV/AIDS Program to identify disparities and work to improve quality of care for subpopulations. Additionally, this measure is not used for pay-for-performance, bonuses, or penalties.

2b4.3. Describe the conceptual/clinical and statistical methods and criteria used to select patient factors (clinical factors or sociodemographic factors) used in the statistical risk model or for stratification by risk (*e.g., potential factors identified in the literature and/or expert panel; regression analysis; statistical significance of p<0.10; correlation of x or higher; patient factors should be present at the start of care*)

N/A

2b4.4a. What were the statistical results of the analyses used to select risk factors?

N/A

2b4.4b. Describe the analyses and interpretation resulting in the decision to select SDS factors (e.g. prevalence of the factor across measured entities, empirical association with the outcome, contribution of unique variation in the outcome, assessment of between-unit effects and within-unit effects)

2b4.5. Describe the method of testing/analysis used to develop and validate the adequacy of the statistical model or stratification approach (*describe the steps—do not just name a method; what statistical analysis was used*)

N/A

If stratified, skip to 2b4.9

2b4.6. Statistical Risk Model Discrimination Statistics (*e.g., c-statistic, R-squared*)**:**

2b4.7. Statistical Risk Model Calibration Statistics (*e.g., Hosmer-Lemeshow statistic*):

2b4.8. Statistical Risk Model Calibration – Risk decile plots or calibration curves:

2b4.9. Results of Risk Stratification Analysis:

2b4.10. What is your interpretation of the results in terms of demonstrating adequacy of controlling for differences in patient characteristics (case mix)? (i.*e., what do the results mean and what are the norms for the test conducted*)
N/A

2b4.11. Optional Additional Testing for Risk Adjustment (*not required, but would provide additional support of adequacy of risk model, e.g., testing of risk model in another data set; sensitivity analysis for missing data; other methods that were assessed*)

N/A

2b5. IDENTIFICATION OF STATISTICALLY SIGNIFICANT & MEANINGFUL DIFFERENCES IN PERFORMANCE

2b5.1. Describe the method for determining if statistically significant and clinically/practically meaningful differences in performance measure scores among the measured entities can be identified (*describe the steps—do not just name a method; what statistical analysis was used? Do not just repeat the information provided related to performance gap in 1b)*

To examine meaningful differences in performance, we examined the distribution of the proportion of patients with viral suppression across providers, by year. Performance scores were broken into the bottom 10% and top 90% providers to better characterize the gaps that remain across providers. Moreover, performance scores were examined with respect the proportion of providers with least 80 percent of patients that were prescribed ART in a given year.

2b5.2. What were the statistical results from testing the ability to identify statistically significant and/or clinically/practically meaningful differences in performance measure scores across measured entities? (e.g., *number and percentage of entities with scores that were statistically significantly different from mean or some benchmark, different from expected; how was meaningful difference defined*)

	% patients with viral suppression across providers					providers with ≥80% patients prescribed ART		
Year	Mean	SD	Median	10th %ile	90th %ile	N	n	%
2010	65.9%	27.5%	76.5%	17.8%	91.2%	846	353	41.7
2011	70.1%	26.4%	79.8%	26.1%	93.2%	811	402	49.6
2012	73.4%	25.4%	83.8%	31.7%	94.7%	816	471	57.7
2013	77.5%	24.1%	86.5%	42.9%	96.4%	823	532	64.6
2014	78.0%	28.0%	90.0%	29.6%	98.3%	813	565	69.5

2b5.3. What is your interpretation of the results in terms of demonstrating the ability to identify statistically significant and/or clinically/practically meaningful differences in performance across measured entities? (i.*e., what do the results mean in terms of statistical and meaningful differences?*)

The table above demonstrates meaningful variability across providers, allowing for the identification of meaningful differences across sites. Specifically, the measure is able to detect providers with better or worse than median performance scores. In 2014, the bottom 10% of providers had ART prescription rates of 29.6% or lower; the top 90% of providers had rates of 98.3% or higher. These differences demonstrate the continued value of the measure in identifying sites based on poor performance relative to the top performers.

Provider-level performance differences observed in the table above also underscore improvements in the proportion of patients prescribed ART. In 2014, of 813 providers, 565 (69.5%) had prescribed ART for at least 80% of patients. Additionally, on average by provider, nearly 80% (78%) of patients were prescribed ART; however, given the large population that the RWHAP serves, even the poorest performing sites (e.g., bottom 10%) represent a substantial number of patients.

2b6. COMPARABILITY OF PERFORMANCE SCORES WHEN MORE THAN ONE SET OF SPECIFICATIONS

If only one set of specifications, this section can be skipped.

Note: *This item is directed to measures that are risk-adjusted (with or without SDS factors)* ***OR*** *to measures with more than one set of specifications/instructions (e.g., one set of specifications for how to identify and compute the measure from medical record abstraction and a different set of specifications for claims or eMeasures). It does not apply to measures that use more than one source of data in one set of specifications/instructions (e.g., claims data to identify the denominator and medical record abstraction for the numerator).* ***Comparability is not required when comparing performance scores with and without SDS factors in the risk adjustment model. However, if comparability is not demonstrated for measures with more than one set of specifications/instructions, the different specifications (e.g., for medical records vs. claims) should be submitted as separate measures.***

2b6.1. Describe the method of testing conducted to compare performance scores for the same entities across the different data sources/specifications (*describe the steps—do not just name a method; what statistical analysis was used*)
N/A

2b6.2. What were the statistical results from testing comparability of performance scores for the same entities when using different data sources/specifications? (*e.g., correlation, rank order*)
N/A

2b6.3. What is your interpretation of the results in terms of the differences in performance measure scores for the same entities across the different data sources/specifications? (i.*e., what do the results mean and what are the norms for the test conducted*)
N/A

2b7. MISSING DATA ANALYSIS AND MINIMIZING BIAS

2b7.1. Describe the method of testing conducted to identify the extent and distribution of missing data (or nonresponse) and demonstrate that performance results are not biased due to systematic missing data (or differences between responders and nonresponders) and how the specified handling of missing data minimizes bias (*describe the steps—do not just name a method; what statistical analysis was used*)

Based on the method used to calculate the ART performance score, conducting missing data analysis is not applicable for this measure. Specifically, the logic used to determine the number of patients prescribed ART relied on whether or not the patient had at least one medical visit in the measurement year, and then among these patients, whether or not the patient was prescribed ART during the measurement year. Based on provider reporting, patients were classified as either having a medical visit or not, and similarly, patients were considered to be prescribed ART or not, and missing/unknown were not response options.

2b7.2. What is the overall frequency of missing data, the distribution of missing data across providers, and the results from testing related to missing data? (*e.g., results of sensitivity analysis of the effect of various rules for missing data/nonresponse; if no empirical sensitivity analysis, identify the approaches for handling missing data that were considered and pros and cons of each*)

N/A (see 2b7.1)

2b7.3. What is your interpretation of the results in terms of demonstrating that performance results are not biased due to systematic missing data (or differences between responders and nonresponders) and how the specified handling of missing data minimizes bias**?** (i.*e., what do the results mean in terms of supporting the selected approach for missing data and what are the norms for the test conducted; if no empirical analysis, provide rationale for the selected approach for missing data*)

N/A (see 2b7.1)

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.**
Generated or collected by and used by healthcare personnel during the provision of care (e.g., blood pressure, lab value, diagnosis, depression score)
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 health records (EHRs)

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).
Not applicable.

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 a PRO-PM, consider implications for both individuals providing PRO data (patients, service recipients, respondents) and those whose performance is being measured.
Data collection and availability: The data used for testing and operational use of this measure are readily available within patient health records and provided annually to the Ryan White HIV/AIDS Program through the reporting of the Ryan White Service Report (approved by the Office of Management and Budget 0915-0323).
Missing data: A full analysis of missing data is provided in this submission.
Time and frequency of data collection: As noted previously, all variables to calculate this measure are contained in a patient health record in a structured field. These data are routinely collected in the provision of care to people living with HIV. Because the availability of data, sampling is not performed.

Patient confidentiality: The data used in the testing of this measure are deidentified/striped of personally identifiable information prior to submitting.

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)*.
No fees, licensing, or other requirements to use any aspect of the measure.

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)
	Public Reporting Ryan White HIV/AIDS Program https://hab.hrsa.gov/clinical-quality-management/performance-measure-portfolio Public Health/Disease Surveillance National HIV/AIDS Strategy https://www.aids.gov/federal-resources/national-hiv-aids-strategy/nhas-update.pdf Payment Program PQRS https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/PQRS/index.html?redirect=/pqri Quality Improvement (external benchmarking to organizations) Ryan White HIV/AIDS Program https://hab.hrsa.gov/clinical-quality-management/performance-measure-portfolio Quality Improvement (Internal to the specific organization) yan White HIV/AIDS Program https://hab.hrsa.gov/clinical-quality-management/performance-measure-portfolio

4a.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

Ryan White HIV/AIDS Program
Sponsor: Federal government

Geographic area: Nationwide
Accountable entities: Approximately 600 Ryan White HIV/AIDS Program grant recipients and their providers
Patients: Approximately 316,000 patients

Physician Quality Report System and Value Based Modifier
Sponsor: Federal government
Geographic area: Nationwide
Accountable entities: Physicians and practitioners
Patients: Unknown

Merit-Based Incentive Payment System
Sponsor: Federal government
Geographic area: Nationwide
Accountable entities: Physicians, Physician Assistant, Nurse Practitioner, and Clinical Nurse Specialist
Patients: Unknown

National HIV/AIDS Strategy
Sponsor: Federal government
Geographic area: Nationwide
Accountable entities: Federal agencies and service providers
Patients: All people living with HIV in the United States

4a.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?*)
N/A

4a.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.*)
N/A

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.

4b. **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.
Prescription of HIV antiretroviral therapy has been improving in the United States since the first release of publically available data. The Ryan White HIV/AIDS Program served more than 300,000 unduplicated patients annually between 2010-2014 across 2,000+ grant recipients and subrecipients. The Ryan White HIV/AIDS Program has experienced a 10 + point increase in viral suppression from 65.9% in 2010 to 78.0% in 2014. Prescription of HIV antiretroviral therapy has increased across all demographic groups and subpopulations.

4c. 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).

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

The adoption and use of this measure has continued to spread since the initial development of this measure. This measure has been adopted by Centers for Medicare and Medicaid measurement programs, Department of Health and Human Service Secretary as a one of the core HIV indicators, countless outpatient/ambulatory care settings, and health departments. National learning collaborates have used this measure to focus the improvement efforts of grant recipients and subrecipients. Additionally, prescription of HIV antiretroviral therapy is one of five stages of the HIV care continuum. This measure has become the standard when measuring prescription of HIV antiretroviral therapy.

4c.2. **Please explain any unexpected benefits from implementation of this measure.**
N/A

4d1.1. **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.
Starting in 2015, Health Resources and Services Administration began releasing December 1st – World AIDS Day – an annual data report (Ryan White HIV/AIDS Program Annual Client-Level Data Report) that contains data similar to those presenting in the report. Building upon the success of the state profiles (http://hab.hrsa.gov/stateprofiles/), Health Resources and Services Administration worked diligently to release the annual data report in the same year it was collected (collected in April and released in December of the same year). The report is publically available on the Health Resources and Services Administration website (http://hab.hrsa.gov/data/data-reports) and is released via an accompanying webinar (recorded and archived). A supplemental report exploring data for the eligible metropolitan areas and transitional grant areas and youth/young adults has been released as well as slides sets for fact sheets by program and population, special populations (http://hab.hrsa.gov/publications/hivaids-bureau-fact-sheets), and infographics (contained in fact sheets). Additionally, grant recipient level reports are prepared and disseminated to all Ryan White HIV/AIDS Program grant recipients.

4d1.2. **Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.**
Starting in 2015, Health Resources and Services Administration began releasing December 1st – World AIDS Day – an annual data report (Ryan White HIV/AIDS Program Annual Client-Level Data Report) that contains data similar to those presenting in the report. Building upon the success of the state profiles (http://hab.hrsa.gov/stateprofiles/), Health Resources and Services Administration worked diligently to release the annual data report in the same year it was collected (collected in April and released in December of the same year). The report is publically available on the Health Resources and Services Administration website (http://hab.hrsa.gov/data/data-reports) and is released via an accompanying webinar (recorded and archived). A supplemental report exploring data for the eligible metropolitan areas and transitional grant areas and youth/young adults has been released as well as slides sets for fact sheets by program and population, special populations (http://hab.hrsa.gov/publications/hivaids-bureau-fact-sheets), and infographics (contained in fact sheets). Additionally, grant recipient level reports are prepared and disseminated to all Ryan White HIV/AIDS Program grant recipients.

4d2.1. **Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1.**
Describe how feedback was obtained.
Antidotal feedback has been received from Ryan White HIV/AIDS Program grant recipients and subrecipients regarding the feasibility and usefulness of the data presented in the Ryan White HIV/AIDS Program Annual Client-Level Data Report. Significant feedback has been provided about the timeliness and expansions of the data release. Grant recipient report using the data for benchmarking their program, setting goals/targets, and gaining a fuller understanding of all aspects of the Ryan White HIV/AIDS Program (i.e. other regions of the country). Grant recipients and subrecipients have also requested additional analyses. Health Resources and Services Administration responded with supplemental reports (Ryan White HIV/AIDS Program Supplemental Client-Level Data Report, Eligible Metropolitan Areas and Transitional Grant Areas; special population reports); slide decks for the overall client population and special populations; grant recipient reports; and infographics – all of which will be updated and released annually. Health Resources and Services Administration plans to release additional analyses and special reports this year based on feedback from Ryan White HIV/AIDS Program grant recipients and subrecipients.

4d2.2. **Summarize the feedback obtained from those being measured.**
See 4d2.2

4d2.3. **Summarize the feedback obtained from other users**

Ryan White HIV/AIDS Program national partners (national organizations that represent grant recipients, subrecipients, and patients) has provided antidotal feedback regarding the timeliness, feasibility, and usability of the release of the Ryan White HIV/AIDS Program Annual Client-Level Data Report, supplemental reports, slide decks, fact sheets, and infographics. The national partners encourage the continued release of the data in all its formats.

4d.3. **Describe how the feedback described in 4d.2 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.**
During the initial development of the measure, formal feedback was gathered. The measures were modified during the development phase and have not been modified since. A concerted effort was made to develop a measure that would likely stand the test of time from a scientific, clinical, and patient perspective. On an annual basis, the measure is review for clinical relevance, change in scientific acceptability, and consistency with guidelines. This measure has not been modified as a result of the annual reviews. Additionally, this measure is used by a number of measurement programs and strategies. Each of those programs require a separate annual review. No modifications have been made for those programs.

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)**

5.1b. **If related or competing measures are not NQF endorsed please indicate measure title and steward.**
0405 HIV/AIDS: Pneumocystis Jiroveci Pneumonia (PCP) Prophylaxis
0409 HIV/AIDS: Sexually Transmitted Disease Screening for Chlamydia, Gonorrhea, and Syphilis
2079 HIV Medical Visit Frequency
2080 Gap in HIV Medical Visits
2082 HIV Viral Suppression
3211 Prescription of HIV Antiretroviral Therapy
3210 HIV viral suppression
3010 HIV Medical Visit Frequency
3211 Prescription of HIV Antiretroviral Therapy

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?
Yes

5a.2. **If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.**
Harmonized with all measures except 405 and 409. Plans to harmonize with 405 and 409.

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.)
Not applicable.

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:

Contact Information

Co.1 **Measure Steward (Intellectual Property Owner):** Health Resources and Services Administration - HIV/AIDS Bureau
Co.2 **Point of Contact:** Marlene, Matosky, mmatosky@hrsa.gov, 301-443-0798-
Co.3 **Measure Developer if different from Measure Steward:** Health Resources and Services Administration - HIV/AIDS Bureau
Co.4 **Point of Contact:** Marlene, Matosky, mmatosky@hrsa.gov, 301-443-0798-

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.
Employees of hate following governmental and non-governmental organizations/agencies participated in the development of this measure and assisted in assessing face validity:
-HHS Office of HIV/AIDS and Infectious Disease Policy
-Centers for Disease Control
-Center for Medicaid and Medicare
-Health Resources and Services Administration
-Indian Health Service
-National Institutes of Health
-Substances Abuse and Mental Health Services Administration
-U.S. Department of Veterans Affairs
-HIV Medical Association
-Kaiser Permanente
-National Associate of State and Territorial AIDS Directors
-Urban Coalition for HIV/AIDS Prevention Services
-National Minority AIDS Council
-Iowa Department of Health
-Washington D.C. Department of Health
-Maryland Department of Health
-University of Alabama
-University of San Francisco
-Johns Hopkins University

Measure Developer/Steward Updates and Ongoing Maintenance
Ad.2 **Year the measure was first released:** 2011

Ad.3 **Month and Year of most recent revision:** 05, 2016
Ad.4 **What is your frequency for review/update of this measure?** Annual
Ad.5 **When is the next scheduled review/update for this measure?** 05, 2016

Ad.6 **Copyright statement:** None
Ad.7 **Disclaimers:** None

Ad.8 **Additional Information/Comments:** It is our intention that this measure will be used in quality improvement in addition to public reporting. As it is involved in quality improvement, it is not our intent that the performance goal will be 100%. When we do set the performance goal, we will take into consideration appropriate reasons why the patient may not be able to meet the numerator criterion.