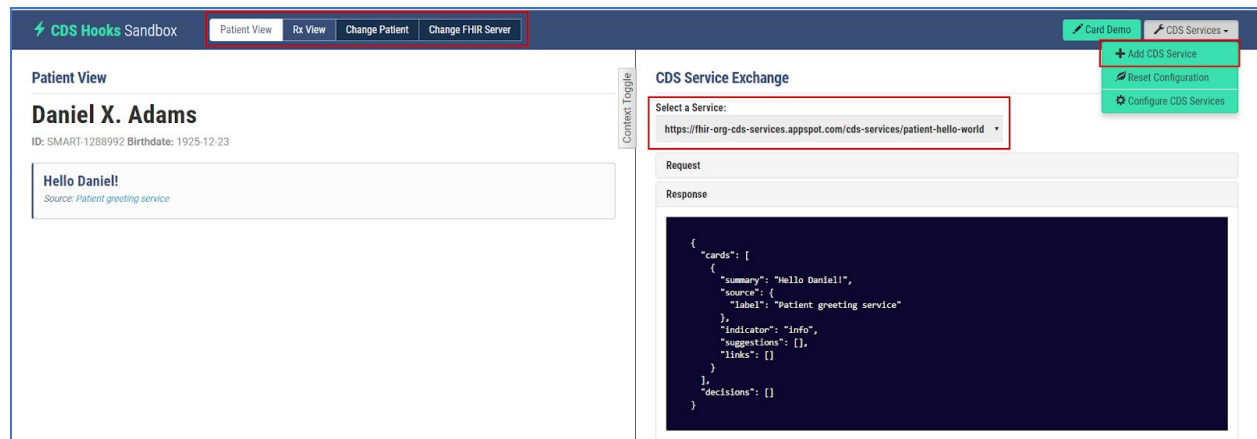


This document describes some of the scenarios that we tested in the [CDS Hooks Sandbox](#).

## Sandbox Overview

The CDS Sandbox is a web app that can be used to simulate an EHR for CDS Hooks service testing. The app allows you to specify a CDS Hooks service, a FHIR server, and a patient ID. It currently supports the “Patient View” and “Rx View” hooks.



This “patient-hello-world” example service uses the “Patient View” hook and simply takes the patient’s name and returns a decision support card with a customized patient greeting.

The CDS Hooks sandbox renders the decision support cards for testing purposes. In a real scenario, the EHR is responsible for rendering the card so certain aspects of the UI will be controlled by EHR vendors.

## Hepatitis C Service Testing

Our Hepatitis C service supports two “hooks”. The “Patient View” hook and the “Order Review” hook. Of those two, only the “Patient View” hook is currently included in the sandbox, so our sandbox testing was limited to the Patient View hook.

We started with a STU3 FHIR server and identified some test patients.

- We used this FHIR server from SMART
  - o <https://sb-fhir-stu3.smarthealthit.org/smartstu3/open>
- Our test patients included
  - o Anthony Z Coleman (smart-1869612): Baby boomer w/ chronic Hep C
  - o Mildred Ferguson (SMART-PROMs-58): Baby boomer w/o Hep C or screening

The service should automatically queue up a hepatitis C screening lab when

- The patient is a baby boomer
- The patient has not had a screening in the past

- The patient has never been diagnosed with hepatitis C

Among these two test patients, the service should:

- Return a card and queue up a screening for Mildred. She is a baby boomer with no history of hepatitis C and no prior screenings.
- Return nothing for Anthony. He is a baby boomer but he is already diagnosed with hepatitis C

Mildred

The screenshot shows the CDS Hooks Sandbox interface. On the left, the 'Patient View' for Mildred Ferguson (ID: SMART-PROMS-58, Birthdate: 1945-07-28) is displayed. A card titled 'HCV Screen Proposed' is highlighted, indicating that an HCV screening has been queued for the patient. On the right, the 'CDS Service Exchange' section shows a request to the service 'http://localhost:8080/cds-services/hep-c-screen-patient-view'. The response is a JSON object containing a card with the summary 'HCV Screen Proposed' and a detail about the queued screening. The response also includes a suggestion to 'Promote' the screening, which would create a ProcedureRequest resource.

After this CDS hooks card is returned, Mildred's FHIR resource now has a "ProcedureRequest" resource for an order with [LOINC code 47365-2](#)

The FHIR server we used also had a patient browser UI where the newly added procedure request could be viewed.

The screenshot shows the patient browser UI for Mildred Ferguson. The patient's information is displayed at the top, including gender (female), email, DOB (1945-07-28), phone, age (73 year), and address. Below this, a list of resources is shown, with 'ProcedureRequest' selected. The detailed view of the ProcedureRequest resource is displayed, showing the identifier (152778), LOINC code (47365-2), status (draft), and the date it was last updated (04/08/2018).

## Anthony

CDS Hooks Sandbox

Patient ViewRx ViewChange PatientChange FHIR Server

Card DemoCDS Services

Patient View

Anthony Z Coleman

ID: smart-1869612 Birthdate: 1950-07-31

Hello Anthony!  
Source: Patient greeting service

Context Toggle

CDS Service Exchange


Select a Service:  
http://localhost:8080/cds-services/hep-c-screenr-patient-view

Request

Response

```
{
  "cards": [],
  "decisions": []
}
```

The service does not return a decision support card for Anthony. As seen in the patient browser, Anthony has a condition of chronic hepatitis C and so it would not be appropriate to order a screening for him.



Anthony Z Coleman

Gender: maleDOB: 1950-07-31Age: 68 year  
Email: anthony.coleman@example.comPhone: 800-176-9648Address: 2 Main Rd 74008 Bixby USA  
ID: smart-1869612MRN: smart-1869612

SelectReload

AllergyIntolerance1

Condition10

Encounter10

MedicationDispense13

MedicationRequest9

Observation - Exam1

Observation - Laboratory11

Observation - Social history1

Observation - Vital signs144

Patient1

Practitioner1

10 Conditions

Condition		Clinical Status	Verification Status	Onset Date
Chronic hepatitis C	120302006 (SNOMED-CT)	active	confirmed	12/11/2007
Accident	55666003 (SNOMED-CT)	active	confirmed	11/13/2006
Contusion of toe	58075000 (SNOMED-CT)	active	confirmed	11/13/2006
Diabetes mellitus type 2	44054006 (SNOMED-CT)	active	confirmed	11/13/2006
Acquired stenosis of nasolacrimal duct	193965004 (SNOMED-CT)	active	confirmed	08/21/2005
Superficial injury of cornea	85848002 (SNOMED-CT)	active	confirmed	08/03/2005
Impotence of organic origin	198036002 (SNOMED-CT)	active	confirmed	08/23/2004
Otitis media	65363002 (SNOMED-CT)	active	confirmed	04/26/2004
Benign essential hypertension	1201005 (SNOMED-CT)	active	confirmed	04/26/2004
Acute maxillary sinusitis	66272006 (SNOMED-CT)	active	confirmed	01/08/2004