# mCODE Core IG Testing

## Summary

This document provides an overview of the MITRE developed [mCODE Test Suite](https://github.com/mcode/mcode-inferno-test-kit/tree/main) which is a customized version of the open-source [Inferno](https://inferno-framework.github.io/community/) FHIR testing tool. The test suite provides API conformance testing for “[mCODE Core](https://build.fhir.org/ig/HL7/fhir-mCODE-ig/branches/stages-and-mcode-core/conformance-uscdi-plus.html)”, a set of prioritized profiles within the [mCODE Implementation Guide](https://hl7.org/fhir/us/mcode/) as guidance for implementors.

## Background

The Assistant Secretary for Technology Policy (ASTP), formerly the Office of the National Coordinator (ONC), is developing the USCDI+ for Cancer data elements. The USCDI+ Cancer Program will define real-world data (RWD) elements to further cancer prevention, diagnosis, treatment, research, and care. Enhanced data exchange for research purposes and clinical care contribute to the U.S. government’s support of persons with cancer. USCDI+ Cancer includes focus on the following use cases:

* Clinical Trial Recruitment / Matching
* Immune Related Adverse Event (irAE) tracking in Immunotherapy trials
* Enhance the efficiency and timeliness of collection of cancer registry data
* [Enhancing Oncology Model (EOM)](https://www.cms.gov/priorities/innovation/media/document/eom-payment-methodology) alignment

The [CMS EOM Data Element Guide](https://www.cms.gov/priorities/innovation/media/document/eom-clinical-data-elements-guide) highlights that to improve interoperability and reduce administrative burden, EOM reporting options are aligned with Health Level 7 (HL7) FHIR® minimal Common Oncology Data Elements (mCODE), which is a set of standardized data elements specifically designed for oncology. The USCDI+ Cancer use cases are also being aligned to mCODE where relevant.

This is an important development that deserves early guidance on how mCODE can support these initiatives and provide guidance for implementors.

At the time of [mCODE STU4 IG](https://build.fhir.org/ig/HL7/fhir-mCODE-ig/branches/stages-and-mcode-core/) development (November 2024), USCDI+ for Cancer proposed data elements are still subject to change. However, the current list of data elements suggests a higher priority should be applied to certain profiles within the mCODE data model. This set of potential higher priority data elements have been collected into a group called "[mCODE Core](https://build.fhir.org/ig/HL7/fhir-mCODE-ig/branches/stages-and-mcode-core/conformance-uscdi-plus.html)".

This [mCODE IG Test Suite](https://github.com/mcode/mcode-inferno-test-kit/tree/main) is a customized version of the open-source [Inferno](https://inferno-framework.github.io/community/) FHIR testing tool and provides the functionality to perform API conformance testing for a set of prioritized profiles within the [mCODE Implementation Guide](https://hl7.org/fhir/us/mcode/). This test suite assesses the conformance of the following subset of mCODE profiles in alignment with "[mCODE Core](https://build.fhir.org/ig/HL7/fhir-mCODE-ig/branches/stages-and-mcode-core/conformance-uscdi-plus.html)":

|  |  |
| --- | --- |
| **mCODE** | **EOM** |
| [Cancer Patient](https://hl7.org/fhir/us/mcode/StructureDefinition-mcode-cancer-patient.html) | Date of Birth  Beneficiary Sex  Patient deceased  Date Patient Died |
| [Primary Cancer Condition](https://hl7.org/fhir/us/mcode/StructureDefinition-mcode-primary-cancer-condition.html) | ICD-10-CM Diagnosis Code  Initial Date of Diagnosis  Recurrence or Relapse Clinical Status |
| [Cancer Disease Status](https://hl7.org/fhir/us/mcode/StructureDefinition-mcode-cancer-disease-status.html) | Current Clinical Status Trend  Current Clinical Status Date |
| [TNM Staging](https://hl7.org/fhir/us/mcode/StructureDefinition-mcode-tnm-stage-group.html) | Primary Tumor (T)  Nodal Disease (N)  Metastasis (M) |
| [Tumor Marker](https://hl7.org/fhir/us/mcode/StructureDefinition-mcode-tumor-marker-test.html) | Result of ER Test (Qualitative)  ER Test Specified  ER Test Quantity  Result of PR Test (Qualitative)  PR Test Specified  PR Test Quantity  Result of HER2 Test (Qualitative)  HER2 Test Specified  HER2 Test Quantity |

## mCODE Core Conceptual Diagram

The diagram below highlights the set of "mCODE Core" profiles within mCODE, as of October 10, 2024, that implementers may want to prioritize to meet the USCDI+ for Cancer proposal.

