BULK FHIR Igniting Quality Measure

Dynamic FHIR for Quality Measures

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Senior Architect
7/21/2021
INTEROPERABILITY IN THE REAL WORLD
Data Exchange

- C-CDA containing USCDIV1 data are being exchanged across the Healthcare Community in an effort to improve and facilitate patient care.
  - Provider to Patient
  - Provider to Provider
  - Provider/Hospital to HIE
- Like it or not it’s the data we have from EHRs
Clinical Care Summary

Patient: John Smith
Previous Name: 
DOB: July 8, 1971
Sex: Male

Medications

<table>
<thead>
<tr>
<th>Medication</th>
<th>Medication Code</th>
<th>Medication CodeSystem</th>
<th>Start Date</th>
<th>Stop Date</th>
<th>Route</th>
<th>Dose</th>
<th>Status</th>
<th>Fill Instructions</th>
<th>Author Name</th>
<th>Author Organization</th>
<th>Author TimeStamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buprenorphine 2 MG / Naloxone 0.5 MG Oral Strip</td>
<td>1010600</td>
<td>RxNorm</td>
<td>2019-01-17</td>
<td>2018-03-17</td>
<td>Oral</td>
<td>1 Unit</td>
<td>Active</td>
<td>Dr Davis Albert</td>
<td>Neighborhood Physicians Practice</td>
<td>201901170916500</td>
<td></td>
</tr>
<tr>
<td>Flurazepam Hydrochloride 15 MG Oral Capsule</td>
<td>1298088</td>
<td>RxNorm</td>
<td>2019-01-17</td>
<td>2019-03-17</td>
<td>INTRAVENOUS</td>
<td>1 Unit Two times daily</td>
<td>Active</td>
<td>Dr Davis Albert</td>
<td>Neighborhood Physicians Practice</td>
<td>201901170808000</td>
<td></td>
</tr>
<tr>
<td>Acetaminophen 300 MG / Oxycodone Hydrochloride 10 MG Oral Tablet</td>
<td>1014599</td>
<td>RxNorm</td>
<td>2019-01-17</td>
<td>2019-03-17</td>
<td>INTRAVENOUS</td>
<td>1 Unit</td>
<td>Active</td>
<td>Dr Davis Albert</td>
<td>Neighborhood Physicians Practice</td>
<td>201901170808000</td>
<td></td>
</tr>
</tbody>
</table>

Encounters/encounter diagnoses

<table>
<thead>
<tr>
<th>Encounter Name</th>
<th>Encounter Code</th>
<th>Diagnosis Code</th>
<th>Diagnosis Name</th>
<th>Diagnosis CodeSystem</th>
<th>Date of Diagnosis</th>
<th>Service Delivery Location</th>
<th>Author Name</th>
<th>Author Organization</th>
<th>Author TimeStamp</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital admission (procedure)</td>
<td>32485007</td>
<td>Rs50.9</td>
<td>Fever, Unspecified</td>
<td>ICD-10</td>
<td>2019-01-16</td>
<td>Neighborhood Physicians Practice 2472, Rocky place, Beaverton, OR, 97006</td>
<td>Dr Davis Albert2</td>
<td>Neighborhood Physicians Practice</td>
<td>20190116</td>
<td>Narrative text for Encounter Note here.</td>
</tr>
</tbody>
</table>
Bulk FHIR and DB storage
CMS 506: Safe Use of Opioids

```hl7
define "Inpatient Encounter with Age Greater than or Equal to 18":
    Global. "Inpatient Encounter" Encounter/Inpatient
    with ["Patient!"] BirthDate
    such that Global.CalendarAgeInYears(THIRHelpers.ToDate(Patient.BirthDate), start of FHIRHelpers.Tc

define "Discharge":
    ["MedicationRequest": "Schedule II and Schedule III Opioids"] OpioidDischarge
    where exists (OpioidDischarge.category with FHIRHelpers.ToConcept(C) = "Discharge")
    and OpioidDischarge.intensity = 'plan'

define "Benzodiazepine at Discharge":
    ["MedicationRequest": "Schedule IV Benzodiazepines"] BenzodiazepineDischarge
    where exists (BenzodiazepineDischarge.category with FHIRHelpers.ToConcept(C) = "Discharge")
    and BenzodiazepineDischarge.intensity = 'plan'

define "Encounter with an Opioid or Benzodiazepine at Discharge":
    "Inpatient Encounter with Age Greater than or Equal to 18" InpatientEncounter
    with ("Opioid at Discharge" union "Benzodiazepine at Discharge") OpioidBenzodiazepine
    such that FHIRHelpers.ToDateTime(OpioidBenzodiazepine.authoredOn) during (InpatientEncounter.period)

define "Initial Population":
    "Encounter with an Opioid or Benzodiazepine at Discharge"

define "Denominator":
    "Initial Population"

define "Denominator Exclusion":
    ("Inpatient Encounter with Age Greater than or Equal to 18" InpatientEncounter
    with [Condition: "All Primary and Secondary Cancer"] Cancer
    such that Global. "Normalize Interval"(Cancer.onset) overlaps InpatientEncounter.period)

    union ("Inpatient Encounter with Age Greater than or Equal to 18" InpatientEncounter
    with ["ServiceRequest": "Palliative Care"]
    union ("ServiceRequest": "Hospice Care") PalliativeOrHospiceCareOrder
    such that PalliativeOrHospiceCareOrder.intensity = 'order'
    and FHIRHelpers.ToDateTime(PalliativeOrHospiceCareOrder.authoredOn) during (InpatientEncounter.period)

    union ("Inpatient Encounter with Age Greater than or Equal to 18" InpatientEncounter
    with ["Procedure": "Palliative Care"]
    union ("Procedure": "Hospice Care") PalliativeOrHospiceCarePerformed
    such that Global. "Normalize Interval"(PalliativeOrHospiceCarePerformed.performed)
    overlaps InpatientEncounter.period)

define "Encounter with a Concurrent Opioid and Benzodiazepine at Discharge":
    "Inpatient Encounter with Age Greater than or Equal to 18" InpatientEncounter
    with ("Opioid at Discharge" union "Benzodiazepine at Discharge") OpioidBenzodiazepine
```

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