

eCQM Title	HIV Viral Suppression	
eCQM Identifier (Measure Authoring Tool)	314	eCQM Version Number 2.0.000
CBE Number	Not Applicable	GUID 9e0a7673-bae5-400a-9e3b-19029cac288a
Measurement Period	January 1, 20XX through December 31, 20XX	
Measure Steward	Health Resources & Services Administration	
Measure Developer	Health Resources & Services Administration	
Endorsed By	None	
Description	Percentage of patients, regardless of age, diagnosed with HIV prior to or during the first 90 days of the measurement period, with an eligible encounter in the first 240 days of the measurement period, whose last HIV viral load test result was less than 200 copies/mL during the measurement period	
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Measure Scoring	Proportion	
Measure Type	Outcome	
Stratification	None	
Risk Adjustment	None	
Rate Aggregation	None	

Rationale
<p>HIV is a communicable infection that leads to a progressive disease with a long asymptomatic period. Approximately 40,000 persons in the United States are newly infected with HIV each year (Centers for Disease Control and Prevention, 2021, p. 51). Without treatment, most persons develop acquired immunodeficiency syndrome (AIDS) within 10 years of HIV infection.</p> <p>HIV viral suppression is a long-standing priority outcome among the HIV community in the United States and around the world. The National HIV/AIDS Strategy for the United States from 2022-2025, developed by the White House Office of National AIDS Policy with input from the HIV community across the United States, prioritizes increasing HIV viral suppression rates to 95 percent (The White House, 2020). The DHHS Panel on Antiretroviral Guidelines for Adults and Adolescents defines viral suppression as a viral load below the lower limits of detection in its guidelines on virologic failure, and it defines viral suppression as a viral load of less than 200 copies/mL as part of its guidelines for the use of antiretroviral therapy to prevent HIV transmission (Panel on Antiretroviral Guidelines for Adults and Adolescents, 2022).</p> <p>Antiretroviral therapy (ART) delays the progression to AIDS and increases the length of survival. ART reduces HIV-associated morbidity and mortality by maximally inhibiting HIV replication to achieve viral suppression (Hogg et al., 2001; Lundgren et al., 2015). ART has also been shown to reduce transmission of HIV (Rodger et al., 2019). Studies show disparities in rates of viral suppression by race and ethnicity among MSM and among women, with Black and Hispanic or Latino/a study participants having lower rates of viral suppression than White participants (Buchacz et al., 2020; Buchacz et al., 2018; Getz et al., 2018). This measure will help providers direct their attention and quality improvement efforts towards improving HIV viral suppression rates.</p>

Clinical Recommendation Statement
<p>Adult guidelines:            "The primary goal of antiretroviral therapy (ART) is to prevent HIV-associated morbidity and mortality. This goal is accomplished by using effective ART to achieve and maintain a plasma HIV-1 RNA (viral load) below the quantification limits of commercially available assays. Durable viral suppression improves immune function and overall quality of life, lowers the risk of both AIDS-defining and non-AIDS-defining complications, and allows persons with HIV to live a lifespan approaching that of persons without HIV." (Panel on Antiretroviral Guidelines for Adults and Adolescents, 2022, p. E-1).</p> <p>"ART is recommended for all individuals with HIV to reduce the morbidity and mortality associated with HIV infection and to prevent HIV transmission to sexual partners and infants (AI). ART should be initiated as soon as possible after HIV diagnosis (AI)" (Panel on Antiretroviral Guidelines for Adults and Adolescents, 2022, p. E-2).</p> <p>"The guidelines and the AIDS Clinical Trials Group (ACTG) now define virologic failure as a confirmed viral load &gt;200 copies/mL—a threshold that eliminates most cases of apparent viremia caused by viral load blips or assay variability" (Panel on Antiretroviral Guidelines for Adults and Adolescents, 2022, p. C-6).</p> <p>"Individuals who are adherent to their ARV regimen and do not harbor resistance mutations to the component drugs can generally achieve suppression 8 to 24 weeks after ART initiation, rarely, in some patients it may take longer." (Panel on Antiretroviral Guidelines for Adults and Adolescents, 2022, p. C-6).</p> <p>Pediatric guidelines:            "Based on accumulated experience with currently available assays, the current definition of virologic suppression is a plasma viral load below the detection limit of the assay used (generally &lt;20 to 75 copies/mL)" (Panel on Antiretroviral Therapy and Medical Management of Children Living with HIV, 2022, p. D-5).</p> <p>"Temporary viral load elevations ("blips") that are between the level of detection and 200 copies/mL to 500 copies/mL are often detected in adults and children who are on ART; these temporary elevations do not represent virologic failure, as long as the values have returned to below the level of detection when testing is repeated" (Panel on Antiretroviral Therapy and Medical Management of Children Living with HIV, 2022, p. D-5).</p>
Improvement Notation
Higher score equals better quality
Reference
<p>Reference Type: CITATION</p> <p>Reference Text: Buchacz, K., Armon, C., Palella, F. J., Novak, R. M., Fuhrer, J., Tedaldi, E., . . . Investigators, HOPS (2020). The HIV Outpatient study-25 Years of HIV patient care and epidemiologic research. Open Forum Infect Dis, 7(5), ofaa123. https://doi.org/10.1093/ofid/ofaa123</p>
Reference
<p>Reference Type: CITATION</p> <p>Reference Text: Buchacz, K., Armon, C., Tedaldi, E., Palella, F. J., Novak, R. M., Ward, D., . . . Investigators, HOPS (2018). Disparities in HIV viral load suppression by race/ethnicity among men who have sex with men in the HIV Outpatient Study. AIDS Res Hum Retroviruses, 34(4), 357-364. https://doi.org/10.1089/AID.2017.0162</p>
Reference
<p>Reference Type: CITATION</p> <p>Reference Text: "Centers for Disease Control and Prevention (2021). HIV surveillance report, 2019. http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html"</p>
Reference
<p>Reference Type: CITATION</p> <p>Reference Text: Getz, A., Sutton, M. Y., Armon, C., Durham, M. D., Palella, F. J., Tedaldi, E., . . . Investigators, HOPS (2018). Trends of racial and ethnic disparity in virologic suppression among women in the HIV Outpatient Study, USA, 2010-2015. PLoS One, 13(1), e0189973. https://doi.org/10.1371/journal.pone.0189973</p>
Reference
<p>Reference Type: CITATION</p> <p>Reference Text: "Hogg, R. S., Yip, B., Chan, K. J., Wood, E., Craib, K. J., O'Shaughnessy, M. V., &amp; Montaner, J. S. (2001). Rates of disease progression by baseline CD4 cell count and viral load after initiating triple-drug therapy. JAMA, 286(20), 2568-2577. https://doi.org/10.1001/jama.286.20.2568"</p>
Reference
<p>Reference Type: CITATION</p> <p>Reference Text: Lundgren, J. D., Babiker, A. G., Gordin, F., Emery, S., Grund, B., Sharma, S., . . . Group, ISS (2015a). Initiation of antiretroviral therapy in early asymptomatic HIV infection. N Engl J Med, 373(9), 795-807. https://doi.org/10.1056/NEJMoa1506816"</p>
Reference
<p>Reference Type: CITATION</p> <p>Reference Text: "Panel on Antiretroviral Guidelines for Adults and Adolescents. (2022, September). "Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents with HIV." Retrieved from https://clinicalinfo.hiv.gov/sites/default/files/guidelines/documents/adult-adolescent-arv/guidelines-adult-adolescent-arv.pdf"</p>
Reference
<p>Reference Type: CITATION</p> <p>Reference Text: "Panel on Antiretroviral Therapy and Medical Management of Children Living with HIV. (2022, October). Guidelines for the use of antiretroviral agents in pediatric HIV infection. Retrieved from https://clinicalinfo.hiv.gov/sites/default/files/guidelines/documents/pediatric-arv/guidelines-pediatric-arv.pdf"</p>
Reference
<p>Reference Text: "Rodger, A. J., Cambiano, V., Braun, T., Vernazza, P., Collins, S., Degen, O., . . . Group, PS (2019). Risk of HIV transmission through condomless sex in serodifferent gay couples with the HIV-positive partner taking suppressive antiretroviral therapy (PARTNER): Final results of a multicentre, prospective, observational study. Lancet, 393(10189), 2428-2436. https://doi.org/10.1016/S0140-6736(19)30418-0"</p>
Reference
<p>Reference Type: CITATION</p> <p>Reference Text: "The White House. (2021). National HIV/AIDS strategy for the United States 2022–2025. https://files.hiv.gov/s3fs-public/NHAS-2022-2025.pdf"</p>

Definition
<p>Only patients diagnosed with HIV prior to or in the first 90 days of the measurement period are included in this measure to allow for sufficient time for patients to achieve viral suppression after their initial HIV diagnosis.</p> <p>Only patients with an eligible encounter in the first 240 days of the measurement period are included in this measure to allow the reporting clinician to have sufficient time to collect follow-up labs on patients in the clinic before the end of the measurement period.</p>
Guidance
<p>HIV viral load data should be captured either as a numeric value or as a character/text value, depending on whether a given viral load result falls above or below the lab's lower limit of detection. For viral loads at or above the lower limit of detection, the viral load should be captured as a numeric value (expressed as the number of copies/mL). For viral loads below the lower limit of detection, the viral load should be populated with a character/text value equivalent to "Below lower limit of detection." The EHR need not record this character value using this exact wording (for example, the character value could be recorded as "&lt;20 copies/mL" or "not detected"), but values below the lower limit of detection should be documented to allow the submitter to accurately map them to a value of "Below lower limit of detection" for reporting purposes.</p> <p>HIV viral load test results may be expressed as log values (log copies/mL). For this eCQM, please convert the log value to copies/mL.</p> <p>This eCQM is a patient-based measure.</p> <p>This version of the eCQM uses QDM version 5.6. Please refer to the eCQI resource center (https://ecqi.healthit.gov/qdm) for more information on the QDM.</p>
Transmission Format
TBD
Initial Population
All patients, regardless of age, diagnosed with HIV prior to or during the first 90 days of the measurement period with at least one eligible encounter in the first 240 days of the measurement period
Denominator
Equals Initial Population
Denominator Exclusions
None
Numerator
Patients with a last HIV viral load test result of less than 200 copies/mL during the measurement period
Numerator Exclusions
Not Applicable
Denominator Exceptions
None
Supplemental Data Elements
For every patient evaluated by this measure also identify payer, race, ethnicity and sex

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## Population Criteria

Initial Population	"Has Active HIV Diagnosis Before or in First 90 Days of Measurement Period" and "Has Qualifying Encounter During First 240 Days of Measurement Period"
Denominator	"Initial Population"
Denominator Exclusions	None
Numerator	"Most Recent Viral Load Test During Measurement Period".result < 200 [copies]/mL" or "Most Recent Viral Load Test During Measurement Period".result ~ "Below threshold level (qualifier value)" or "Most Recent Viral Load Test During Measurement Period".result ~ "Not detected (qualifier value)"
Numerator Exclusions	None
Denominator Exceptions	None
Stratification	None

## Definitions

Denominator	"Initial Population"
Has Active HIV Diagnosis Before or in First 90 Days of Measurement Period	exists ["Diagnosis": "HIV"] HIVDx where HIVDx.prevalencePeriod starts before day of ( start of "Measurement Period" + 90 days )
Has Qualifying Encounter During First 240 Days of Measurement Period	exists ( ( ["Encounter, Performed": "Office Visit"] union ["Encounter, Performed": "Outpatient Consultation"] union ["Encounter, Performed": "Annual Wellness Visit"] union ["Encounter, Performed": "Face-to-Face Interaction"] union ["Encounter, Performed": "Home Healthcare Services"] union ["Encounter, Performed": "Preventive Care Services Established Office Visit, 18 and Up"] union ["Encounter, Performed": "Preventive Care Services Initial Office Visit, 18 and Up"] union ["Encounter, Performed": "Preventive Care Services, Initial Office Visit, 0 to 17"] union ["Encounter, Performed": "Preventive Care, Established Office Visit, 0 to 17"] union ["Encounter, Performed": "Telephone Visits"] union ["Encounter, Performed": "Unlisted preventive medicine service"] ) QualifyingEncounter where QualifyingEncounter.relevantPeriod during day of Interval[start of "Measurement Period", start of "Measurement Period" + 240 days] )
Initial Population	"Has Active HIV Diagnosis Before or in First 90 Days of Measurement Period" and "Has Qualifying Encounter During First 240 Days of Measurement Period"
Most Recent Viral Load Test During Measurement Period	Last(["Laboratory Test, Performed": "HIV Viral Load"] ViralLoad where Global.LatestOf("ViralLoad.relevantDatetime, ViralLoad.relevantPeriod") during day of "Measurement Period" sort by start of Global.NormalizeInterval("relevantDatetime, relevantPeriod") )
Numerator	"Most Recent Viral Load Test During Measurement Period".result < 200 [copies]/mL" or "Most Recent Viral Load Test During Measurement Period".result ~ "Below threshold level (qualifier value)" or "Most Recent Viral Load Test During Measurement Period".result ~ "Not detected (qualifier value)"
SDE Ethnicity	["Patient Characteristic Ethnicity": "Ethnicity"]
SDE Payer	["Patient Characteristic Payer": "Payer Type"]
SDE Race	["Patient Characteristic Race": "Race"]
SDE Sex	["Patient Characteristic Sex": "ONC Administrative Sex"]

## Functions

Global.HasEnd(period Interval<DateTime>)	not ( end of period is null or end of period = maximum DateTime )
Global.Latest(period Interval<DateTime>)	if ( HasEnd(period) ) then end of period else start of period
Global.LatestOf(pointInTime, period Interval<DateTime>)	Latest(NormalizeInterval(pointInTime, period))
Global.NormalizeInterval(pointInTime DateTime, period Interval<DateTime>)	if pointInTime is not null then interval[pointInTime, pointInTime] else if period is not null then period else null as Interval<DateTime>

## Terminology

<ul style="list-style-type: none"> <li>code "Below threshold level (qualifier value)" ("SNOMEDCT Code (260988000)")</li> <li>code "Not detected (qualifier value)" ("SNOMEDCT Code (260415000)")</li> <li>code "Unlisted preventive medicine service" ("CPT Code (99429)")</li> <li>valueset "Annual Wellness Visit" (2.16.840.1.113883.3.464.1003.101.12.1023)</li> <li>valueset "Ethnicity" (2.16.840.1.114222.4.11.837)</li> <li>valueset "Face-to-Face Interaction" (2.16.840.1.113883.3.464.1003.101.12.1048)</li> <li>valueset "HIV" (2.16.840.1.113883.3.464.1003.120.12.1003)</li> <li>valueset "HIV Viral Load" (2.16.840.1.113883.3.464.1003.101.12.1003)</li> <li>valueset "Home Healthcare Services" (2.16.840.1.113883.3.464.1003.101.12.1016)</li> <li>valueset "Office Visit" (2.16.840.1.113883.3.464.1003.101.12.1001)</li> <li>valueset "ONC Administrative Sex" (2.16.840.1.113762.4.1.1)</li> <li>valueset "Outpatient Consultation" (2.16.840.1.113883.3.464.1003.101.12.1008)</li> <li>valueset "Payer Type" (2.16.840.1.114222.4.11.3591)</li> <li>valueset "Preventive Care Services Established Office Visit, 18 and Up" (2.16.840.1.113883.3.464.1003.101.12.1025)</li> <li>valueset "Preventive Care Services Initial Office Visit, 18 and Up" (2.16.840.1.113883.3.464.1003.101.12.1023)</li> <li>valueset "Preventive Care Services, Initial Office Visit, 0 to 17" (2.16.840.1.113883.3.464.1003.101.12.1022)</li> <li>valueset "Preventive Care, Established Office Visit, 0 to 17" (2.16.840.1.113883.3.464.1003.101.12.1024)</li> <li>valueset "Race" (2.16.840.1.114222.4.11.836)</li> <li>valueset "Telephone Visits" (2.16.840.1.113883.3.464.1003.101.12.1080)</li> </ul>
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## Data Criteria (QDM Data Elements)

<ul style="list-style-type: none"> <li>"Diagnosis: HIV" using "HIV (2.16.840.1.113883.3.464.1003.120.12.1003)"</li> <li>"Encounter, Performed: Annual Wellness Visit" using "Annual Wellness Visit (2.16.840.1.113883.3.464.1003.101.12.1023)"</li> <li>"Encounter, Performed: Face-to-Face Interaction" using "Face-to-Face Interaction (2.16.840.1.113883.3.464.1003.101.12.1048)"</li> <li>"Encounter, Performed: Home Healthcare Services" using "Home Healthcare Services (2.16.840.1.113883.3.464.1003.101.12.1016)"</li> <li>"Encounter, Performed: Office Visit" using "Office Visit (2.16.840.1.113883.3.464.1003.101.12.1001)"</li> <li>"Encounter, Performed: Outpatient Consultation" using "Outpatient Consultation (2.16.840.1.113883.3.464.1003.101.12.1008)"</li> <li>"Encounter, Performed: Preventive Care Services Established Office Visit, 18 and Up" using "Preventive Care Services Established Office Visit, 18 and Up (2.16.840.1.113883.3.464.1003.101.12.1025)"</li> <li>"Encounter, Performed: Preventive Care Services Initial Office Visit, 18 and Up" using "Preventive Care Services Initial Office Visit, 18 and Up (2.16.840.1.113883.3.464.1003.101.12.1023)"</li> <li>"Encounter, Performed: Preventive Care Services, Initial Office Visit, 0 to 17" using "Preventive Care Services, Initial Office Visit, 0 to 17 (2.16.840.1.113883.3.464.1003.101.12.1022)"</li> <li>"Encounter, Performed: Preventive Care, Established Office Visit, 0 to 17" using "Preventive Care, Established Office Visit, 0 to 17 (2.16.840.1.113883.3.464.1003.101.12.1024)"</li> <li>"Encounter, Performed: Telephone Visits" using "Telephone Visits (2.16.840.1.113883.3.464.1003.101.12.1080)"</li> <li>"Encounter, Performed: Unlisted preventive medicine service" using "Unlisted preventive medicine service (CPT Code 99429)"</li> <li>"Laboratory Test, Performed: HIV Viral Load" using "HIV Viral Load (2.16.840.1.113883.3.464.1003.120.12.1003)"</li> <li>"Patient Characteristic Ethnicity: Ethnicity" using "Ethnicity (2.16.840.1.114222.4.11.837)"</li> <li>"Patient Characteristic Payer: Payer Type" using "Payer Type (2.16.840.1.114222.4.11.3591)"</li> <li>"Patient Characteristic Race: Race" using "Race (2.16.840.1.114222.4.11.836)"</li> <li>"Patient Characteristic Sex: ONC Administrative Sex" using "ONC Administrative Sex (2.16.840.1.113762.4.1.1)"</li> </ul>
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## Supplemental Data Elements

SDE Ethnicity	["Patient Characteristic Ethnicity": "Ethnicity"]
SDE Payer	["Patient Characteristic Payer": "Payer Type"]
SDE Race	["Patient Characteristic Race": "Race"]
SDE Sex	["Patient Characteristic Sex": "ONC Administrative Sex"]

## Risk Adjustment Variables

None
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Measure Set	None
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