

BULK FHIR Igniting Quality Measure

Dynamic FHIR for
Quality Measures

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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



C-CDA

Clinical Care Summary

Patient John Smith
Previous Name
D.O.B July 8, 1971 **Sex** Male

Patient Detail

You can arrange the document to your preferences. Move sections by dragging them. Hide by closing. Use the TOC to review.

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Collapse/Expand all

Medications

Medication	Medication Code	Medication CodeSystem	Start Date	Stop Date	Route	Dose	Status	Fill Instructions	Author Name	Author Organization	Author TimeStamp
Buprenorphine 2 MG / Naloxone 0.5 MG Oral Strip	1010600	RxNorm	2019-01-17	2019-03-17	Oral	1 Unit As needed	Active		Dr Davis Albert	Neighborhood Physicians Practice	20190117091500
Flurazepam Hydrochloride 15 MG Oral Capsule	1298088	RxNorm	2019-01-17	2019-03-17	INTRAVENOUS	1 Unit Two times daily	Active		Dr Davis Albert	Neighborhood Physicians Practice	20190117080000
Acetaminophen 300 MG / Oxycodone Hydrochloride 10 MG Oral Tablet	1014599	RxNorm	2019-01-17	2019-03-17	INTRAVENOUS	1 Unit Once a week	Active		Dr Davis Albert	Neighborhood Physicians Practice	20190117080000

Encounters/encounter diagnoses

Encounter Name	Encounter Code	Diagnosis Code	Diagnosis Name	Diagnosis CodeSystem	Date of Diagnosis	Service Delivery Location	Author Name	Author Organization	Author TimeStamp	Note
Hospital admission (procedure)	32485007	R50.9	Fever, Unspecified	ICD-10	2019-01-16	Neighborhood Physicians Practice 2472, Rocky place, Beaverton, OR, 97006	Dr Davis2 Albert2	Neighborhood Physicians Practice	20190116	Narrative text for Encounter Note here.



Bulk FHIR and DB storage

```
1
2
3 "resourceType": "Bundle",
4 "id": "tests:nuher-EXM506-bundle",
5 "type": "transaction",
6 "entry": [
7
8   "resource": {
9     "resourceType": "Encounter",
10    "id": "nuher-EXM506-1",
11    "meta": {
12      "profile": [ "http://hl7.org/fhir/us/core/StructureDefinition/us-core-encounter" ]
13    },
14    "status": "finished",
15    "class": {
16      "system": "http://terminology.hl7.org/CodeSystem/v3-ActCode",
17      "code": "IMP",
18      "display": "Inpatient encounter"
19    },
20    "type": {
21      "coding": [
22        {
23          "system": "http://snomed.info/sct",
24          "code": "3388687",
25          "display": "Hospital admission (procedure)"
26        }
27      ]
28    },
29    "subject": {
30      "reference": "Patient/nuher-EXM506"
31    },
32    "period": {
33      "start": "2019-01-18T08:30:00-07:00",
34      "end": "2019-01-20T08:30:00-07:00"
35    },
36    "request": [
37      {
38        "method": "PUT",
39        "url": "Encounter/nuher-EXM506-1"
40      }
41    ]
42  },
43
44  "resource": {
45    "resourceType": "MedicationRequest",
46    "id": "nuher-EXM506-2",
47    "status": "completed",
48    "intent": "plan",
49    "category": {
50      "coding": [
51        {
52          "system": "http://terminology.hl7.org/CodeSystem/medicationrequest-category",
53          "code": "discharge",
54          "display": "Discharge"
55        }
56      ]
57    },
58    "medicationCodeableConcept": {
59      "coding": [
60        {
61          "system": "http://www.nlm.nih.gov/research/umls/rxnorm",
62          "code": "1018060",
63          "display": "Buprenorphine 2 MG / Naloxone 0.5 MG Oral Strip"
64        }
65      ]
66    },
67    "subject": {
68      "reference": "Patient/nuher-EXM506"
69    },
70    "reference": {
71      "reference": "Encounter/nuher-EXM506-1"
72    }
73  }
74 ]
```



```
***** Script for selectTopRows command from SSIS *****
SELECT TOP (5000) [logId]
[CLIENT_ID]
[SEC_TYPE]
[SEC_TYPE]
[0001]
[0002]
[0003]
[0004]
[0005]
[0006]
[0007]
[0008]
[0009]
[0010]
[0011]
[0012]
[0013]
[0014]
[0015]
[0016]
[0017]
[0018]
[0019]
[0020]
[0021]

100% Messages
Results
logId CLIENT_ID REC_TYPE SEC_TYPE D001
1 5055263c3c6f4b4822a773d55e6db FHR Bundle { "resourceType": "Bundle", "id": "ons154-4-nuher", "type": "transaction", "entry": [ { "resource": { "resourceType": "Patient", "id": "5055263c3c6f4b4822a773d55e6db", "name": { "family": "denom", "given": "nuher" } } } ] }
2 7c937218-9ea1-4c51-a193-ecb1e226776 FHR Bundle { "resourceType": "Bundle", "id": "ons164-4-denom", "type": "transaction", "entry": [ { "resource": { "resourceType": "Patient", "id": "7c937218-9ea1-4c51-a193-ecb1e226776", "name": { "family": "denom", "given": "nuher" } } } ] }
3 4 denes1-EXM506 FHR Bundle { "resourceType": "Bundle", "id": "tests:denes1-EXM506bundle", "type": "transaction", "entry": [ { "resource": { "resourceType": "Condition", "id": "denes1-EXM506-2", "status": "active", "category": { "coding": [ { "system": "http://snomed.info/sct", "code": "388875009", "display": "Discharge" } ] }, "code": { "text": "Buprenorphine 2 MG / Naloxone 0.5 MG Oral Strip" } } } ] }
4 4 denes2-EXM506 FHR Bundle { "resourceType": "Bundle", "id": "tests:denes2-EXM506bundle", "type": "transaction", "entry": [ { "resource": { "resourceType": "Encounter", "id": "denes2-EXM506-1", "status": "finished", "class": { "system": "http://terminology.hl7.org/CodeSystem/v3-ActCode", "code": "IMP", "display": "Inpatient encounter" }, "type": { "coding": [ { "system": "http://snomed.info/sct", "code": "3388687", "display": "Hospital admission (procedure)" } ] }, "subject": { "reference": "Patient/nuher-EXM506" }, "period": { "start": "2019-01-18T08:30:00-07:00", "end": "2019-01-20T08:30:00-07:00" }, "request": [ { "method": "PUT", "url": "Encounter/nuher-EXM506-1" } ] } } ] }
5 5 denom-EXM506 FHR Bundle { "resourceType": "Bundle", "id": "tests:denom-EXM506bundle", "type": "transaction", "entry": [ { "resource": { "resourceType": "Encounter", "id": "denom-EXM506-1", "status": "finished", "class": { "system": "http://terminology.hl7.org/CodeSystem/v3-ActCode", "code": "IMP", "display": "Inpatient encounter" }, "type": { "coding": [ { "system": "http://snomed.info/sct", "code": "3388687", "display": "Hospital admission (procedure)" } ] }, "subject": { "reference": "Patient/nuher-EXM506" }, "period": { "start": "2019-01-18T08:30:00-07:00", "end": "2019-01-20T08:30:00-07:00" }, "request": [ { "method": "PUT", "url": "Encounter/nuher-EXM506-1" } ] } } ] }
6 6 nuher-EXM506 FHR Bundle { "resourceType": "Bundle", "id": "tests:nuher-EXM506bundle", "type": "transaction", "entry": [ { "resource": { "resourceType": "Encounter", "id": "nuher-EXM506-1", "status": "finished", "class": { "system": "http://terminology.hl7.org/CodeSystem/v3-ActCode", "code": "IMP", "display": "Inpatient encounter" }, "type": { "coding": [ { "system": "http://snomed.info/sct", "code": "3388687", "display": "Hospital admission (procedure)" } ] }, "subject": { "reference": "Patient/nuher-EXM506" }, "period": { "start": "2019-01-18T08:30:00-07:00", "end": "2019-01-20T08:30:00-07:00" }, "request": [ { "method": "PUT", "url": "Encounter/nuher-EXM506-1" } ] } }, { "resource": { "resourceType": "MedicationRequest", "id": "nuher-EXM506-2", "status": "completed", "intent": "plan", "category": { "coding": [ { "system": "http://terminology.hl7.org/CodeSystem/medicationrequest-category", "code": "discharge", "display": "Discharge" } ] }, "medicationCodeableConcept": { "coding": [ { "system": "http://www.nlm.nih.gov/research/umls/rxnorm", "code": "1018060", "display": "Buprenorphine 2 MG / Naloxone 0.5 MG Oral Strip" } ] }, "subject": { "reference": "Patient/nuher-EXM506" }, "reference": { "reference": "Encounter/nuher-EXM506-1" } } } ] }
```



CMS 506: Safe Use of Opioids

```
define "Inpatient Encounter with Age Greater than or Equal to 18":
  Global."Inpatient Encounter" EncounterInpatient
  with ["Patient"] BirthDate
  such that Global.CalendarAgeInYearsAt(FHIRHelpers.ToDate(Patient.birthDate), start of FHIRHelpers.To

define "Opioid at Discharge":
  ["MedicationRequest": "Schedule II and Schedule III Opioids"] OpioidsDischarge
  where exists (OpioidsDischarge.category C where FHIRHelpers.ToConcept(C) ~ "Discharge")
  and OpioidsDischarge.intent = 'plan'

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

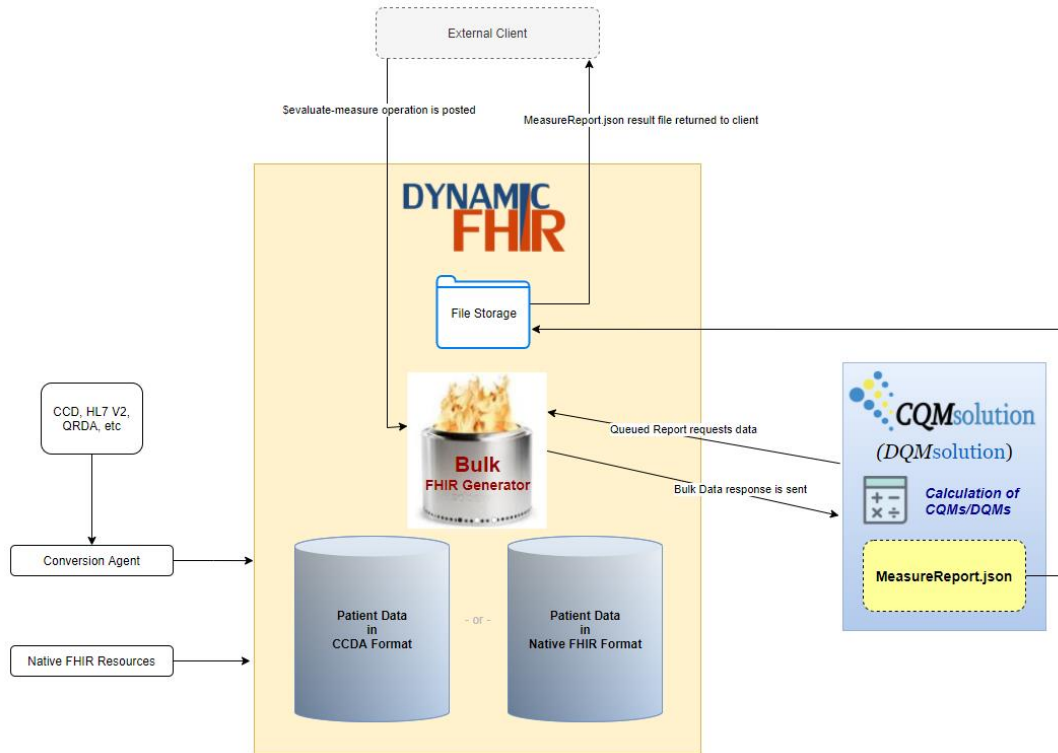
  union ("Inpatient Encounter with Age Greater than or Equal to 18" InpatientEncounter
  with (["ServiceRequest": "Palliative Care"]
  union ["ServiceRequest": "Hospice Care"]) PalliativeOrHospiceCareOrder
  such that PalliativeOrHospiceCareOrder.intent = 'order'
  and FHIRHelpers.ToDateTime(PalliativeOrHospiceCareOrder.authoredOn)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



Making use of Data we have until FHIR is everywhere.



DEMO

Dynamic Health IT



- ✓ 2015 Edition Cures Update certified to support all latest eCQMs
- ✓ Imports from QRDA I or vendor-supplied data using variety of methods, including API
- ✓ Generates outputs for MU, IQR, MIPS/QPP, Joint Commission, and Primary Care First
- ✓ Visual dashboards for viewing measure progress
- ✓ Patient drill-down screens shows how patient meets measure logic
- ✓ Certified for 170.315(c)(1-4)



- ✓ Certified for 2015 Edition Cures Update, meets Promoting Interoperability and MACRA/MIPS requirements.
- ✓ Supports C-CDAs: TOC, VDT, Batch, USCDiv1, Care Plan, Referral Notes and Summary of Care
- ✓ Creates, receives and parses HL7 messages required for MU, including Public Health, Immunization and Lab results
- ✓ Integrates with MaxMD or any certified HISP for Direct secure messaging
- ✓ CEHRT: 170.315(b)(1,4-8)(f)(1,2)



- ✓ API provides leading-edge interoperability while meeting ONC 2015 Cures Update EHR certification requirements
- ✓ Makes USCDiv1 EHR data readily available using universal XML and JSON web standards
- ✓ Can be reached through a RESTful protocol in which each FHIR resource has known URL
- ✓ Data is populated via receipt of a version 2.1 CCDA and secured using the HIPAA-compliant OAUTH standard
- ✓ CEHRT: 170.315(g)(7-9)



- ✓ Enables patients to View, Download and Transmit clinical documents
- ✓ Secure Messaging between provider and patient for EP and EH
- ✓ Automatically triggers activation and reminder emails to patient ; bulk messaging
- ✓ Rapid implementation; patient email address not required
- ✓ MIPS/PI Utilization Reporting
- ✓ Mobile-friendly, Spanish available
- ✓ CEHRT: 170.315(e)(1-3)



- ✓ Turnkey HL7 & Clinical Document Architecture solutions for 1.1 and 2.1 CCDA
- ✓ Intuitive easy to use, browser-based UI
- ✓ Very affordable but outstanding message throughput & scalability
- ✓ Easy to map & transform messages using HL7 & Clinical Document objects with VBScript or JavaScript



- ✓ Qualified Registry for MIPS submission
- ✓ Instant display of MIPS score trended over time
- ✓ Captures PI, IA and Cost data
- ✓ With CQMsolution, provides seamless end-to-end MIPS solution

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