Health Informatics on FHIR

Interoperability
HL7’s Mission

“a not-for-profit, ANSI-accredited standards developing organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery and evaluation of health services”
HL7 Evolution
2011: Fresh Look
FHIR: Fast Healthcare Interoperability Resources

- **Content:** Focus on *simplicity* (80/20) – bite-sized v. monolithic
- **Technology:** Use *cross-industry internet technologies* ideal for mobile and web platforms
- **Community:** Develop standards incrementally with *early input from implementers* through real-world projects with committed and ongoing involvement
- **Privacy & Security:** Adopt best practices, *don’t re-invent the wheel*
A Foundation for Broad Interoperability
FHIR Clinical Resources

General
- AllergyIntolerance
- Condition (Problem)
- Procedure
- ClinicalImpression
- FamilyMemberHistory
- RiskAssessment
- DetectedIssue

Care Provision
- CarePlan
- Goal
- ReferralRequest
- ProcedureRequest
- NutritionOrder
- VisionPrescription

Medication & Immunization
- Medication
- MedicationOrder
- MedicationAdministration
- MedicationDispense
- MedicationStatement
- Immunization
- ImmunizationRecommendation

Diagnostics
- Observation
- DiagnosticReport
- DiagnosticOrder
- Specimen
- BodySite
- ImagingStudy
Patient Resource

https://fhirtest.uhn.ca/baseDstu2/Patient?id=201670

API

JSON Object
Facile Program Development

GET [base]/Observation?_query=obs.stats&code=8480-6&03/03/2016/07:00:00&03/03/2016/12:00:00
GET [base]/Observation?_query=obs.stats&code=8462-4&03/03/2016/07:00:00&03/03/2016/12:00:00
Universal App Platform: SMART on FHIR
Tight Integration Into Workflow/Process
Automated Initiation of CDS

Rx View

Patient: Daniel X. Adams ID: smart-1288992

Treating:
Essential hypertension

Medication:
Search for a drug...
Furosemide 80 MG Oral Tablet [Lasix]

Take 1 pill by mouth daily

Start date: 2017-10-10
End date: 2017-11-10

Cost: $25. Save $19 with a generic.
Source: CDS Public Use Files

CDS Service Exchange

Select a Service:
http://hooks.fhir.me:8082/cds-services/cms-price-check

Request

Response

```json
{
  "cards": [
    {
      "summary": "Cost: $25. Save $19 with a generic.",
      "source": {
        "label": "CMS Public Use Files",
        "indicator": "info",
        "suggestions": {
          "label": "change to generic",
          "uid": "123",
          "actions": {
            "type": "create",
            "resource": {
              "resourceType": "MedicationOrder",
              "status": "draft",
              "patient": {
                "reference": "Patient/SMART-1288992"
              },
              "dosageInstruction": {
                "dose": 1,
                "unit": "tablet",
                "system": "http://unitsofmeasure.org",
                "code": "(pill)"
              }
            }
          }
        }
      }
    }
  ]
}```
It’s Happening for Real!
App Orchard Developer Programs
Want to create and sell apps as a member of the Epic developer community?
Click the “I’m Interested” button below to request a developer account. Once you receive an email to create your account, you can log in to learn more about App Orchard’s three programs and pick which one you’d like to enroll in:

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<thead>
<tr>
<th>Bronze</th>
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<tr>
<td>Access to FHIR APIs</td>
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I’m Interested
“... that the entity has in place data sharing programs or capabilities based on common data elements through such mechanisms as application programming interfaces without the requirement for vendor-specific interfaces;

[...] publish application programming interfaces and associated documentation, with respect to health information within such records, for search and indexing, semantic harmonization and vocabulary translation, and user interface applications; and

[...] demonstrate to the satisfaction of the Secretary that health information from such records are able to be exchanged, accessed, and used through the use of application programming interfaces without special effort, as authorized under applicable law.”