

Sentinel Common Data Model (SCDM) v8.0.0: Frequently Asked Questions

Version 8.0.0 of the Sentinel Common Data Model includes several major enhancements, including three new tables, Prescribing, Facility, and Provider.

Below is a list of Frequently Asked Questions to orient and guide users who have some familiarity with the SCDM. If you have questions about SCDM v8.0.0 not addressed here, please contact [info@sentinelssystem.org]. For general SCDM questions please see the [“How Sentinel Gets Its Data”](#) webpage.

1. What were the goals of this model change?

- a. Increase data capture.
- b. Improve data precision.
- c. Open SCDM to international and broader use of Real-World Data (RWD).
- d. Introduce greater efficiencies into the SCDM.

2. How does SCDM v8.0.0 increase capture of data?

- a. A new Prescribing table was added to capture patient prescription data. Prescribing data are distinct from outpatient drug dispensings (for more detail, please see [Question 7](#) below).
- b. A new Provider table was added to capture provider specialty data (e.g., cardiologist).
- c. SCDM v8.0.0 includes capture of new laboratory test types, including diagnostic tests for COVID-19.
- d. The Prescribing, Dispensing, Diagnosis, and Procedure tables capture additional drug code, diagnosis code, and procedure code terminologies (i.e., international codes).

3. How does SCDM v8.0.0 improve data precision?

- a. Providers are now associated with *each* health care service performed -- such as, who wrote a prescription (whether dispensed or not), who recorded a diagnosis, or who performed a procedure. In previous versions of the SCDM, one provider was assigned per “encounter” or visit to a healthcare system.
- b. SCDM v8.0.0 provides greater clarity on what qualifies as an encounter and improved guidance on how to treat encounters in diverse care settings.

4. What changes opened the SCDM to international and broader use of Real-World Data (RWD)?

Two primary changes: (1) Data element values and code terminologies were added to support the use of the SCDM by international data partners, and (2) Reference tables were included within the SCDM architecture allow for greater responsiveness to public health needs. Specific changes are detailed below:

- a. The Dispensing table variable NDC has been replaced with Rx_Codetype. This table now allows for the following additional code types for medication:
 - SN = SNOMED CT (US)
 - SK = SNOMED CT (UK)
 - DM = Dictionary of Medicines and Devices (UK)
 - DI = Drug Identification Number (Canada)
 - RN = RxNorm (US)
 - AT= Anatomical Therapeutic Chemical Classification (Denmark)
- b. The Diagnosis table variable Dx_Codetype now allows for additional diagnosis code types:
 - C9 = ICD-9-CA (Canada)
 - C0 = ICD-10-CA (Canada)
- c. The Procedure table variable Px_Codetype now allows for the following additional procedure code types:
 - a. CP = Canadian Classification of Diagnostic, Therapeutic, and Surgical Procedures (CCP)
 - b. CX = Canadian Classification of Health Interventions (CCI)
 - c. SK = SNOMED CT (UK)
- d. The Laboratory Result table now allows for additional values to support COVID-19 diagnostic lab tests (MS_Test_Name = SARS_COV_2)
- e. The Laboratory Result table architecture now includes a reference table so that additional lab tests may be added with less time and effort for the Sentinel Operations Center and Data Partners.
- f. In the Demographic table, Zip Code has been changed to Postal Code to allow for diverse geographic identifiers.
- g. To address the needs of some international Data Partners, the Enrollment table can now accept “Ambulatory Only” medical coverage.
- h. The Source of Death and Cause of Death information now has globalized descriptions of values.

5. What efficiencies were introduced into SCDM v8.0.0?

- a. A required sort order was set for all tables, reducing computational processing needs.
- b. Definitions for unique rows were provided, reducing the instance of duplicate records.

- c. Identification variables (e.g., PatID) were set to numeric data type, reducing table sizes.
- d. Length requirements for many variables were set to “minimal length necessary to contain code values,” reducing table size.
- e. Moving certain provider and facility data from the Encounter table to the new Provider and Facility tables reduced redundant information across multiple rows, reducing overall table size.

6. Were these efficiency changes effective?

Yes. We examined performance across tools and tables within Sentinel (using an internal test database) and at two Sentinel Data Partners selected to represent integrated delivery system and insurance carrier data.

We assessed processing (“run-times”) within two major tools: Quality Assurance SAS Program Package and the Active post-market Risk Identification and Analysis (ARIA) routine querying tools. We also assessed storage space (“disk space utilization”). Note: positive percentages show efficiency improvements (i.e., shorter run-times, decreased space utilization); negative percentages show reductions in efficiency (i.e., longer run-times, increased space utilization)

- a. QA Package Run-times: Run-time improvements varied, ranging from -7.6% to 64.8%. Notably, databases with larger volumes of data realized greater efficiency improvements.
- b. ARIA Tool Run-times: Run-time improvements attributed to model changes (vs. improvements made to the tools themselves) ranged from 5.7% to 24%.
- c. SCDM Database Disk Space: Disk space utilization decreased in range from 31% to 56%.

7. What are the differences between Prescribing data and Dispensing data?

Prescribing data represent the prescription order written by a provider for a medication or medical product. The Prescribing Table can include inpatient and outpatient prescriptions. Dispensing data represent filled prescriptions with a claim paid by a health insurer. The Dispensing Table currently includes only outpatient prescriptions.

8. Some individual providers have more than one medical specialty. Are all medical specialties of each provider available in this new model?

No, they are not. When a provider has multiple specialties in source data, the specialty under which that provider practices most often is included in the SCDM-compliant data. This selection is made at the Data Partner level.

9. Does this new model enable tracking patients and encounters from one ETL to another?

The model itself does not. Data Partners have been instructed to establish systems to be able to identify the same patients and encounters across SCDM versions and ETLs.