CMS826V0

MP 2012

MEASURE DETAILS

HOSPITAL HARM - PRESSURE INJURY

Episode of Care Based Measure

The proportion of inpatient hospitalization for patients 18 years of age or older at the start of the encounter, who suffer the harm of developing a new stage 2, stage 3, stage 4, deep tissue, or unstageable pressure injury

SHOW ALL RESULTS

Initial Population:

```
define "Initial Population":
  "Qualifying Encounter"
```

SHOW RESULT

Denominator:

```
define "Denominator":
  "Initial Population"
```

SHOW RESULT

Denominator Exclusion:

```
define "Denominator Exclusions":
  "Encounter With Deep Tissue Injury Present on Admission"
  union   "Encounter With Stage 2, 3, 4 or Unstageable PI Present on Admission"
  union   "Encounter With Diagnosis of COVID19 Infection"
```

SHOW RESULT

Numerator:

```
define "Numerator":
  "Encounter With New Deep Tissue Pressure Injury"
  union   "Encounter With New Stage 2, 3, 4 or Unstageable PI"
```

SHOW RESULT

Definitions:

```
define "Qualifying Encounter":
  ["Encounter, Performed": "Encounter Inpatient"] InpatientHospitalization
    where InpatientHospitalization.relevantPeriod ends during day of "Measurement Period"
   and    AgeInYearsAt(date from start of Global."HospitalizationWithObservation"
(InpatientHospitalization))>= 18
```

SHOW RESULT

```
define "Encounter With Deep Tissue Pressure Injury Present on Admission by Exam":
  "Qualifying Encounter" InpatientHospitalization
    with ["Physical Exam, Performed": "Pressure Injury Deep Tissue"] PressureInjuryDTI
   such that    Global."NormalizeInterval" ( PressureInjuryDTI.relevantDatetime,
PressureInjuryDTI.relevantPeriod ) starts 72 hours or less on or after start of
Global."HospitalizationWithObservation" ( InpatientHospitalization )
    and      Global."NormalizeInterval" ( PressureInjuryDTI.relevantDatetime,
PressureInjuryDTI.relevantPeriod ) starts during Global."HospitalizationWithObservation" (
InpatientHospitalization )
```

SHOW RESULT

```
define "Encounter With New Deep Tissue Pressure Injury by Exam":
  "Qualifying Encounter" InpatientHospitalization
    with ["Physical Exam, Performed": "Pressure Injury Deep Tissue"] PressureInjuryDTI
   such that    Global."NormalizeInterval" ( PressureInjuryDTI.relevantDatetime,
PressureInjuryDTI.relevantPeriod ) starts more than 72 hours after start of
Global."HospitalizationWithObservation" ( InpatientHospitalization )
    and      Global."NormalizeInterval" ( PressureInjuryDTI.relevantDatetime,
PressureInjuryDTI.relevantPeriod ) starts during Global."HospitalizationWithObservation" (
InpatientHospitalization )
```

SHOW RESULT

```
define "Encounter With Deep Tissue Injury Present on Admission by POA Indicator":
  "Qualifying Encounter" InpatientHospitalization
    where exists ( InpatientHospitalization.diagnoses PressureInjuryDTI
        where PressureInjuryDTI.code in "Pressure Injury Deep Tissue Diagnoses"
    and      PressureInjuryDTI.presentOnAdmissionIndicator in "Present on Admission or Clinically
Undetermined"
    )
   and    InpatientHospitalization.relevantPeriod during Global."HospitalizationWithObservation" (
InpatientHospitalization )
```

SHOW RESULT

```
define "Encounter With New Stage 2, 3, 4 or Unstageable PI by Exam":
  "Qualifying Encounter" InpatientHospitalization
    with ["Physical Exam, Performed": "Pressure Injury Stage 2, 3, 4 or Unstageable"]
Stage234UnstageablePI
   such that    Global."NormalizeInterval" ( Stage234UnstageablePI.relevantDatetime,
Stage234UnstageablePI.relevantPeriod ) starts more than 24 hours after start of
Global."HospitalizationWithObservation" ( InpatientHospitalization )
    and     Global."NormalizeInterval" ( Stage234UnstageablePI.relevantDatetime,
Stage234UnstageablePI.relevantPeriod ) starts during Global."HospitalizationWithObservation" (
InpatientHospitalization )
```

SHOW RESULT

```
define "Encounter With New Stage 2, 3, 4 or Unstageable PI Not POA by Indicator":
  "Qualifying Encounter" InpatientHospitalization
    where exists ( InpatientHospitalization.diagnoses Stage234UnstageablePressureInjury
        where Stage234UnstageablePressureInjury.code in "Pressure Injury Stage 2, 3, 4, or
Unstageable Diagnoses"
     and      Stage234UnstageablePressureInjury.presentOnAdmissionIndicator in "Not Present On
Admission or Documentation Insufficient to Determine"
    )
   and    InpatientHospitalization.relevantPeriod during Global."HospitalizationWithObservation" (
InpatientHospitalization )
```

SHOW RESULT

```
define "Encounter With Stage 2, 3, 4, or Unstageable PI Present on Admission by POA Indicator":
  "Qualifying Encounter" InpatientHospitalization
    where exists ( InpatientHospitalization.diagnoses Stage234UnstageablePI
        where Stage234UnstageablePI.code in "Pressure Injury Stage 2, 3, 4, or Unstageable
Diagnoses"
     and      Stage234UnstageablePI.presentOnAdmissionIndicator in "Present on Admission or
Clinically Undetermined"
    )
   and    InpatientHospitalization.relevantPeriod during Global."HospitalizationWithObservation" (
InpatientHospitalization )
```

SHOW RESULT

```
define "Encounter With New Deep Tissue Pressure Injury Not POA by Indicator":
  "Qualifying Encounter" InpatientHospitalization
    where exists ( InpatientHospitalization.diagnoses PressureInjuryDTI
        where PressureInjuryDTI.code in "Pressure Injury Deep Tissue Diagnoses"
     and      PressureInjuryDTI.presentOnAdmissionIndicator in "Not Present On Admission or
Documentation Insufficient to Determine"
    )
   and    InpatientHospitalization.relevantPeriod during Global."HospitalizationWithObservation" (
InpatientHospitalization )
```

SHOW RESULT

```
define "Encounter With New Deep Tissue Pressure Injury":
  "Encounter With New Deep Tissue Pressure Injury Not POA by Indicator"
   union   "Encounter With New Deep Tissue Pressure Injury by Exam"
```

SHOW RESULT

```
define "Encounter With New Stage 2, 3, 4 or Unstageable PI":
  "Encounter With New Stage 2, 3, 4 or Unstageable PI Not POA by Indicator"
   union   "Encounter With New Stage 2, 3, 4 or Unstageable PI by Exam"
```

SHOW RESULT

```
define "Encounter With Deep Tissue Injury Present on Admission":
  "Encounter With Deep Tissue Injury Present on Admission by POA Indicator"
   union   "Encounter With Deep Tissue Pressure Injury Present on Admission by Exam"
```

SHOW RESULT

```
define "Encounter With Stage 2, 3, 4 or Unstageable PI Present on Admission by Exam":
  "Qualifying Encounter" InpatientHospitalization
    with ["Physical Exam, Performed": "Pressure Injury Stage 2, 3, 4 or Unstageable"]
Stage234UnstageablePI
   such that    Global."NormalizeInterval" ( Stage234UnstageablePI.relevantDatetime,
Stage234UnstageablePI.relevantPeriod ) starts 24 hours or less on or after start of
Global."HospitalizationWithObservation" ( InpatientHospitalization )
    and     Global."NormalizeInterval" ( Stage234UnstageablePI.relevantDatetime,
Stage234UnstageablePI.relevantPeriod ) starts during Global."HospitalizationWithObservation" (
InpatientHospitalization )
```

SHOW RESULT

```
define "Encounter With Stage 2, 3, 4 or Unstageable PI Present on Admission":
  "Encounter With Stage 2, 3, 4, or Unstageable PI Present on Admission by POA Indicator"
   union   "Encounter With Stage 2, 3, 4 or Unstageable PI Present on Admission by Exam"
```

SHOW RESULT

```
define "Encounter With Diagnosis of COVID19 Infection":
  "Qualifying Encounter" InpatientHospitalization
    where exists ( InpatientHospitalization.diagnoses EncounterDiagnosis
        where EncounterDiagnosis.code in "COVID 19"
  )
```

SHOW RESULT

Functions:

```
/*calculates the difference in calendar days between the start and end of the given
interval.*/define function "LengthInDays"(Value Interval<DateTime> ):
  difference in days between start of Value and end of Value
```

```
/*@description: Returns an interval of date values extracted from the input interval of date-time
values
@comment: This function returns an interval constructed using the `date from` extractor on the
start
and end values of the input date-time interval. Note that using a precision specifier as part of a
timing phrase is preferred to communicate intent to perform day-level comparison, as well as for
general readability.*/define function "ToDateInterval"(period Interval<DateTime> ):
  Interval[date from start of period, date from end of period]
```

```
/*returns list of all locations within an encounter, including locations for immediately prior ED
visit.*/define function "HospitalizationLocations"(Encounter "Encounter, Performed" ):
  Encounter Visit
    let EDVisit: Last(["Encounter, Performed": "Emergency Department Visit"] LastED
        where LastED.relevantPeriod ends 1 hour or less on or before start of Visit.relevantPeriod
        sort by
        end of relevantPeriod
  )
    return if EDVisit is null then Visit.facilityLocations
   else    flatten { EDVisit.facilityLocations, Visit.facilityLocations }
```

```
/*Returns the arrival time in the ED for the encounter.*/define function
"EmergencyDepartmentArrivalTime"(Encounter "Encounter, Performed" ):
  start of First(("HospitalizationLocations"(Encounter))HospitalLocation
      where HospitalLocation.code in "Emergency Department Visit"
      sort by start of locationPeriod
  ).locationPeriod
```

```
/*Hospitalization returns the total interval for admission to discharge for the given encounter, or
for the admission of any immediately prior emergency department visit to the discharge of the given
encounter.*/define function "Hospitalization"(Encounter "Encounter, Performed" ):
  Encounter Visit
    let EDVisit: Last(["Encounter, Performed": "Emergency Department Visit"] LastED
        where LastED.relevantPeriod ends 1 hour or less on or before start of Visit.relevantPeriod
        sort by
        end of relevantPeriod
  )
    return Interval[Coalesce(start of EDVisit.relevantPeriod, start of Visit.relevantPeriod),
    end of Visit.relevantPeriod]
```

```
/*Returns admission time for an encounter or for immediately prior emergency department
visit.*/define function "HospitalAdmissionTime"(Encounter "Encounter, Performed" ):
  start of "Hospitalization"(Encounter)
```

```
/*Returns earliest arrival time for an encounter including any prior ED visit.*/define function
"HospitalArrivalTime"(Encounter "Encounter, Performed" ):
  start of First(("HospitalizationLocations"(Encounter))HospitalLocation
      sort by start of locationPeriod
  ).locationPeriod
```

```
/*Returns the length of stay in days (i.e. the number of days between admission and discharge) for
the given encounter, or from the admission of any immediately prior emergency department visit to
the discharge of the encounter*/define function "HospitalizationLengthofStay"(Encounter "Encounter,
Performed" ):
  LengthInDays("Hospitalization"(Encounter))
```

```
/*Returns the latest departure time for encounter including any prior ED visit.*/define function
"HospitalDepartureTime"(Encounter "Encounter, Performed" ):
  end of Last(("HospitalizationLocations"(Encounter))HospitalLocation
      sort by start of locationPeriod
  ).locationPeriod
```

```
/*Hospital Discharge Time returns the discharge time for an encounter*/define function
"HospitalDischargeTime"(Encounter "Encounter, Performed" ):
  end of Encounter.relevantPeriod
```

```
/*Hospitalization with Observation and Outpatient Surgery Service returns the total interval from
the start of any immediately prior emergency department visit, outpatient surgery visit or
observation visit to the discharge of the given encounter.*/define function
"HospitalizationWithObservationAndOutpatientSurgeryService"(Encounter "Encounter, Performed" ):
  Encounter Visit
    let ObsVisit: Last(["Encounter, Performed": "Observation Services"] LastObs
        where LastObs.relevantPeriod ends 1 hour or less on or before start of Visit.relevantPeriod
        sort by
        end of relevantPeriod
    ),
    VisitStart: Coalesce(start of ObsVisit.relevantPeriod, start of Visit.relevantPeriod),
    EDVisit: Last(["Encounter, Performed": "Emergency Department Visit"] LastED
        where LastED.relevantPeriod ends 1 hour or less on or before VisitStart
        sort by
        end of relevantPeriod
    ),
    VisitStartWithED: Coalesce(start of EDVisit.relevantPeriod, VisitStart),
    OutpatientSurgeryVisit: Last(["Encounter, Performed": "Outpatient Surgery Service"]
LastSurgeryOP
        where LastSurgeryOP.relevantPeriod ends 1 hour or less on or before VisitStartWithED
        sort by
        end of relevantPeriod
  )
    return Interval[Coalesce(start of OutpatientSurgeryVisit.relevantPeriod, VisitStartWithED),
    end of Visit.relevantPeriod]
```

```
/*Hospitalization with Observation returns the total interval from the start of any immediately
prior emergency department visit through the observation visit to the discharge of the given
encounter*/define function "HospitalizationWithObservation"(Encounter "Encounter, Performed" ):
  Encounter Visit
    let ObsVisit: Last(["Encounter, Performed": "Observation Services"] LastObs
        where LastObs.relevantPeriod ends 1 hour or less on or before start of Visit.relevantPeriod
        sort by
        end of relevantPeriod
    ),
    VisitStart: Coalesce(start of ObsVisit.relevantPeriod, start of Visit.relevantPeriod),
    EDVisit: Last(["Encounter, Performed": "Emergency Department Visit"] LastED
        where LastED.relevantPeriod ends 1 hour or less on or before VisitStart
        sort by
        end of relevantPeriod
  )
    return Interval[Coalesce(start of EDVisit.relevantPeriod, VisitStart),
    end of Visit.relevantPeriod]
```

```
/*Hospitalization with Observation Length of Stay returns the length in days from the start of any
immediately prior emergency department visit through the observation visit to the discharge of the
given encounter*/define function "HospitalizationWithObservationLengthofStay"(Encounter "Encounter,
Performed" ):
  "LengthInDays"("HospitalizationWithObservation"(Encounter))
```

```
/*First Inpatient Intensive Care Unit returns the first intensive care unit for the given
encounter, without considering any immediately prior emergency department visit.*/define function
"FirstInpatientIntensiveCareUnit"(Encounter "Encounter, Performed" ):
  First((Encounter.facilityLocations)HospitalLocation
      where HospitalLocation.code in "Intensive Care Unit"
    and     HospitalLocation.locationPeriod during Encounter.relevantPeriod
      sort by start of locationPeriod
  )
```

```
/*Given a datetime and a period, returns the period (if a period is provided) or the interval
beginning and ending on the datetime (if a datetime is provided)*/define function
"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>
```

```
/*Given an interval, return true if the interval has a starting boundary specified (i.e. the start
of the interval is not null and not the minimum DateTime value)*/define function "HasStart"(period
Interval<DateTime> ):
  not ( start of period is null
    or    start of period = minimum DateTime
  )
```

```
/*Given an interval, return true if the interval has an ending boundary specified (i.e. the end of
the interval is not null and not the maximum DateTime value)*/define function "HasEnd"(period
Interval<DateTime> ):
  not (
    end of period is null
   or
      end of period = maximum DateTime
  )
```

```
/*Given an interval, return the ending point if the interval has an ending boundary specified,
otherwise, return the starting point*/define function "Latest"(period Interval<DateTime> ):
  if ( HasEnd(period)) then
  end of period
   else   start of period
```

```
/*Given an interval, return the starting point if the interval has a starting boundary specified,
otherwise, return the ending point*/define function "Earliest"(period Interval<DateTime> ):
  if ( HasStart(period)) then start of period
   else
  end of period
```

```
/*Given a pointInTime or period, if the pointInTime is specified, returns the pointInTime, returns
the ending point of the period if the period has an ending boundary specified, otherwise returns
the starting point of the interval*/define function "LatestOf"(pointInTime DateTime, period
Interval<DateTime> ):
  Latest(NormalizeInterval(pointInTime, period))
```

```
/*Given a pointInTime or period, if the pointInTime is specified, returns the pointInTime, returns
the starting point of the period if the period has a starting boundary specified, otherwise returns
the ending point of the period*/define function "EarliestOf"(pointInTime DateTime, period
Interval<DateTime> ):
  Earliest(NormalizeInterval(pointInTime, period))
```

Unused Definitions: >

TERMINOLOGY

COVID 19
2.16.840.1.113762.1.4.1248.140
Draft

Emergency Department Visit
2.16.840.1.113883.3.117.1.7.1.292
Draft

Encounter Inpatient
2.16.840.1.113883.3.666.5.307
Draft

Ethnicity
2.16.840.1.114222.4.11.837
Draft

Intensive Care Unit
2.16.840.1.113762.1.4.1029.206
Draft

Not Present On Admission or Documentation Insufficient to Determine
2.16.840.1.113762.1.4.1147.198
Draft

ONC Administrative Sex
2.16.840.1.113762.1.4.1
Draft

Observation Services
2.16.840.1.113762.1.4.1111.143
Draft

Outpatient Surgery Service
2.16.840.1.113762.1.4.1110.38
Draft

Payer
2.16.840.1.114222.4.11.3591
Draft

Present on Admission or Clinically Undetermined
2.16.840.1.113762.1.4.1147.197
Draft

Pressure Injury Deep Tissue Diagnoses
2.16.840.1.113762.1.4.1147.194
Draft

Pressure Injury Deep Tissue
2.16.840.1.113762.1.4.1147.112
Draft

Pressure Injury Stage 2, 3, 4 or Unstageable
2.16.840.1.113762.1.4.1147.113
Draft

Pressure Injury Stage 2, 3, 4, or Unstageable Diagnoses
2.16.840.1.113762.1.4.1147.196
Draft

Race
2.16.840.1.114222.4.11.836
Draft

TEST PATIENTS

100

PASS 54 /54

100

› COVERAGE

DENEXFail InjuryIsAfterEncounterEnd	PASS
DENEXPass 2 DTIs1POAofW1After72 hrs.	PASS
DENEXPass 3PIs1DTIPOAYand2PIsLater arrival	PASS
DENEXPass COVIDDuringEncounter	PASS
DENEXPass DTIPOAStage3LT24 hrs	PASS
DENEXPass DTIPOAexactly72hours	PASS
DENEXPass DTISameTimeAsEncounterStart	PASS

DENEXPass DTIWithin72Hours	PASS
DENEXPass DTIandCovidDuringEnc	PASS
DENEXPass DTIbyExamLT72ofArrival	PASS
DENEXPass DTIexactly72HrsfromArrival	PASS
DENEXPass EDwithDTIbyExam	PASS
DENEXPass InjuryInED	PASS
DENEXPass InjuryStartSameTimeAsEncounterStart	PASS
DENEXPass Stage2PIwithDTIGT72hrs	PASS
DENEXPass Stage2PIwithDTILT72hrs(2)	PASS
DENEXPass Stage2byExamLT24ofArrival	PASS
DENEXPass Stage2within24 hrs	PASS
DENEXPass Stage3POAisW	PASS
DENEXPass Stage3byExamLT24Hrs	PASS
DENEXPass TwoPIsStage3OnePOA	PASS
DENEXPass UnstageablePIexactly24hours	PASS
DENOMPass Age18EDEnc	PASS
DENOMPass Age18StartEnc	PASS
DENOMPass Age19EDObsEnc	PASS
DENOMPass EncounterEndsinMP	PASS
DENOMPass PressureInjuryNotInEncounter	PASS
IPPFail Age17StartEnc	PASS
IPPFail EncounterEarly	PASS
IPPFail EncounterEndsAfterMP	PASS
IPPFail EncounterLate	PASS
IPPFail EncounterStartDateMissing	PASS
IPPFail NoEncounter	

IPPFail OtherEncounter	PASS
NUMERFail DTIPriorToEncounter	PASS
NUMERFail InjuryInObservationNotCounted	PASS
NUMERFail PIStartsBeforeEncounter	PASS
NUMERPass DTI72hrsand1minutefromObservationStart	PASS
NUMERPass DTIGT72Hrs	PASS
NUMERPass DTIGT72HrsAndNotPOA	PASS
NUMERPass DTIGT72hrsMissingPOAIndicatorOfNo	PASS
NUMERPass DTINewHarm	PASS
NUMERPass DTINotPOA	PASS
NUMERPass NewDTIPOAEqualsNo	PASS
NUMERPass NonstageableNewPOAisU	PASS
NUMERPass OneEncTwoHarms	PASS
NUMERPass PInjuryNotPOADxLater	PASS
NUMERPass PInjuryNotPOANoDxLater	PASS
NUMERPass Stage2New	PASS
NUMERPass Stage3GT24 HrsPOAisNo	PASS
NUMERPass Stage3New	PASS
NUMERPass ThreeEncountersTwoQualDiag	PASS
NUMERPass TwoEncountersOneDiag	PASS
NUMERPass TwoEncountersOneHarm	PASS