NHSNLink: Fast Healthcare Interoperability Resources (FHIR) Application Programming Interfaces (API) and Resources

NHSNLink is an open-source application developed by Lantana Consulting Group for the Centers for Disease Control and Prevention (CDC). NHSNLink uses Health Level Seven International® (HL7®) Fast Healthcare Interoperability Resources® (FHIR®) to enable reporting of FHIR digital quality measures (dQMs) for surveillance of public health and patient-safety events via the National Healthcare Safety Network (NHSN). NHSNLink is installed within the CDC firewall and allows NHSN to connect securely to a healthcare facility's EHR via the FHIR application programming interface (API), extract and evaluate patient-level data, and submit it to NHSN for analysis.

The NHSNLink application provides consistent user-experience across all facilities. Although NHSNLink does not support customization, facilities can selectively expose specific APIs to NHSNLink based on their individual needs, maintaining full compliance and control over their data. This approach streamlines the reporting process, reduces reporting-variability, and enhances data quality, ultimately contributing to improved surveillance of public health and patient-safety events.

This document outlines the FHIR Resources and respective US Core standards that NHSNLink uses to enable reporting of dQMs to NHSN.

FHIR Resources, Standards, and Conformance for Reporting dQMs to NHSN

The FHIR profiles below are further described in the *CDC National Healthcare Safety Network (NHSN) Digital Quality Measures (dQM) Content Package Implementation Guide*.

The Acute Care Hospital (ACH) Monthly Reporting Profiles

ACH Monthly FHIR Resources	Standard	ACH Monthly Conformance*
Condition	US Core v3.1.1	MS
Coverage	FHIR R4 v4.0.1	MS
Device	FHIR R4 v4.0.1	MS
Diagnostic Report	FHIR R4 v.4.0.1	MS
Diagnostic Report Lab	US Core v3.1.1	MS
Diagnostic Report Profile for Report and Note Exchange	US Core v3.1.1	MS
Encounter	US Core v3.1.1	R
Implantable Device	US Core v3.1.1	MS
Laboratory Result Observation	US Core v3.1.1	MS
Location	US Core v3.1.1	R
Medication	US Core v3.1.1	MS
MedicationAdministration	FHIR R4 v4.0.1	MS
MedicationRequest	US Core v3.1.1	MS
Observation	FHIR R4 v4.0.1	MS
Observation-Vital Signs	FHIR R4 v4.0.1	MS
Patient	US Core v3.1.1	R
Procedure	US Core v3.1.1	MS
Service Request	FHIR R4 v4.0.1	MS
Specimen	FHIR R4 v4.0.1	MS

The Acute Care Hospital (ACH) Daily Reporting Profiles

ACH Daily FHIR Resources	Standard	ACH Daily Conformance*
Diagnostic Report Lab	US Core v3.1.1	MS
Encounter	US Core v3.1.1	R
Laboratory Result Observation	US Core v3.1.1	MS
Location	US Core v3.1.1	R
Medication	US Core v3.1.1	MS
MedicationAdministration	FHIR R4 v4.0.1	MS
MedicationRequest	US Core v3.1.1	MS
Observation	FHIR R4 v4.0.1	MS
Patient	US Core v3.1.1	R
Procedure	US Core v3.1.1	MS
Service Request	FHIR R4 v4.0.1	MS
Specimen	FHIR R4 v4.0.1	MS

*Conformance: MS = Must Support; R = Required

EHR Vendor-specific Information

EHR Vendor: Oracle (Cerner)
Application Registry: Oracle Health Code Console (Oracle Health code Console)

Application Name	Environment/Purpose	Client ID
NHSNLink Alpha Testing Service	Sandbox/Alpha Testing	84530d0e-216c-4ae3-8cb4-96543593508c
NHSNLink Beta	Production/Beta Testing	302e4bb6-90dd-4cee-aba6-a17deb201391

API Information:

Resource	Function	Type	Version
Condition	read	*	R4
Coverage	read	*	R4
Device	read	*	R4
DiagnosticReport	read	*	R4
Encounter	read	*	R4
Immunization	read	*	R4
Location	read	*	R4
MedicationAdministration	read	*	R4
MedicationRequest	read	*	R4
Observation	read	*	R4
Organization	read	*	R4
Patient	read	*	R4
Practitioner	read	*	R4
Procedure	read	*	R4
ServiceRequest	read	*	R4
Specimen	read	*	R4

EHR Vendor: Epic

Application Registry: Epic on FHIR (Home - Epic on FHIR)

Application Name	Environment/Purpose	Client ID
NHSNLink Alpha Application	Sandbox/Alpha Testing	7fa5b66e-654e-44fd-a4c4-a6abbb1fa026
NHSNLink Beta	Production/Beta Testing	39e944b8-9157-4007-9d30-6fce71868510

API Information:

Resource	Function	Type	Version
Condition	Search	Encounter Diagnosis	R4
Condition	Search	Health Concern	R4
Condition	Search	Infection	R4
Condition	Search	Medial History	R4
Condition	Search	Problems	R4
Condition	Search	Reason for Visit	R4
Coverage	Search	*	R4
Device	Search	External Devices	R4
Device	Search	Implants	R4
DiagnosticReport	Search	Results	R4
Encounter	Search	Patient Chart	R4
List	Read	Patient List	R4
List	Search	Patient List	R4
Location	Search	*	R4
Medication	Search	*	R4
MedicationAdministration	Search	LDAs	R4
MedicationRequest	Search	Signed Medication Orders	R4
Observation	Search	Core Characteristics	R4
Observation	Search	Labs	R4
Observation	Search	LDA-W	R4
Observation	Search	SmartData Elements	R4
Observation	Search	Social History	R4
Observation	Search	Vitals	R4
Patient	Read	*	R4
Patient	Search	*	R4
Procedure	Search	Orders	R4
Procedure	Search	Surgeries	R4
Procedure	Search	Surgical History	R4
ServiceRequest	Search	Order Procedure	R4
Specimen	Search	*	R4

EHR Vendor: Veradigm (formerly Allscripts)
Application Registry: Veradigm Developer Portal

Application Name	Environment/Purpose	Client ID
NHSNLink Beta Testing	Alpha (Sandbox) and Beta (Production)	31122d85-8bd5-4c7e-949a-da9e60bd936f

API Information:

Resource	Function	Type	Version
system	read	*	R4