eCQM Title	Functional Status Assessments for Heart Failure		
eCQM Identifier (Measure Authoring Tool)	90	eCQM Version Number	14.0.000
CBE Number	Not Applicable	GUID	bb9b8ef7-0354-40e0-bec7-d6891b7df519
Measurement Period	January 1, 20XX through December 31, 20XX		
Measure Steward	Centers for Medicare & Medicaid Services (CMS)		
Measure Developer	National Committee for Quality Assurance		
Endorsed By	None		
Description	Percentage of patients 18 years of age and older with heart failure who completed initial and follow-up patient-reported functional status assessments		
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Measure Scoring	Proportion		
Measure Type	Process		
Stratification	None		
Risk Adjustment	None		
Rate Aggregation	None		
Rationale	Patients living with heart failure often have poor functional status and health-related quality of life, which declines as the disease progresses (Allen et al., 2012). In addition, their care is often complicated by multiple comorbidities. To assist in managing these complex patients, the American College of Cardiology Foundation and American Heart Association recommend collecting initial and repeat assessments of a patient's function and ability to complete desired activities of daily living (Hunt et al., 2009). The American Heart Association also released scientific statements emphasizing the collection of patient-reported health status (for example, functional limitations, symptom burden, quality of life) from heart failure patients as an important means of establishing a dynamic conversation between patient and provider regarding care goals and the patient's priorities (Allen et al., 2012; Rumsfeld et al., 2013). The most recent update to clinical guidelines by the American Heart Association, the American College of Cardiology, and the Heart Failure Society of America further emphasizes that better understanding of symptom burden and prognosis may improve the quality of treatment decisions. The guideline also indicates that routine assessment can facilitate population health management by identifying high-risk patients needing closer monitoring or referral to specialized centers and that patient-reported health status assessment increases the patient's role in care, which can motivate initiation and uptake of medical therapy (Heidenreich et al., 2022).		
Clinical Recommendation Statement	The American Heart Association, the American College of Cardiology, and the Heart Failure Society of America (2022): This guideline provides patient-centric recommendations for clinicians to prevent, diagnose, and manage patients with heart failure and specifically recommends assessing patient-reported health status using a validated questionnaire to provide incremental information for patient functional status, symptom burden, and prognosis. Tools specifically recommended in the guideline are as follows: - The Kansas City Cardiomyopathy Questionnaire or, - The Minnesota Living with Heart Failure Questionnaire - PROMIS-Plus-HF [Patient Reported Outcomes Measurement Information System Plus-Heart Failure]		
Improvement Notation	A higher score indicates better quality		
Reference	Reference Type: CITATION Reference Text: 'Allen, L. A., Stevenson, L. W., Grady, K. L., et al. (2012). Decision Making in Advanced Heart Failure: A Scientific Statement from the American Heart Association. Circulation, 125(15), 1928-1952. doi: 10.1161/CIR.0b013e31824f2173'		
Reference	Reference Type: CITATION Reference Text: 'Heidenreich PA, Bozkurt B, Aguilar D, Allen LA, Byun JJ, Colvin MM, Deswal A, Drazner MH, Dunlay SM, Evers LR, Fang JC, Fedson SE, Fonarow GC, Hayek SS, Hernandez AF, Khazanie P, Kittleson MM, Lee CS, Link MS, Milano CA, Nnacheta LC, Sandhu AT, Stevenson LW, Vardeny O, Vest AR, Yancy CW. 2022 AHA/ACC/HFSA guideline for the management of heart failure: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. Circulation. 2022;145:e895–e1032. doi: 10.1161/CIR.0000000000001063'		
Reference	Reference Type: CITATION Reference Text: 'Hunt, S. A., Abraham, W. T., Chin, M. H., et al. (2009). 2009 Focused Update Incorporated into the ACC/AHA 2005 Guidelines for the Diagnosis and Management of Heart Failure in Adults. Circulation, 119(14), e391-e479. doi: 10.1161/CIRCULATIONAHA.109.192065'		
Reference	Reference Type: CITATION Reference Text: 'Rumsfeld, J. S., Alexander, K. P., Goff, D. C., et al. (2013). Cardiovascular health: The Importance of Measuring Patient-Reported Health Status: A Scientific Statement from the American Heart Association. Circulation, 127(22), 2233-2249. doi: 10.1161/CIR.0b013e3182949a2e'		

Definition	None
Guidance	Initial functional status assessment (FSA) and encounter: The initial FSA is an FSA that occurs within two weeks before or during an encounter, in the 180 days or more before the end of the measurement period. Follow-up FSA: The follow-up FSA must be completed at least 30 days but no more than 180 days after the initial FSA. The same FSA instrument must be used for the initial and follow-up assessment. This eCQM is a patient-based measure. 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.
Transmission Format	TBD
Initial Population	Patients 18 years of age and older who had two outpatient encounters during the measurement period and a diagnosis of heart failure that starts any time before and continues into the measurement period
Denominator	Equals Initial Population
Denominator Exclusions	Exclude patients who are in hospice care for any part of the measurement period. Exclude patients with severe cognitive impairment in any part of the measurement period.
Numerator	Patients with patient-reported functional status assessment results (i.e., Veterans RAND 12-item health survey [VR-12]; VR-36; Kansas City Cardiomyopathy Questionnaire [KCCQ]; KCCQ-12; Minnesota Living with Heart Failure Questionnaire [MLHFQ]; Patient-Reported Outcomes Measurement Information System [PROMIS]-10 Global Health; PROMIS-29) present in the EHR within two weeks before or during the initial FSA encounter and results for the follow-up FSA at least 30 days but no more than 180 days after the initial FSA
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

```
AgeInYearsAt(date from start of "Measurement Period") >= 18
  and exists ( ["Diagnosis": "Heart Failure"] HeartFailure
      where HeartFailure.prevalencePeriod overlaps before "Measurement Period"
  )
  and exists ( "Two Outpatient Encounters during Measurement Period" )
```

Denominator

```
"Initial Population"
```

Denominator Exclusions

```
Hospice."Has Hospice Services"
  or exists ( ["Diagnosis": "Severe cognitive impairment (finding)"] SevereCognitiveImpairment
      where SevereCognitiveImpairment.prevalencePeriod overlaps "Measurement Period"
  )
```

Numerator

```
( "Has Encounter with Initial and Follow Up PROMIS10 Assessments" )
  or ( "Has Encounter with Initial and Follow Up PROMIS29 Assessments" )
  or ( "Has Encounter with Initial and Follow Up VR12 Oblique Assessments" )
  or ( "Has Encounter with Initial and Follow Up VR12 Orthogonal Assessments" )
  or ( "Has Encounter with Initial and Follow Up VR36 Oblique Assessments" )
  or ( "Has Encounter with Initial and Follow Up VR36 Orthogonal Assessments" )
  or ( "Has Encounter with Initial and Follow Up MLHFQ Assessments" )
  or ( "Has Encounter with Initial and Follow Up KCCQ12 Assessments" )
  or ( "Has Encounter with Initial and Follow Up KCCQ Domain Score Assessments" )
  or ( "Has Encounter with Initial and Follow Up KCCQ Total Score Assessments" )
```

Numerator Exclusions

None

Denominator Exceptions

None

Stratification

None

Definitions

Date KCCQ Domain Assessment Completed

```
from
  ["Assessment, Performed": "Quality of life score [KCCQ]"] KCCQLifeQuality,
  ["Assessment, Performed": "Symptom stability score [KCCQ]"] KCCQSymptomStability,
```

```
["Assessment, Performed": "Self-efficacy score [KCCQ]"] KCCQSelfEfficacy,
["Assessment, Performed": "Total symptom score [KCCQ]"] KCCQSymptoms,
["Assessment, Performed": "Physical limitation score [KCCQ]"] KCCQPhysicalLimits,
["Assessment, Performed": "Social limitation score [KCCQ]"] KCCQSocialLimits
let KCCQLifeQualityDate: date from start of Global."NormalizeInterval" ( KCCQLifeQuality.relevantDatetime, KCCQLifeQuality.relevantPeriod ),
KCCQSymptomStabilityDate: date from start of Global."NormalizeInterval" ( KCCQSymptomStability.relevantDatetime, KCCQSymptomStability.relevantPeriod ),
KCCQSelfEfficacyDate: date from start of Global."NormalizeInterval" ( KCCQSelfEfficacy.relevantDatetime, KCCQSelfEfficacy.relevantPeriod ),
KCCQSymptomsDate: date from start of Global."NormalizeInterval" ( KCCQSymptoms.relevantDatetime, KCCQSymptoms.relevantPeriod ),
KCCQPhysicalLimitsDate: date from start of Global."NormalizeInterval" ( KCCQPhysicalLimits.relevantDatetime, KCCQPhysicalLimits.relevantPeriod ),
KCCQSocialLimitsDate: date from start of Global."NormalizeInterval" ( KCCQSocialLimits.relevantDatetime, KCCQSocialLimits.relevantPeriod )
where KCCQLifeQualityDate same day as KCCQSymptomStabilityDate
  and KCCQSymptomStability.result is not null
  and KCCQLifeQualityDate same day as KCCQSelfEfficacyDate
  and KCCQSelfEfficacy.result is not null
  and KCCQLifeQualityDate same day as KCCQSymptomsDate
  and KCCQSymptoms.result is not null
  and KCCQLifeQualityDate same day as KCCQPhysicalLimitsDate
  and KCCQPhysicalLimits.result is not null
  and KCCQLifeQualityDate same day as KCCQSocialLimitsDate
  and KCCQSocialLimits.result is not null
  and KCCQLifeQuality.result is not null
return Max({ KCCQLifeQualityDate, KCCQSymptomStabilityDate, KCCQSelfEfficacyDate, KCCQSymptomsDate, KCCQPhysicalLimitsDate, KCCQSocialLimitsDate })
```

Date KCCQ Total Assessment Completed

```
["Assessment, Performed": "Overall summary score [KCCQ]"] KCCQSummaryScore
  let KCCQSummaryScoreDate: date from start of Global."NormalizeInterval" ( KCCQSummaryScore.relevantDatetime, KCCQSummaryScore.relevantPeriod )
  where KCCQSummaryScore.result is not null
  return Max({ KCCQSummaryScoreDate })
```

Date KCCQ12 Total Assessment Completed

```
from
  ["Assessment, Performed": "Kansas City Cardiomyopathy Questionnaire - 12 item [KCCQ-12]"] KCCQ12Item,
  ["Assessment, Performed": "Overall summary score [KCCQ-12]"] KCCQ12Summary
  let KCCQ12ItemDate: date from start of Global."NormalizeInterval" ( KCCQ12Item.relevantDatetime, KCCQ12Item.relevantPeriod ),
  KCCQ12SummaryDate: date from start of Global."NormalizeInterval" ( KCCQ12Summary.relevantDatetime, KCCQ12Summary.relevantPeriod )
  where KCCQ12ItemDate same day as KCCQ12SummaryDate
    and KCCQ12Summary.result is not null
    and KCCQ12Item.result is not null
  return Max({ KCCQ12ItemDate, KCCQ12SummaryDate })
```

Date MLHFQ Total Assessment Completed

```
from
  ["Assessment, Performed": "Physical score [MLHFQ]"] MLHFQPhysical,
  ["Assessment, Performed": "Emotional score [MLHFQ]"] MLHFQEmotional
  let MLHFQPhysicalDate: date from start of Global."NormalizeInterval" ( MLHFQPhysical.relevantDatetime, MLHFQPhysical.relevantPeriod ),
  MLHFQEmotionalDate: date from start of Global."NormalizeInterval" ( MLHFQEmotional.relevantDatetime, MLHFQEmotional.relevantPeriod )
  where MLHFQPhysicalDate same day as MLHFQEmotionalDate
    and MLHFQEmotional.result is not null
    and MLHFQPhysical.result is not null
  return Max({ MLHFQPhysicalDate, MLHFQEmotionalDate })
```

Date PROMIS10 Total Assessment Completed

```
from
  ["Assessment, Performed": "PROMIS-10 Global Mental Health (GMH) score T-score"] PROMIS10MentalScore,
  ["Assessment, Performed": "PROMIS-10 Global Physical Health (GPH) score T-score"] PROMIS10PhysicalScore
  let PROMIS10MentalScoreDate: date from start of Global."NormalizeInterval" ( PROMIS10MentalScore.relevantDatetime, PROMIS10MentalScore.relevantPeriod ),
  PROMIS10PhysicalScoreDate: date from start of Global."NormalizeInterval" ( PROMIS10PhysicalScore.relevantDatetime, PROMIS10PhysicalScore.relevantPeriod )
  where PROMIS10MentalScoreDate same day as PROMIS10PhysicalScoreDate
    and PROMIS10PhysicalScore.result is not null
    and PROMIS10MentalScore.result is not null
  return Max({ PROMIS10MentalScoreDate, PROMIS10PhysicalScoreDate })
```

Date PROMIS29 Total Assessment Completed

```
from
  ["Assessment, Performed": "PROMIS-29 Sleep disturbance score T-score"] Promis29Sleep,
  ["Assessment, Performed": "PROMIS-29 Satisfaction with participation in social roles score T-score"] Promis29SocialRoles,
  ["Assessment, Performed": "PROMIS-29 Physical function score T-score"] Promis29Physical,
  ["Assessment, Performed": "PROMIS-29 Pain interference score T-score"] Promis29Pain,
  ["Assessment, Performed": "PROMIS-29 Fatigue score T-score"] Promis29Fatigue,
  ["Assessment, Performed": "PROMIS-29 Depression score T-score"] Promis29Depression,
  ["Assessment, Performed": "PROMIS-29 Anxiety score T-score"] Promis29Anxiety
  let Promis29SleepDate: date from start of Global."NormalizeInterval" ( Promis29Sleep.relevantDatetime, Promis29Sleep.relevantPeriod ),
  Promis29SocialRolesDate: date from start of Global."NormalizeInterval" ( Promis29SocialRoles.relevantDatetime, Promis29SocialRoles.relevantPeriod ),
  Promis29PhysicalDate: date from start of Global."NormalizeInterval" ( Promis29Physical.relevantDatetime, Promis29Physical.relevantPeriod ),
  Promis29PainDate: date from start of Global."NormalizeInterval" ( Promis29Pain.relevantDatetime, Promis29Pain.relevantPeriod ),
  Promis29FatigueDate: date from start of Global."NormalizeInterval" ( Promis29Fatigue.relevantDatetime, Promis29Fatigue.relevantPeriod ),
  Promis29DepressionDate: date from start of Global."NormalizeInterval" ( Promis29Depression.relevantDatetime, Promis29Depression.relevantPeriod ),
  Promis29AnxietyDate: date from start of Global."NormalizeInterval" ( Promis29Anxiety.relevantDatetime, Promis29Anxiety.relevantPeriod )
  where Promis29SleepDate same day as Promis29SocialRolesDate
    and Promis29SocialRoles.result is not null
    and Promis29SleepDate same day as Promis29PhysicalDate
    and Promis29Physical.result is not null
    and Promis29SleepDate same day as Promis29PainDate
    and Promis29Pain.result is not null
    and Promis29SleepDate same day as Promis29FatigueDate
    and Promis29Fatigue.result is not null
    and Promis29SleepDate same day as Promis29DepressionDate
    and Promis29Depression.result is not null
    and Promis29SleepDate same day as Promis29AnxietyDate
    and Promis29Anxiety.result is not null
    and Promis29Sleep.result is not null
  return Max({ Promis29SleepDate, Promis29SocialRolesDate, Promis29PhysicalDate, Promis29PainDate, Promis29FatigueDate, Promis29DepressionDate,
Promis29AnxietyDate })
```

Date VR12 Oblique Total Assessment Completed

```
from
  ["Assessment, Performed": "VR-12 Mental component summary (MCS) score - oblique method T-score"] VR12MentalAssessment,
```

```
  ["Assessment, Performed": "VR-12 Physical component summary (PCS) score - oblique method T-score"] VR12PhysicalAssessment
  let VR12MentalAssessmentDate: date from start of Global."NormalizeInterval" ( VR12MentalAssessment.relevantDatetime, VR12MentalAssessment.relevantPeriod ),
  VR12PhysicalAssessmentDate: date from start of Global."NormalizeInterval" ( VR12PhysicalAssessment.relevantDatetime, VR12PhysicalAssessment.relevantPeriod )
  where VR12MentalAssessmentDate same day as VR12PhysicalAssessmentDate
    and VR12MentalAssessment.result is not null
    and VR12PhysicalAssessment.result is not null
  return Max({ VR12MentalAssessmentDate, VR12PhysicalAssessmentDate })
```

Date VR12 Orthogonal Total Assessment Completed

```
from
  ["Assessment, Performed": "VR-12 Mental component summary (MCS) score - orthogonal method T-score"] VR12MentalAssessment,
  ["Assessment, Performed": "VR-12 Physical component summary (PCS) score - orthogonal method T-score"] VR12PhysicalAssessment
  let VR12MentalAssessmentDate: date from start of Global."NormalizeInterval" ( VR12MentalAssessment.relevantDatetime, VR12MentalAssessment.relevantPeriod ),
  VR12PhysicalAssessmentDate: date from start of Global."NormalizeInterval" ( VR12PhysicalAssessment.relevantDatetime, VR12PhysicalAssessment.relevantPeriod )
  where VR12MentalAssessmentDate same day as VR12PhysicalAssessmentDate
    and VR12MentalAssessment.result is not null
    and VR12PhysicalAssessment.result is not null
  return Max({ VR12MentalAssessmentDate, VR12PhysicalAssessmentDate })
```

Date VR36 Oblique Total Assessment Completed

```
from
  ["Assessment, Performed": "VR-36 Mental component summary (MCS) score - oblique method T-score"] VR36MentalAssessment,
  ["Assessment, Performed": "VR-36 Physical component summary (PCS) score - oblique method T-score"] VR36PhysicalAssessment
  let VR36MentalAssessmentDate: date from start of Global."NormalizeInterval" ( VR36MentalAssessment.relevantDatetime, VR36MentalAssessment.relevantPeriod ),
  VR36PhysicalAssessmentDate: date from start of Global."NormalizeInterval" ( VR36PhysicalAssessment.relevantDatetime, VR36PhysicalAssessment.relevantPeriod )
  where VR36MentalAssessmentDate same day as VR36PhysicalAssessmentDate
    and VR36MentalAssessment.result is not null
    and VR36PhysicalAssessment.result is not null
  return Max({ VR36MentalAssessmentDate, VR36PhysicalAssessmentDate })
```

Date VR36 Orthogonal Total Assessment Completed

```
from
  ["Assessment, Performed": "VR-36 Mental component summary (MCS) score - orthogonal method T-score"] VR36MentalAssessment,
  ["Assessment, Performed": "VR-36 Physical component summary (PCS) score - orthogonal method T-score"] VR36PhysicalAssessment
  let VR36MentalAssessmentDate: date from start of Global."NormalizeInterval" ( VR36MentalAssessment.relevantDatetime, VR36MentalAssessment.relevantPeriod ),
  VR36PhysicalAssessmentDate: date from start of Global."NormalizeInterval" ( VR36PhysicalAssessment.relevantDatetime, VR36PhysicalAssessment.relevantPeriod )
  where VR36MentalAssessmentDate same day as VR36PhysicalAssessmentDate
    and VR36MentalAssessment.result is not null
    and VR36PhysicalAssessment.result is not null
  return Max({ VR36MentalAssessmentDate, VR36PhysicalAssessmentDate })
```

Denominator

```
"Initial Population"
```

Denominator Exclusions

```
Hospice."Has Hospice Services"
  or exists ( ["Diagnosis": "Severe cognitive impairment (finding)"] SevereCognitiveImpairment
      where SevereCognitiveImpairment.prevalencePeriod overlaps "Measurement Period"
  )
```

Has Encounter with Initial and Follow Up KCCQ Domain Score Assessments

```
exists ( from
    "Qualifying Encounters" ValidEncounters,
    "Date KCCQ Domain Assessment Completed" InitialKCCQAssessmentDate,
    "Date KCCQ Domain Assessment Completed" FollowUpKCCQAssessmentDate
    where ValidEncounters.relevantPeriod ends 180 days or more before day of end of "Measurement Period"
      and InitialKCCQAssessmentDate 14 days or less on or before day of end of ValidEncounters.relevantPeriod
      and date from FollowUpKCCQAssessmentDate during day of Interval[date from InitialKCCQAssessmentDate + 30 days, date from InitialKCCQAssessmentDate + 180
days]
    return ValidEncounters
)
```

Has Encounter with Initial and Follow Up KCCQ Total Score Assessments

```
exists ( from
    "Qualifying Encounters" ValidEncounters,
    "Date KCCQ Total Assessment Completed" InitialKCCQTotalScore,
    "Date KCCQ Total Assessment Completed" FollowUpKCCQTotalScore
    where ValidEncounters.relevantPeriod ends 180 days or more before day of end of "Measurement Period"
      and InitialKCCQTotalScore 14 days or less on or before day of end of ValidEncounters.relevantPeriod
      and date from FollowUpKCCQTotalScore during day of Interval[date from InitialKCCQTotalScore + 30 days, date from InitialKCCQTotalScore + 180 days]
    return ValidEncounters
)
```

Has Encounter with Initial and Follow Up KCCQ12 Assessments

```
exists ( from
    "Qualifying Encounters" ValidEncounters,
    "Date KCCQ12 Total Assessment Completed" InitialKCCQ12Date,
    "Date KCCQ12 Total Assessment Completed" FollowUpKCCQ12Date
    where ValidEncounters.relevantPeriod ends 180 days or more before day of end of "Measurement Period"
      and InitialKCCQ12Date 14 days or less on or before day of end of ValidEncounters.relevantPeriod
      and date from FollowUpKCCQ12Date during day of Interval[date from InitialKCCQ12Date + 30 days, date from InitialKCCQ12Date + 180 days]
    return ValidEncounters
)
```

Has Encounter with Initial and Follow Up MLHFQ Assessments

```
exists ( from
    "Qualifying Encounters" ValidEncounters,
    "Date MLHFQ Total Assessment Completed" InitialMLHFQDate,
    "Date MLHFQ Total Assessment Completed" FollowUpMLHFQDate
    where ValidEncounters.relevantPeriod ends 180 days or more before day of end of "Measurement Period"
      and InitialMLHFQDate 14 days or less on or before day of end of ValidEncounters.relevantPeriod
      and date from FollowUpMLHFQDate during day of Interval[date from InitialMLHFQDate + 30 days, date from InitialMLHFQDate + 180 days]
    return ValidEncounters
)
```

Has Encounter with Initial and Follow Up PROMIS10 Assessments

```
exists ( from
   "Qualifying Encounters" ValidEncounters,
   "Date PROMIS10 Total Assessment Completed" InitialPROMIS10Date,
   "Date PROMIS10 Total Assessment Completed" FollowUpPROMIS10Date
   where ValidEncounters.relevantPeriod ends 180 days or more before day of end of "Measurement Period"
     and InitialPROMIS10Date 14 days or less on or before day of end of ValidEncounters.relevantPeriod
     and date from FollowUpPROMIS10Date during day of Interval[date from InitialPROMIS10Date + 30 days, date from InitialPROMIS10Date + 180 days]
   return ValidEncounters
)
```

Has Encounter with Initial and Follow Up PROMIS29 Assessments

```
exists ( from
   "Qualifying Encounters" ValidEncounters,
   "Date PROMIS29 Total Assessment Completed" InitialPROMIS29Date,
   "Date PROMIS29 Total Assessment Completed" FollowUpPROMIS29Date
   where ValidEncounters.relevantPeriod ends 180 days or more before day of end of "Measurement Period"
     and InitialPROMIS29Date 14 days or less on or before day of end of ValidEncounters.relevantPeriod
     and date from FollowUpPROMIS29Date during day of Interval[date from InitialPROMIS29Date + 30 days, date from InitialPROMIS29Date + 180 days]
   return ValidEncounters
)
```

Has Encounter with Initial and Follow Up VR12 Oblique Assessments

```
exists ( from
   "Qualifying Encounters" ValidEncounters,
   "Date VR12 Oblique Total Assessment Completed" InitialVR12ObliqueDate,
   "Date VR12 Oblique Total Assessment Completed" FollowUpVR12ObliqueDate
   where ValidEncounters.relevantPeriod ends 180 days or more before day of end of "Measurement Period"
     and InitialVR12ObliqueDate 14 days or less on or before day of end of ValidEncounters.relevantPeriod
     and date from FollowUpVR12ObliqueDate during day of Interval[date from InitialVR12ObliqueDate + 30 days, date from InitialVR12ObliqueDate + 180 days]
   return ValidEncounters
)
```

Has Encounter with Initial and Follow Up VR12 Orthogonal Assessments

```
exists ( from
   "Qualifying Encounters" ValidEncounters,
   "Date VR12 Orthogonal Total Assessment Completed" InitialVR12OrthogonalDate,
   "Date VR12 Orthogonal Total Assessment Completed" FollowUpVR12OrthogonalDate
   where ValidEncounters.relevantPeriod ends 180 days or more before day of end of "Measurement Period"
     and InitialVR12OrthogonalDate 14 days or less on or before day of end of ValidEncounters.relevantPeriod
     and date from FollowUpVR12OrthogonalDate during day of Interval[date from InitialVR12OrthogonalDate + 30 days, date from InitialVR12OrthogonalDate + 180
days]
   return ValidEncounters
)
```

Has Encounter with Initial and Follow Up VR36 Oblique Assessments

```
exists ( from
   "Qualifying Encounters" ValidEncounters,
   "Date VR36 Oblique Total Assessment Completed" InitialVR36ObliqueDate,
   "Date VR36 Oblique Total Assessment Completed" FollowUpVR36ObliqueDate
   where ValidEncounters.relevantPeriod ends 180 days or more before day of end of "Measurement Period"
     and InitialVR36ObliqueDate 14 days or less on or before day of end of ValidEncounters.relevantPeriod
     and date from FollowUpVR36ObliqueDate during day of Interval[date from InitialVR36ObliqueDate + 30 days, date from InitialVR36ObliqueDate + 180 days]
   return ValidEncounters
)
```

Has Encounter with Initial and Follow Up VR36 Orthogonal Assessments

```
exists ( from
   "Qualifying Encounters" ValidEncounters,
   "Date VR36 Orthogonal Total Assessment Completed" InitialVR36OrthogonalDate,
   "Date VR36 Orthogonal Total Assessment Completed" FollowUpVR36OrthogonalDate
   where ValidEncounters.relevantPeriod ends 180 days or more before day of end of "Measurement Period"
     and InitialVR36OrthogonalDate 14 days or less on or before day of end of ValidEncounters.relevantPeriod
     and date from FollowUpVR36OrthogonalDate during day of Interval[date from InitialVR36OrthogonalDate + 30 days, date from InitialVR36OrthogonalDate + 180
days]
   return ValidEncounters
)
```

Hospice.Has Hospice Services

```
exists ( ["Encounter, Performed": "Encounter Inpatient"] InpatientEncounter
   where ( InpatientEncounter.dischargeDisposition ~ "Discharge to home for hospice care (procedure)"
      or InpatientEncounter.dischargeDisposition ~ "Discharge to healthcare facility for hospice care (procedure)"
   )
     and InpatientEncounter.relevantPeriod ends during day of "Measurement Period"
)
  or exists ( ["Encounter, Performed": "Hospice Encounter"] HospiceEncounter
     where HospiceEncounter.relevantPeriod overlaps day of "Measurement Period"
  )
  or exists ( ["Assessment, Performed": "Hospice care [Minimum Data Set]"] HospiceAssessment
     where HospiceAssessment.result ~ "Yes (qualifier value)"
       and Global."NormalizeInterval" ( HospiceAssessment.relevantDatetime, HospiceAssessment.relevantPeriod ) overlaps day of "Measurement Period"
  )
  or exists ( ["Intervention, Order": "Hospice Care Ambulatory"] HospiceOrder
     where HospiceOrder.authorDatetime during day of "Measurement Period"
  )
  or exists ( ["Intervention, Performed": "Hospice Care Ambulatory"] HospicePerformed
     where Global."NormalizeInterval" ( HospicePerformed.relevantDatetime, HospicePerformed.relevantPeriod ) overlaps day of "Measurement Period"
  )
or exists ( ["Diagnosis": "Hospice Diagnosis"] HospiceCareDiagnosis
     where HospiceCareDiagnosis.prevalencePeriod overlaps day of "Measurement Period"
  )
```

Initial Population

```
AgeInYearsAt(date from start of "Measurement Period") >= 18
```

```
and exists ( ["Diagnosis": "Heart Failure"] HeartFailure
    where HeartFailure.prevalencePeriod overlaps before "Measurement Period"
)
and exists ( "Two Outpatient Encounters during Measurement Period" )
```

Numerator

```
( "Has Encounter with Initial and Follow Up PROMIS10 Assessments" )
  or ( "Has Encounter with Initial and Follow Up PROMIS29 Assessments" )
  or ( "Has Encounter with Initial and Follow Up VR12 Oblique Assessments" )
  or ( "Has Encounter with Initial and Follow Up VR12 Orthogonal Assessments" )
  or ( "Has Encounter with Initial and Follow Up VR36 Oblique Assessments" )
  or ( "Has Encounter with Initial and Follow Up VR36 Orthogonal Assessments" )
  or ( "Has Encounter with Initial and Follow Up MLHFQ Assessments" )
  or ( "Has Encounter with Initial and Follow Up KCCQ12 Assessments" )
  or ( "Has Encounter with Initial and Follow Up KCCQ Domain Score Assessments" )
  or ( "Has Encounter with Initial and Follow Up KCCQ Total Score Assessments" )
```

Qualifying Encounters

```
( ["Encounter, Performed": "Office Visit"]
  union ["Encounter, Performed": "Telephone Visits"]
  union ["Encounter, Performed": "Virtual Encounter"] ) ValidEncounters
  where ValidEncounters.relevantPeriod during day of "Measurement Period"
```

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"]
```

Two Outpatient Encounters during Measurement Period

```
from
  "Qualifying Encounters" OfficeVisit1,
  "Qualifying Encounters" OfficeVisit2
  where OfficeVisit2.relevantPeriod starts 1 day or more after day of end of OfficeVisit1.relevantPeriod
  return OfficeVisit1
```

Functions

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

- code "Discharge to healthcare facility for hospice care (procedure)" ("SNOMEDCT Code (428371000124100)")
- code "Discharge to home for hospice care (procedure)" ("SNOMEDCT Code (428361000124107)")
- code "Emotional score [MLHFQ]" ("LOINC Code (85609-6)")
- code "Hospice care [Minimum Data Set]" ("LOINC Code (45755-6)")
- code "Kansas City Cardiomyopathy Questionnaire - 12 item [KCCQ-12]" ("LOINC Code (86923-0)")
- code "Overall summary score [KCCQ-12]" ("LOINC Code (86924-8)")
- code "Overall summary score [KCCQ]" ("LOINC Code (71940-1)")
- code "Physical limitation score [KCCQ]" ("LOINC Code (72195-1)")
- code "Physical score [MLHFQ]" ("LOINC Code (85618-7)")
- code "PROMIS-10 Global Mental Health (GMH) score T-score" ("LOINC Code (71969-0)")
- code "PROMIS-10 Global Physical Health (GPH) score T-score" ("LOINC Code (71971-6)")
- code "PROMIS-29 Anxiety score T-score" ("LOINC Code (71967-4)")
- code "PROMIS-29 Depression score T-score" ("LOINC Code (71965-8)")
- code "PROMIS-29 Fatigue score T-score" ("LOINC Code (71963-3)")
- code "PROMIS-29 Pain interference score T-score" ("LOINC Code (71961-7)")
- code "PROMIS-29 Physical function score T-score" ("LOINC Code (71959-1)")
- code "PROMIS-29 Satisfaction with participation in social roles score T-score" ("LOINC Code (71957-5)")
- code "PROMIS-29 Sleep disturbance score T-score" ("LOINC Code (71955-9)")
- code "Quality of life score [KCCQ]" ("LOINC Code (72189-4)")
- code "Self-efficacy score [KCCQ]" ("LOINC Code (72190-2)")
- code "Severe cognitive impairment (finding)" ("SNOMEDCT Code (702956004)")
- code "Social limitation score [KCCQ]" ("LOINC Code (72196-9)")
- code "Symptom stability score [KCCQ]" ("LOINC Code (72194-4)")
- code "Total symptom score [KCCQ]" ("LOINC Code (72191-0)")
- code "VR-12 Mental component summary (MCS) score - oblique method T-score" ("LOINC Code (72026-8)")
- code "VR-12 Mental component summary (MCS) score - orthogonal method T-score" ("LOINC Code (72028-4)")
- code "VR-12 Physical component summary (PCS) score - oblique method T-score" ("LOINC Code (72025-0)")
- code "VR-12 Physical component summary (PCS) score - orthogonal method T-score" ("LOINC Code (72027-6)")
- code "VR-36 Mental component summary (MCS) score - oblique method T-score" ("LOINC Code (71990-6)")
- code "VR-36 Mental component summary (MCS) score - orthogonal method T-score" ("LOINC Code (72008-6)")
- code "VR-36 Physical component summary (PCS) score - oblique method T-score" ("LOINC Code (71989-8)")
- code "VR-36 Physical component summary (PCS) score - orthogonal method T-score" ("LOINC Code (72007-8)")
- code "Yes (qualifier value)" ("SNOMEDCT Code (373066001)")
- valueset "Encounter Inpatient" (2.16.840.1.113883.3.666.5.307)
- valueset "Ethnicity" (2.16.840.1.114222.4.11.837)
- valueset "Heart Failure" (2.16.840.1.113883.3.526.3.376)
- valueset "Hospice Care Ambulatory" (2.16.840.1.113883.3.526.3.1584)
- valueset "Hospice Diagnosis" (2.16.840.1.113883.3.464.1003.1165)
- valueset "Hospice Encounter" (2.16.840.1.113883.3.464.1003.1003)
- valueset "Office Visit" (2.16.840.1.113883.3.464.1003.101.12.1001)
- valueset "ONC Administrative Sex" (2.16.840.1.113762.1.4.1)
- valueset "Payer Type" (2.16.840.1.114222.4.11.3591)

- valueset "Race" (2.16.840.1.114222.4.11.836)
- valueset "Telephone Visits" (2.16.840.1.113883.3.464.1003.101.12.1080)
- valueset "Virtual Encounter" (2.16.840.1.113883.3.464.1003.101.12.1089)

Data Criteria (QDM Data Elements)

- "Assessment, Performed: Emotional score [MLHFQ]" using "Emotional score [MLHFQ] (LOINC Code 85609-6)"
- "Assessment, Performed: Hospice care [Minimum Data Set]" using "Hospice care [Minimum Data Set] (LOINC Code 45755-6)"
- "Assessment, Performed: Kansas City Cardiomyopathy Questionnaire - 12 item [KCCQ-12]" using "Kansas City Cardiomyopathy Questionnaire - 12 item [KCCQ-12] (LOINC Code 86923-0)"
- "Assessment, Performed: Overall summary score [KCCQ-12]" using "Overall summary score [KCCQ-12] (LOINC Code 86924-8)"
- "Assessment, Performed: Overall summary score [KCCQ]" using "Overall summary score [KCCQ] (LOINC Code 71940-1)"
- "Assessment, Performed: Physical limitation score [KCCQ]" using "Physical limitation score [KCCQ] (LOINC Code 72195-1)"
- "Assessment, Performed: Physical score [MLHFQ]" using "Physical score [MLHFQ] (LOINC Code 85618-7)"
- "Assessment, Performed: PROMIS-10 Global Mental Health (GMH) score T-score" using "PROMIS-10 Global Mental Health (GMH) score T-score (LOINC Code 71969-0)"
- "Assessment, Performed: PROMIS-10 Global Physical Health (GPH) score T-score" using "PROMIS-10 Global Physical Health (GPH) score T-score (LOINC Code 71971-6)"
- "Assessment, Performed: PROMIS-29 Anxiety score T-score" using "PROMIS-29 Anxiety score T-score (LOINC Code 71967-4)"
- "Assessment, Performed: PROMIS-29 Depression score T-score" using "PROMIS-29 Depression score T-score (LOINC Code 71965-8)"
- "Assessment, Performed: PROMIS-29 Fatigue score T-score" using "PROMIS-29 Fatigue score T-score (LOINC Code 71963-3)"
- "Assessment, Performed: PROMIS-29 Pain interference score T-score" using "PROMIS-29 Pain interference score T-score (LOINC Code 71961-7)"
- "Assessment, Performed: PROMIS-29 Physical function score T-score" using "PROMIS-29 Physical function score T-score (LOINC Code 71959-1)"
- "Assessment, Performed: PROMIS-29 Satisfaction with participation in social roles score T-score" using "PROMIS-29 Satisfaction with participation in social roles score T-score (LOINC Code 71957-5)"
- "Assessment, Performed: PROMIS-29 Sleep disturbance score T-score" using "PROMIS-29 Sleep disturbance score T-score (LOINC Code 71955-9)"
- "Assessment, Performed: Quality of life score [KCCQ]" using "Quality of life score [KCCQ] (LOINC Code 72189-4)"
- "Assessment, Performed: Self-efficacy score [KCCQ]" using "Self-efficacy score [KCCQ] (LOINC Code 72190-2)"
- "Assessment, Performed: Social limitation score [KCCQ]" using "Social limitation score [KCCQ] (LOINC Code 72196-9)"
- "Assessment, Performed: Symptom stability score [KCCQ]" using "Symptom stability score [KCCQ] (LOINC Code 72194-4)"
- "Assessment, Performed: Total symptom score [KCCQ]" using "Total symptom score [KCCQ] (LOINC Code 72191-0)"
- "Assessment, Performed: VR-12 Mental component summary (MCS) score - oblique method T-score" using "VR-12 Mental component summary (MCS) score - oblique method T-score (LOINC Code 72026-8)"
- "Assessment, Performed: VR-12 Mental component summary (MCS) score - orthogonal method T-score" using "VR-12 Mental component summary (MCS) score - orthogonal method T-score (LOINC Code 72028-4)"
- "Assessment, Performed: VR-12 Physical component summary (PCS) score - oblique method T-score" using "VR-12 Physical component summary (PCS) score - oblique method T-score (LOINC Code 72025-0)"
- "Assessment, Performed: VR-12 Physical component summary (PCS) score - orthogonal method T-score" using "VR-12 Physical component summary (PCS) score - orthogonal method T-score (LOINC Code 72027-6)"
- "Assessment, Performed: VR-36 Mental component summary (MCS) score - oblique method T-score" using "VR-36 Mental component summary (MCS) score - oblique method T-score (LOINC Code 71990-6)"
- "Assessment, Performed: VR-36 Mental component summary (MCS) score - orthogonal method T-score" using "VR-36 Mental component summary (MCS) score - orthogonal method T-score (LOINC Code 72008-6)"
- "Assessment, Performed: VR-36 Physical component summary (PCS) score - oblique method T-score" using "VR-36 Physical component summary (PCS) score - oblique method T-score (LOINC Code 71989-8)"
- "Assessment, Performed: VR-36 Physical component summary (PCS) score - orthogonal method T-score" using "VR-36 Physical component summary (PCS) score - orthogonal method T-score (LOINC Code 72007-8)"
- "Diagnosis: Heart Failure" using "Heart Failure (2.16.840.1.113883.3.526.3.376)"
- "Diagnosis: Hospice Diagnosis" using "Hospice Diagnosis (2.16.840.1.113883.3.464.1003.1165)"
- "Diagnosis: Severe cognitive impairment (finding)" using "Severe cognitive impairment (finding) (SNOMEDCT Code 702956004)"
- "Encounter, Performed: Encounter Inpatient" using "Encounter Inpatient (2.16.840.1.113883.3.666.5.307)"
- "Encounter, Performed: Hospice Encounter" using "Hospice Encounter (2.16.840.1.113883.3.464.1003.1003)"
- "Encounter, Performed: Office Visit" using "Office Visit (2.16.840.1.113883.3.464.1003.101.12.1001)"
- "Encounter, Performed: Telephone Visits" using "Telephone Visits (2.16.840.1.113883.3.464.1003.101.12.1080)"
- "Encounter, Performed: Virtual Encounter" using "Virtual Encounter (2.16.840.1.113883.3.464.1003.101.12.1089)"
- "Intervention, Order: Hospice Care Ambulatory" using "Hospice Care Ambulatory (2.16.840.1.113883.3.526.3.1584)"
- "Intervention, Performed: Hospice Care Ambulatory" using "Hospice Care Ambulatory (2.16.840.1.113883.3.526.3.1584)"
- "Patient Characteristic Ethnicity: Ethnicity" using "Ethnicity (2.16.840.1.114222.4.11.837)"
- "Patient Characteristic Payer: Payer Type" using "Payer Type (2.16.840.1.114222.4.11.3591)"
- "Patient Characteristic Race: Race" using "Race (2.16.840.1.114222.4.11.836)"
- "Patient Characteristic Sex: ONC Administrative Sex" using "ONC Administrative Sex (2.16.840.1.113762.1.4.1)"

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

Measure Set	None