



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



CDS Connect Pain Management Summary

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AHRQ Clinical Decision Support

Advancing evidence into practice through CDS and making CDS more shareable, standards-based and publicly- available

1

Engaging a
stakeholder
community



2

Creating prototype
infrastructure for
sharing CDS and
developing CDS



3

Advancing CDS
through grant-
funded research



4

Evaluating the
overall
initiative



<https://cds.ahrq.gov>

CDS Connect: Pain Management Summary

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[Welcome](#) / [Artifact](#) / Factors to Consider in Managing Chronic Pain: A Pain Management Summary

Factors to Consider in Managing Chronic Pain: A Pain Management Summary

This artifact provides relevant information (i.e., factors) to inform decision-making when managing a patient's chronic pain. The information is presented to the clinician as a Pain Management Summary. The key factors include:

- **Pertinent Medical History** (i.e., Conditions associated with chronic pain and Risk factors for opioid-related harm)
- **Pain Assessments** (responses and scores)
- **Historical Treatments** (i.e., Opioid and non-opioid pain medications, Non-pharmacologic treatments, and Stool softeners and laxatives)
- **Risk Considerations** (i.e., Morphine milligram equivalent [MME] amount, Urine drug screen results, Benzodiazepine medications, Naloxone medications, and Risk assessments relevant to pain management)

Artifact Type

 [Data Summary](#)

Creation Date

Fri, 06/01/2018 - 12:00

Version

0.1

Status

[Active](#)

Experimental

False

PROMINENT REPORTS

[Artifact Enhancements Based on Pilot Implementation \(PDF 406 Kb\)](#)

[Implementation Guide for Piloted Artifact \(PDF 1.1 Mb\)](#)

[Pilot Final Report \(PDF 727Kb\)](#)

CDC Guideline for Prescribing Opioids for Chronic Pain

- Non-pharmacologic & non-opioid therapies preferred
- Establish treatment goals with patients
- Assess and discuss risks and benefits
 - Prescribe naloxone if at high risk
- Prescribe immediate-release opioids
- Prescribe the lowest effective dose
- Monitor Physician Drug Monitoring Program (PDMP)
 - ≤ 50 MME/day preferred
 - ≥ 90 MME/day is high risk
- Urine drug screening (prior to and annually)
- Avoid concurrent benzodiazepines
- Offer med-assisted treatment for opioid use disorder

<https://www.cdc.gov/drugoverdose/prescribing/guideline.html>

MME = morphine milligram equivalent

GUIDELINE FOR PRESCRIBING OPIOIDS FOR CHRONIC PAIN

IMPROVING PRACTICE THROUGH RECOMMENDATIONS

CDC's *Guideline for Prescribing Opioids for Chronic Pain* is intended to improve communication between providers and patients about the risks and benefits of opioid therapy for chronic pain, improve the safety and effectiveness of pain treatment, and reduce the risks associated with long-term opioid therapy, including opioid use disorder and overdose.

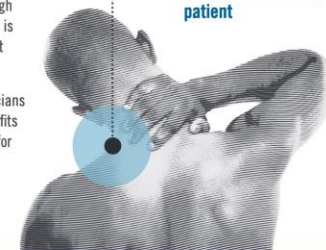
The Guideline is not intended for patients who are in active cancer treatment, palliative care, or end-of-life care.

DETERMINING WHEN TO INITIATE OR CONTINUE OPIOIDS FOR CHRONIC PAIN

- 1 Nonpharmacologic therapy and nonopioid pharmacologic therapy are preferred for chronic pain. Clinicians should consider opioid therapy only if expected benefits for both pain and function are anticipated to outweigh risks to the patient. If opioids are used, they should be combined with nonpharmacologic therapy and nonopioid pharmacologic therapy, as appropriate.
- 2 Before starting opioid therapy for chronic pain, clinicians should establish treatment goals with all patients, including realistic goals for pain and function, and should consider how opioid therapy will be discontinued if benefits do not outweigh risks. Clinicians should continue opioid therapy only if there is clinically meaningful improvement in pain and function that outweighs risks to patient safety.
- 3 Before starting and periodically during opioid therapy, clinicians should discuss with patients known risks and realistic benefits of opioid therapy and patient and clinician responsibilities for managing therapy.

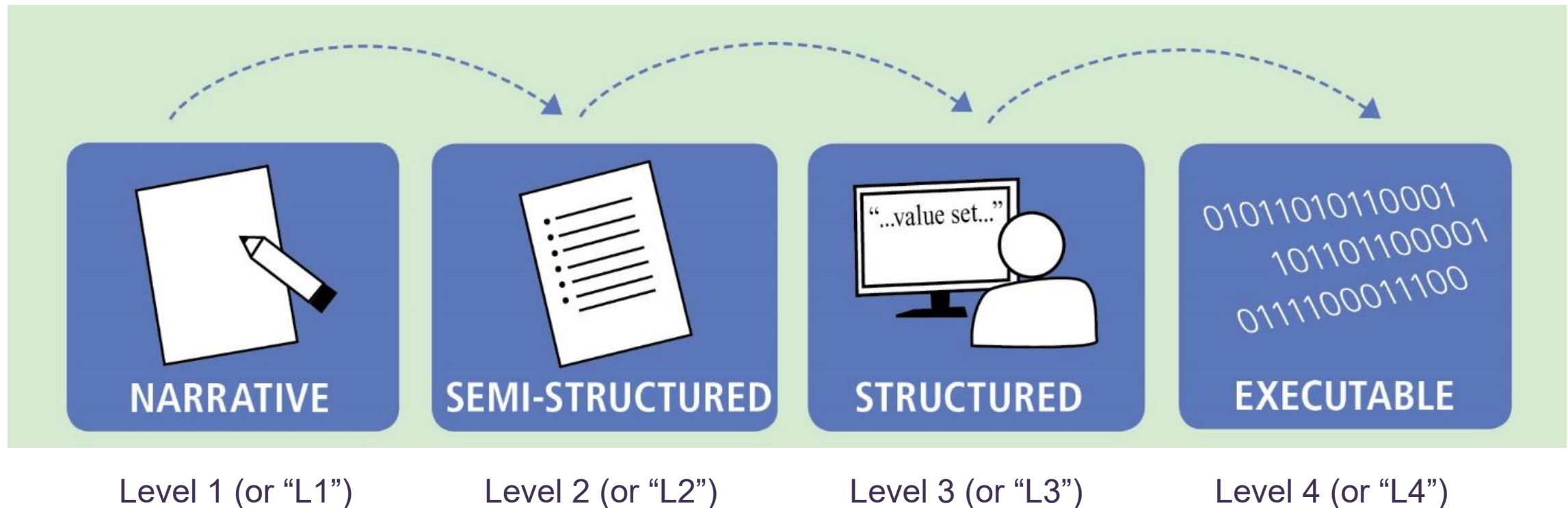
CLINICAL REMINDERS

- Opioids are not first-line or routine therapy for chronic pain
- Establish and measure goals for pain and function
- Discuss benefits and risks and availability of nonopioid therapies with patient



Translating Evidence-Based Research to Executable CDS

The Road from the *CDC Guideline for Prescribing Opioids for Chronic Pain*
to the *AHRQ CDS Connect Pain Management Summary*



Adapted from: Boxwala, A. A., et al. (2011). "A multi-layered framework for disseminating knowledge for computer-based decision support." *Journal of the American Medical Informatics Association* : JAMIA 18 Suppl 1: i132-139.

Pain Management Summary CDS

- **Pertinent Medical History**

- ▶ Conditions associated with chronic pain
- ▶ Risk factors for opioid-related harms

- **Pain Assessments**

- ▶ Wong-Baker FACES Rating Scale
- ▶ Pain, Enjoyment, General Activity (PEG) Assessment
- ▶ STarT Back Screening Tools
- ~~▶ Patient's goal for pain management~~

- **Historical treatments**

- ▶ Opioid medications
- ▶ Non-opioid medications
- ▶ Non-pharmacologic treatments
- ▶ Stool softeners and laxatives

- **Risk Considerations**

- ▶ MME amount
- ▶ Urine drug screen results
- ▶ Benzodiazepine medications
- ▶ Naloxone medications
- ▶ Risk screenings relevant to pain management
- ~~▶ PDMP access~~

Level 1 (Narrative) to Level 2 (Semi-Structured)

Before starting, and periodically during continuation of opioid therapy, clinicians should evaluate risk factors for opioid-related harms. Clinicians should incorporate into the management plan strategies to mitigate risk, including considering offering naloxone when factors that increase risk for opioid overdose, such as history of overdose, history of substance use disorder, higher opioid dosages (greater than or equal to $\geq$ 50 morphine milligram equivalents [MME]/day), or concurrent benzodiazepine use, are present.



ARTIFACT REPRESENTATION

Triggers

Trigger Type Named event

Trigger Event Provider clicks on link to the Pain Management Summary

Inclusions

Age $\geq$ 18 years

AND

- OR Conditions associated with chronic pain (confirmed, active or recurring status, onset date, asserted date, abatement date)
- OR Opioid pain medication
 - Orders (date, active, completed, or stopped within past 180 days)
 - Statements (date, active, or completed within past 180 days)
- OR Adjuvant analgesic medication
 - Orders (date, active, completed, or stopped within past 180 days)
 - Statements (date, active, or completed within past 180 days)

Exclusions

None

Interventions and Actions

DISPLAY and MANIPULATE a Pain Management Summary of the following items:

Pertinent Medical History (unrestricted lookback)

- Conditions associated with chronic pain (confirmed, active or recurring status, onset date, asserted date, abatement date)
- Risk factors for opioid-related harm
 - Risk factors for opioid-related harm (by a union of value sets) - (confirmed, active or recurring status, onset date, asserted date, abatement date)
 - Enrollment in a pain management program (by a union of value sets) - (name, visit date, onset date, abatement date, and recorded date)
 - Prescription of controlled substances within 2 weeks
 - Age

Pain Assessment

- Wong-Baker FACES pain rating scale (total score, interpretation, date)
- PEG pain assessment (total score, interpretation, date)
- STarT back screening tool (total score, interpretation, date)



Source:

https://www.cdc.gov/drugoverdose/pdf/prescribing/Guidelines_Factsheet-a.pdf

Source:

<https://cds.ahrq.gov/cdsconnect/artifact/factors-consider-managing-chronic-pain-pain-management-summary>

Level 2 (Semi-Structured) Example

Inclusions

- Age ≥ 18 years
- *AND*
 - **OR Conditions associated with chronic pain**
(confirmed, active or recurring status, onset date, asserted date, abatement date)
 - **OR Opioid pain medication**
 - **Orders** (date, active, completed, or stopped within past 180 days)
 - **Statements** (date, active, or completed within past 180 days)
 - **OR Adjuvant analgesic medication**
 - **Orders** (date, active, completed, or stopped within past 180 days)
 - **Statements** (date, active, or completed within past 180 days)

Level 2 (Semi-Structured) to Level 3 (Structured)

ARTIFACT REPRESENTATION

Triggers

Trigger Type Named event

Trigger Event Provider clicks on link to the Pain Management Summary

Inclusions

Age ≥ 18 years

AND

- OR Conditions associated with chronic pain (confirmed, active or recurring status, onset date, asserted date, abatement date)
- OR Opioid pain medication
 - Orders (date, active, completed, or stopped within past 180 days)
 - Statements (date, active, or completed within past 180 days)
- OR Adjuvant analgesic medication
 - Orders (date, active, completed, or stopped within past 180 days)
 - Statements (date, active, or completed within past 180 days)

Exclusions

None

Interventions and Actions

DISPLAY and **POPULATE** a Pain Management Summary of the following items:

Pertinent Medical History (unrestricted lookback)

- Conditions associated with chronic pain (*confirmed, active or recurring status, onset date, asserted date, abatement date*)
- Risk factors for opioid-related harm
 - Risk Conditions (*represented by a union of value sets*) - (*confirmed, active or recurring status, onset date, asserted date, abatement date*)
 - Encounter Risk Diagnosis (*represented by a union of value sets*) - (*confirmed, active or recurring status, onset date, asserted date, abatement date, and recorded date*)
 - Pregnancy Observation in the past 42 weeks
 - Age ≥ 65 years

Pain Assessments (lookback of 2 years)

- Wong-Baker FACES assessment (*score, interpretation, date*)
- PEG assessment (*question response and total score, interpretation, date*)
- STarT Back screening tool (*total score, interpretation, date*)



```
define Is18orOlder:
  AgeInYears() >= 18

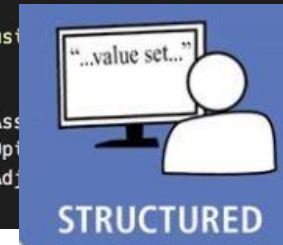
define ConditionsAssociatedWithChronicPain:
  C3F.Confirmed(C3F.ActiveOrRecurring([Condition: "Conditions associated with chronic pain"]))

define HasConditionAssociatedWithChronicPain:
  exists(ConditionsAssociatedWithChronicPain)

define HasRecentOpioidPainMedication:
  exists(C3F.ActiveCompletedOrStoppedMedicationOrder(C3F.MedicationOrderLookBack(
    [MedicationOrder: "Opioid Pain Medications"],
    InclusionMedicationsLookbackPeriod)
  ))
  or exists(C3F.ActiveOrCompletedMedicationStatement(C3F.MedicationStatementLookBack(
    [MedicationStatement: "Opioid Pain Medications"],
    InclusionMedicationsLookbackPeriod)
  ))

define HasRecentAdjuvantAnalgesicMedication:
  exists(C3F.ActiveCompletedOrStoppedMedicationOrder(C3F.MedicationOrderLookBack(
    [MedicationOrder: "Adjuvant Analgesic Medications"],
    InclusionMedicationsLookbackPeriod)
  ))
  or exists(C3F.ActiveOrCompletedMedicationStatement(C3F.MedicationStatementLookBack(
    [MedicationStatement: "Adjuvant Analgesic Medications"],
    InclusionMedicationsLookbackPeriod)
  ))

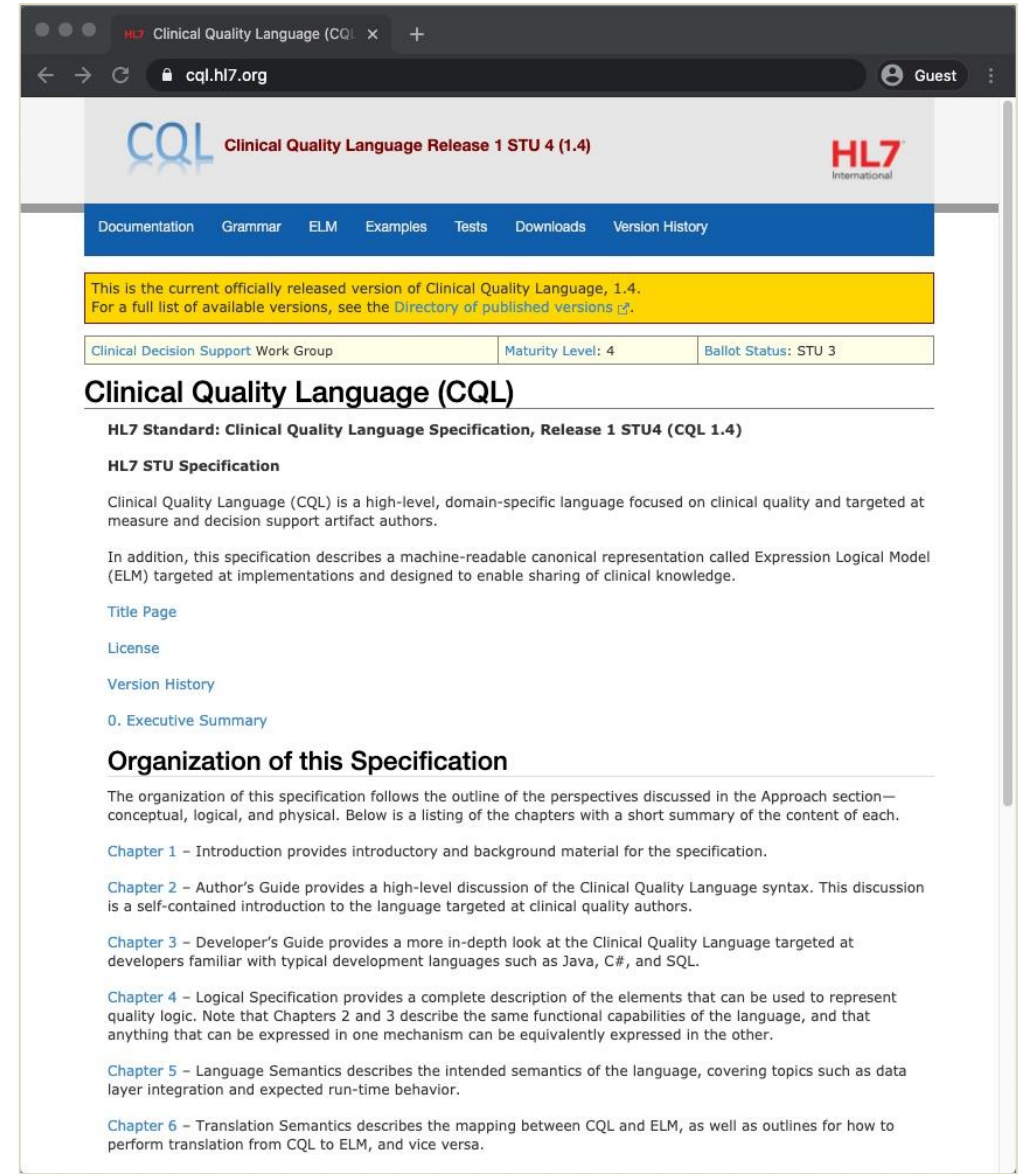
define MeetsInclusionCriteria:
  Is18orOlder
  and (
    HasConditionAssociatedWithChronicPain
    or HasRecentOpioidPainMedication
    or HasRecentAdjuvantAnalgesicMedication
  )
```



HL7 Clinical Quality Language

“Clinical Quality Language (CQL) is a high-level, domain-specific language focused on clinical quality and targeted at measure and decision support artifact authors.”

HL7 Standard: Clinical Quality Language Specification, Release 1 STU4
<http://cql.hl7.org/>

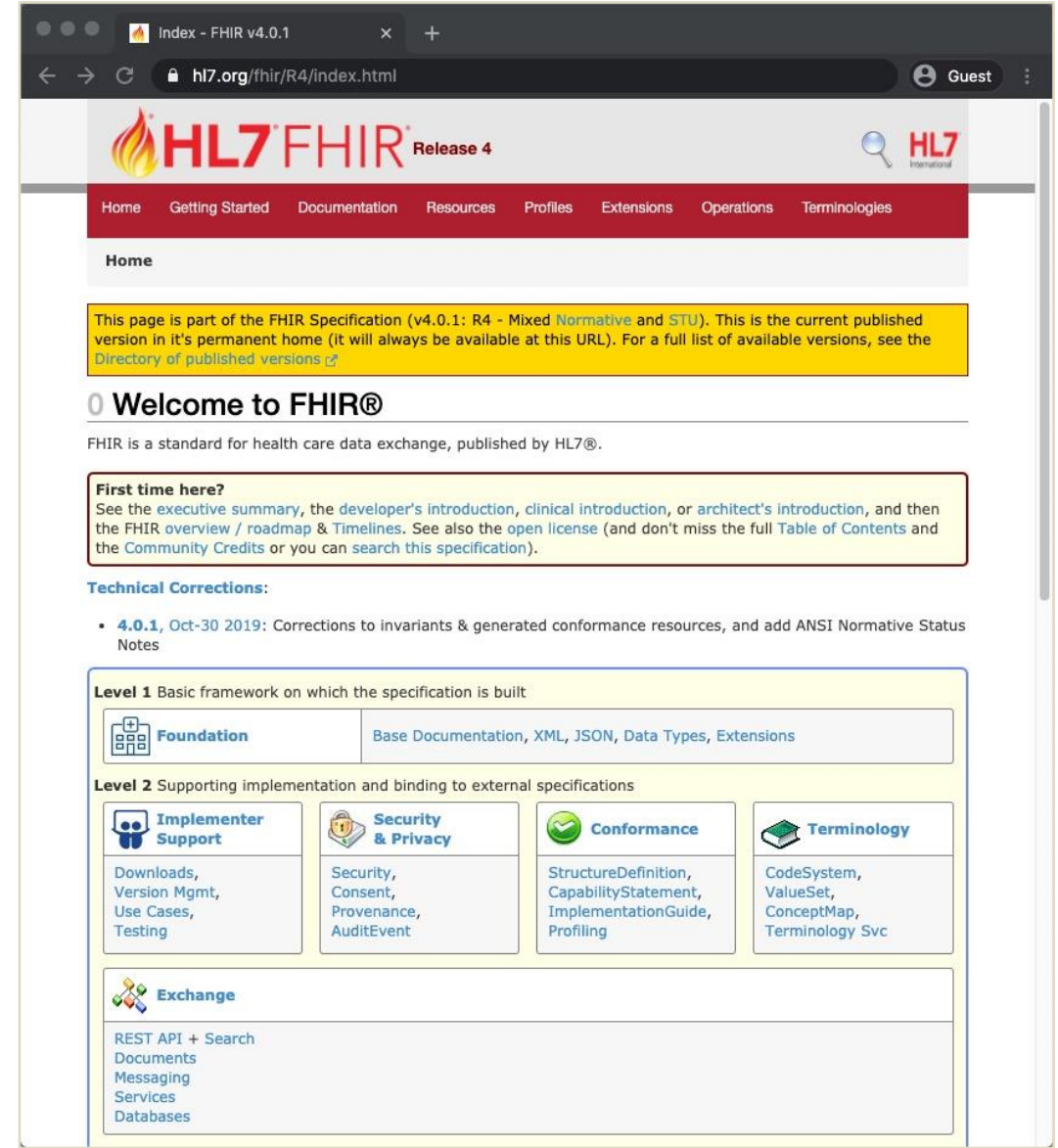


The screenshot shows the website for Clinical Quality Language (CQL) Release 1 STU 4 (1.4). The page features a navigation bar with links to Documentation, Grammar, ELM, Examples, Tests, Downloads, and Version History. A yellow banner indicates that this is the current officially released version. Below the banner, a table shows the Clinical Decision Support Work Group, Maturity Level: 4, and Ballot Status: STU 3. The main content area is titled "Clinical Quality Language (CQL)" and includes the HL7 Standard: Clinical Quality Language Specification, Release 1 STU4 (CQL 1.4). It also includes the HL7 STU Specification, a description of CQL as a high-level, domain-specific language, and a list of chapters (Chapter 1 to Chapter 6) providing an overview of the specification.

HL7® Fast Healthcare Interoperability Resources (FHIR)

“FHIR is a standard for health care data exchange, published by HL7®.”

FHIR Specification
(v4.0.1: R4 - Mixed Normative and STU)
<https://hl7.org/fhir/R4/index.html>



The screenshot shows the HL7 FHIR v4.0.1 index page. The browser address bar displays "hl7.org/fhir/R4/index.html". The page features a red navigation bar with links: Home, Getting Started, Documentation, Resources, Profiles, Extensions, Operations, and Terminologies. Below the navigation bar, a yellow box contains a welcome message and a link to the "Directory of published versions". A section titled "Welcome to FHIR®" states that FHIR is a standard for health care data exchange, published by HL7®. A "First time here?" section provides links to the executive summary, developer's introduction, clinical introduction, architect's introduction, FHIR overview / roadmap & Timelines, open license, Table of Contents, and Community Credits. A "Technical Corrections" section lists a correction for 4.0.1, Oct-30 2019. The page is organized into levels: Level 1 (Basic framework) includes Foundation (Base Documentation, XML, JSON, Data Types, Extensions) and Level 2 (Supporting implementation and binding to external specifications). Level 2 includes four categories: Implementer Support (Downloads, Version Mgmt, Use Cases, Testing), Security & Privacy (Security, Consent, Provenance, AuditEvent), Conformance (StructureDefinition, CapabilityStatement, ImplementationGuide, Profiling), and Terminology (CodeSystem, ValueSet, ConceptMap, Terminology Svc). An "Exchange" section at the bottom lists REST API + Search, Documents, Messaging, Services, and Databases.

From L2 to L3: Extracting FHIR Resources & CQL Logic



Inclusions

- Age ≥ 18 years
- *AND*
 - **OR Conditions associated with chronic pain**
(confirmed, active or recurring status, onset date, asserted date, abatement date)
 - **OR Opioid pain medication**
 - **Orders** (date, active, completed, or stopped within past 180 days)
 - **Statements** (date, active, or completed within past 180 days)
 - **OR Adjuvant analgesic medication**
 - **Orders** (date, active, completed, or stopped within past 180 days)
 - **Statements** (date, active, or completed within past 180 days)

FHIR: Age

Patient: birthDate

- Age ≥ 18 years
- *AND*
 - *OR* **Conditions associated with chronic pain**
(confirmed, active or recurring status, onset date, asserted date, abatement date)
 - *OR* **Opioid pain medication**
 - **Orders** (date, active, completed, or stopped within past 180 days)
 - **Statements** (date, active, or completed within past 180 days)
 - *OR* **Adjuvant analgesic medication**
 - **Orders** (date, active, completed, or stopped within past 180 days)
 - **Statements** (date, active, or completed within past 180 days)

CQL Logic: Age

- Age $\geq$ 18 years

```
define Is18orOlder:  
  AgeInYears()  $\geq$  18
```

FHIR: Conditions Associated w/ Chronic Pain

Condition: code

- Age ≥ 18 years
- AND

- OR **Conditions associated with chronic pain**

confirmed active or recurring status onset date asserted date abatement date

- OR Opioid pain medication

- Orders (date, active, completed, or stopped within past 180 days)
- Statements (date, active, or completed within past 180 days)

- OR Adjuvant analgesic medication

verificationStatus

clinicalStatus

onset[x]

recordedDate

abatement[x]

- Statements (date, active, or completed within past 180 days)

CQL Logic: Conditions Associated w/ Chronic Pain



- Conditions associated with chronic pain (confirmed, active or recurring status, onset date, asserted date, abatement date)

```
include CDS_Connect_Commons_for_FHIRv400 version '1.0.1' called C3F

valueset "Conditions associated with chronic pain":
  '2.16.840.1.113762.1.4.1032.37'

define ConditionsAssociatedWithChronicPain:
  C3F.Confirmed( C3F.ActiveOrRecurring(
    [Condition: "Conditions associated with chronic pain"]
  ) )

define HasConditionAssociatedWithChronicPain:
  exists(ConditionsAssociatedWithChronicPain)
```

CQL Logic: Common Functions

- Conditions associated with chronic pain (confirmed, active or recurring status, onset date, asserted date, abatement date)

```
library CDS_Connect_Commons_for_FHIRv400 version '1.0.1'

// additional declarations removed for brevity

define function Confirmed(CondList List<Condition>):
  CondList C where C.verificationStatus ~ "Condition Confirmed"

define function ActiveOrRecurring(CondList List<Condition>):
  CondList C
    where C.clinicalStatus ~ "Condition Active"
      or C.clinicalStatus ~ "Condition Recurrence"
      or C.clinicalStatus ~ "Condition Relapse"
```

FHIR: Opioid Pain Medication

MedicationRequest: medication[x]

- Age ≥ 18 years
- AND
 - OR Conditions associated with chronic pain (confirmed, active or recurring status, onset date, asserted date, abatement date)
 - OR Opioid pain medication
 - **Orders** [date active, completed, or stopped within past 180 days]
 - **Statements** [date active, or completed within past 180 days]
 - OR Adjuvant analgesic medication
 - Orders (date active, completed, or stopped within past 180 days)

authoredOn

status

authoredOn

Orders [date active, completed, or stopped within past 180 days]

Statements [date active, or completed within past 180 days]

effective[x]

status

effective[x]

MedicationStatement: medication[x]

CQL Logic: Opioid Pain Medication

- Opioid pain medication
 - **Orders** (date, active, completed, or stopped within past 180 days)
 - **Statements** (date, active, or completed within past 180 days)

```
define HasRecentOpioidPainMedication:  
  exists(  
    C3F.ActiveCompletedOrStoppedMedicationRequest( C3F.MedicationRequestLookBack(  
      [MedicationRequest: "Opioid Pain Medications"],  
      InclusionMedicationsLookbackPeriod  
    ))  
  )  
  or exists(  
    C3F.ActiveOrCompletedMedicationStatement( C3F.MedicationStatementLookBack(  
      [MedicationStatement: "Opioid Pain Medications"],  
      InclusionMedicationsLookbackPeriod  
    ))  
  )  
)
```

CQL Logic: Putting It All Together

```
define MeetsInclusionCriteria:  
  Is18orOlder  
  and (  
    HasConditionAssociatedWithChronicPain  
    or HasRecentOpioidPainMedication  
    or HasRecentAdjuvantAnalgesicMedication  
  )
```

Level 3 (Structured) to Level 4 (Executable)

```
define Is18orOlder:  
  AgeInYears() >= 18  
  
define ConditionsAssociatedWithChronicPain:  
  C3F.Confirmed(C3F.ActiveOrRecurring([Condition: "Co  
  
define HasConditionAssociatedWithChronicPain:  
  exists(ConditionsAssociatedWithChronicPain)  
  
define HasRecentOpioidPainMedication:  
  exists(C3F.ActiveCompletedOrStoppedMedicationOrder(  
    [MedicationOrder: "Opioid Pain Medications"],  
    InclusionMedicationsLookbackPeriod)  
  )  
  or exists(C3F.ActiveOrCompletedMedicationStatement(  
    [MedicationStatement: "Opioid Pain Medications"],  
    InclusionMedicationsLookbackPeriod)  
  )  
  
define HasRecentAdjuvantAnalgesicMedication:  
  exists(C3F.ActiveCompletedOrStoppedMedicationOrder(  
    [MedicationOrder: "Adjuvant Analgesic Med  
    InclusionMedicationsLookbackPeriod  
  )  
  or exists(C3F.ActiveOrCompletedMedicationStatement(  
    [MedicationStatement: "Adjuvant Analgesic Medicat  
    InclusionMedicationsLookbackPeriod)  
  )  
  
define MeetsIncl  
  Is18orOlder  
  and (  
    HasCondition  
    or HasRecent  
    or HasRecent
```



CDS Connect

Pertinent Medical History (4) ⓘ

- Conditions Associated with Chronic Pain
- Risk Factors for Opioid-related Harms

Pain Assessments (4) ⓘ

Historical Pain-related Treatments (6) ⓘ

Risk Considerations (0) ⓘ

Brenda Jackson
63 YRS FEMALE

14 Total Entries 8 Total Flags

Factors to Consider in Managing Chronic Pain

ⓘ TAKE NOTICE: This summary is not intended for patients who are undergoing end-of-life care (hospice or palliative) or active cancer treatment. ✕

Pertinent Medical History (4) ⓘ

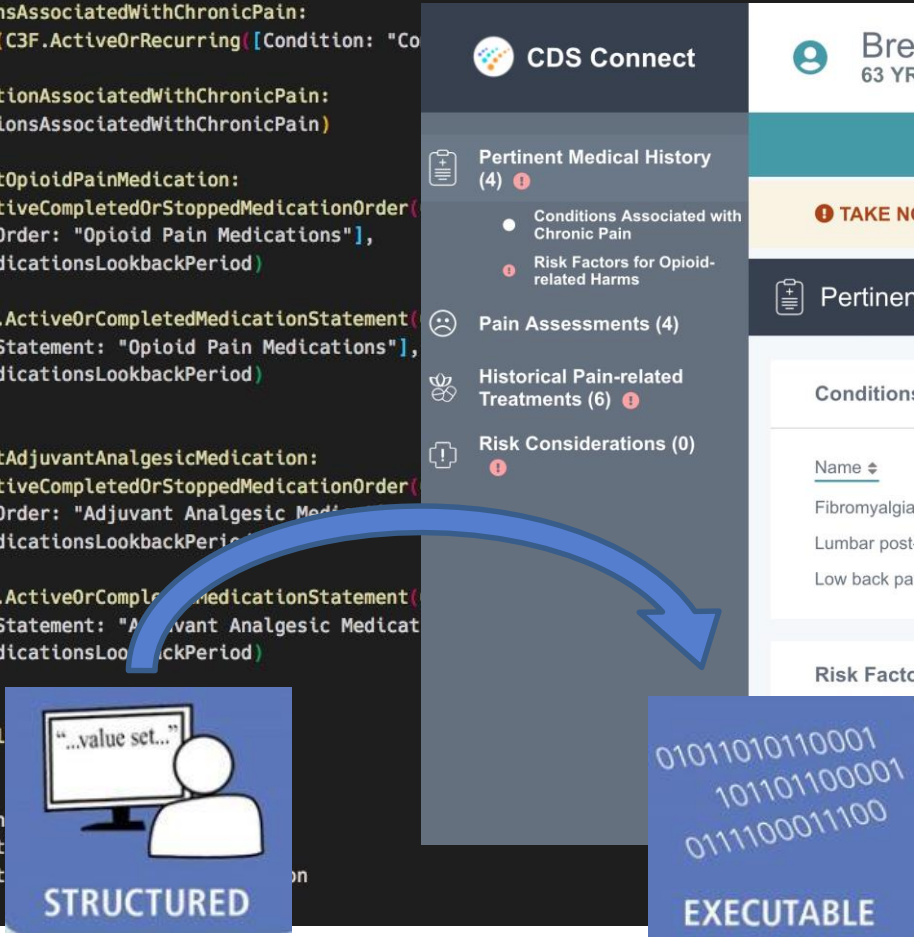
Conditions Associated with Chronic Pain ⓘ

Name ↕	Status ↕	Start ↕	End ↕	Recorded ↕
Fibromyalgia (disorder)	active	2013-Apr-05 (age -7)		2013-Apr-05
Lumbar post-laminectomy syndrome (disorder)	active	2012-Feb-01 (age -8)		2012-Feb-16
Low back pain	active	2008-Nov-12 (age -11)		2008-Nov-12

Risk Factors for Opioid-related Harms ⓘ

Name ↕	Status ↕	Start ↕	End ↕	Recorded ↕
Major depression (disorder)	active	2016-Dec-02 (age -3)		

Synthetic Data



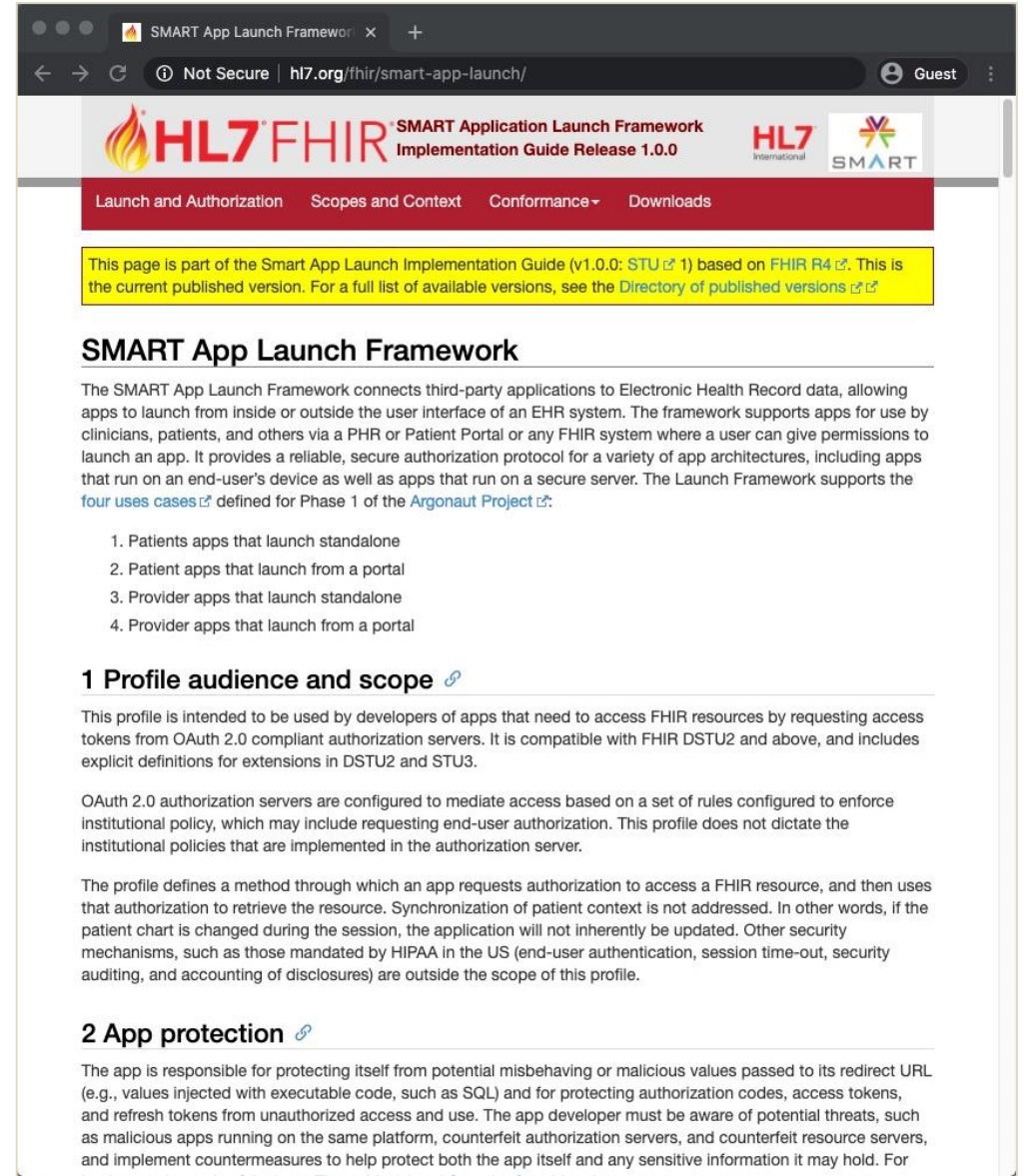
STRUCTURED

EXECUTABLE

HL7® SMART App Launch Framework

“The SMART App Launch Framework connects third-party applications to Electronic Health Record data, allowing apps to launch from inside or outside the user interface of an EHR system.”

Smart App Launch Implementation Guide (v1.0.0: STU 1)
<http://www.hl7.org/fhir/smart-app-launch/>



The screenshot shows a web browser window with the URL hl7.org/fhir/smart-app-launch/. The page features the HL7 FHIR logo and the title "SMART Application Launch Framework Implementation Guide Release 1.0.0". A navigation bar includes links for "Launch and Authorization", "Scopes and Context", "Conformance", and "Downloads". A yellow banner states: "This page is part of the Smart App Launch Implementation Guide (v1.0.0: STU 1) based on FHIR R4. This is the current published version. For a full list of available versions, see the Directory of published versions." The main content area is titled "SMART App Launch Framework" and describes the framework's purpose: connecting third-party applications to EHR data. It lists four use cases: 1. Patients apps that launch standalone, 2. Patient apps that launch from a portal, 3. Provider apps that launch standalone, and 4. Provider apps that launch from a portal. Below this, the "1 Profile audience and scope" section explains that the profile is for developers needing access to FHIR resources via OAuth 2.0, compatible with FHIR DSTU2 and above. It also notes that the profile defines a method for requesting authorization to access FHIR resources. The "2 App protection" section begins by stating that the app is responsible for protecting itself from malicious values and protecting authorization codes and tokens.

CDS Connect Pain Management Summary

Simulated EHR

Patient: Brenda Jackson, age: 64 years, sex: Female

CDS Connect

Pertinent Medical History (4)

Conditions Associated with Chronic Pain

Risk Factors for Opioid-related Harms

Pain Assessments (4)

Historical Pain-related Treatments (6)

Risk Considerations (0)

EHR Sidebar

Brenda Jackson
63 YRS FEMALE

14 Total Entries8 Total Flags

Factors to Consider in Managing Chronic Pain

TAKE NOTICE: This summary is not intended for patients who are undergoing end-of-life care (hospice or palliative) or active cancer treatment.

Pertinent Medical History (4)

Conditions Associated with Chronic Pain

Name	Status	Start	End	Recorded
Fibromyalgia (disorder)	active	2013-Apr-05 (age -7)		2013-Apr-05
Lumbar post-laminectomy syndrome (disorder)	active	2012-Feb-01 (age -8)		2012-Feb-16
Low back pain	active	2008-Nov-12 (age -11)		2008-Nov-12

Risk Factors for Opioid-related Harms

Name	Status	Start	End	Recorded
Moderate major depression (disorder)	active	2016-Dec-02 (age -3)		

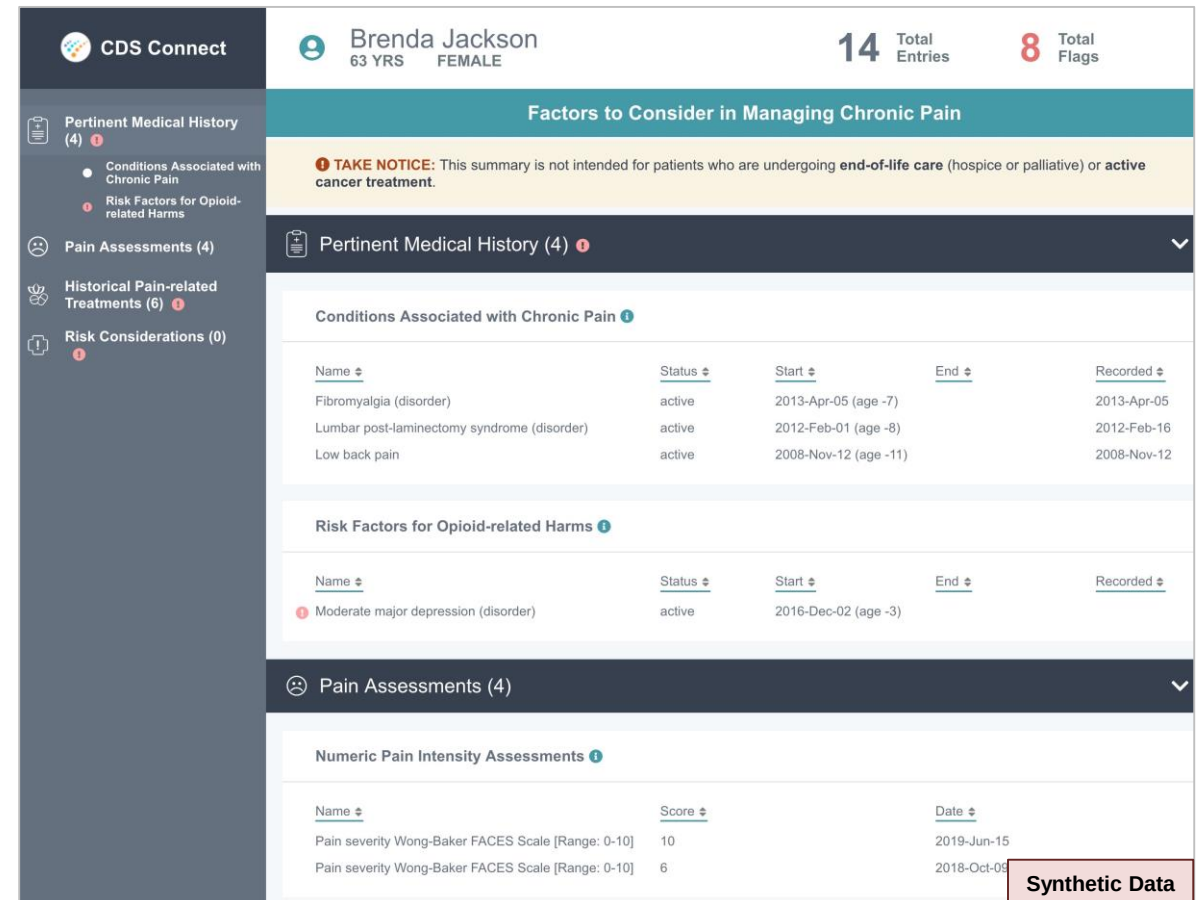
Synthetic Data

Pain Management Summary: <https://apps.smarthealthit.org/app/cds-connect>

Pilot Implementation of the Pain Management Summary

OCHIN

- 1 health care center at OCHIN
- Pilot engagement: 5 months
- Pilot duration: 8 weeks
- Investigated various integration approaches
 - Best Practice Advisory
 - CDS Hooks
 - **SMART on FHIR app**
- Accessed via a Pain Management Information hyperlink in the Patient Summary page



CDS Connect

Brenda Jackson
63 YRS FEMALE

14 Total Entries 8 Total Flags

Factors to Consider in Managing Chronic Pain

TAKE NOTICE: This summary is not intended for patients who are undergoing **end-of-life care** (hospice or palliative) or **active cancer treatment**.

Pertinent Medical History (4)

Conditions Associated with Chronic Pain
Risk Factors for Opioid-related Harms

Name	Status	Start	End	Recorded
Fibromyalgia (disorder)	active	2013-Apr-05 (age -7)		2013-Apr-05
Lumbar post-laminectomy syndrome (disorder)	active	2012-Feb-01 (age -8)		2012-Feb-16
Low back pain	active	2008-Nov-12 (age -11)		2008-Nov-12

Risk Factors for Opioid-related Harms

Name	Status	Start	End	Recorded
Moderate major depression (disorder)	active	2016-Dec-02 (age -3)		

Pain Assessments (4)

Numeric Pain Intensity Assessments

Name	Score	Date
Pain severity Wong-Baker FACES Scale [Range: 0-10]	10	2019-Jun-15
Pain severity Wong-Baker FACES Scale [Range: 0-10]	6	2018-Oct-05

Synthetic Data

Lessons Learned from the Pilot Implementation

What went well:

- Reliable, “simple and intuitive”
- Reduced burden
- Benefited care and informed decision making

Challenges:

- 10-second delay in display
- Troubleshooting required EHR access
- Inconsistent display of MME, urine drug screen results, non-pharmacologic treatments

Enhancement suggestions:

- Integration with PDMP
- Add pain agreement and due date
- Integration with medMATCH

Key takeaways:

- Evaluate FHIR Resources support via API
- Clinical Champion is vital
- Integration requires specific skills
 - ▶ Software Architect (64 hours), Quality Analyst (46 hours), Clinical Informaticist (41 hours), Business Analyst (120 hours), Project Manager (97 hours)

Resources

- AHRQ CDS: <https://cds.ahrq.gov/>
- Pain Management Summary:
 - ▶ Artifact on CDS Connect: <https://cds.ahrq.gov/cdsconnect/artifact/factors-consider-managing-chronic-pain-pain-management-summary>
 - ▶ App in SMART App Gallery: <https://apps.smarthealthit.org/app/cds-connect>
 - ▶ App source code on GitHub: <https://github.com/ahrq-cds>
- Relevant Standards:
 - ▶ HL7 FHIR: <http://hl7.org/fhir/>
 - ▶ HL7 CQL: <https://cql.hl7.org/>
 - ▶ HL7 SMART App Launch Framework: <http://hl7.org/fhir/smart-app-launch/>

Thank you!

Contact AHRQ CDS: ClinicalDecisionSupport@ahrq.hhs.gov