



**NIST NCPDP Analysis – Approach for Further Analysis :
SCRIPT/HL7 Compatibility and Vocabulary Harmonization
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Introduction

The project deliverable, *Initial Assessment: Standards Compatibility in Medication Reconciliation*, compared the C32 CCD, CCR, and NCPDP SCRIPT messaging in the context of a medication reconciliation process. The review focused on how key medication, adverse event and problem concepts are represented in the three standards, and it identified differences in terminology usage as well as other content differences affecting compatibility.

Another project deliverable, *RxNorm Support Assessment*, provided an overview of the RxNorm terminology system, resources available for its implementation, SCRIPT 10.6's support for RxNorm, and a summary of related challenges and opportunities.

This document suggests approaches for additional analysis related to consistency, gaps, and conflicts between SCRIPT and related HL7 messaging based on the findings of the compatibility assessment. In particular, opportunities are identified to harmonize terminology used in the SCRIPT standard and that used in the C32 CCD. In addition, it proposes steps to address the need for additional vocabulary-related direction in SCRIPT and resources for implementers.

Document sections:

- **Further standards compatibility analysis.** This section suggests steps to extend the analysis performed in the *Standards Compatibility* assessment to other areas of the SCRIPT and HL7 standards.
- **Vocabulary-related opportunities.** Both the *Standards Compatibility* analysis and the *RxNorm Assessment* identified opportunities to harmonize vocabulary between NCPDP SCRIPT and other standards. This section proposes actions for further evaluating terminology use in SCRIPT and HL7 and potentially making adjustments to bring consistency between them.

Further standards compatibility analysis

The project deliverable, *Initial Assessment: Standards Compatibility in Medication Reconciliation*, took a limited view into compatibility between the NCPDP SCRIPT and HL7 standards, comparing them in the context of medication reconciliation, focusing on a subset of messages/documents, and targeting the concepts most critical to the medication reconciliation process. This section suggests steps to extend that analysis to other areas of the SCRIPT and HL7 standards.

Focus and findings of the initial analysis. The initial *Standards Compatibility* analysis focused on medication, adverse event and problem/diagnosis concepts in the following SCRIPT and HL7 standards:

SCRIPT

- Medication History
- New Prescription
- Fill Status
- Census

HL7

- C32 CCD

That assessment focused on how the standards were employed during the medication reconciliation process, and how the concepts most critical to the process were represented in each standards. The analysis found areas of consistency and difference with regard to the clinical content supported by the standards and the way in which standard terminologies are used (see below for additional vocabulary harmonization opportunities).

Recommendation: Expand analysis to additional message types. The initial assessment included several NCPDP SCRIPT message types, but only one HL7 document—the C32 CCD. It would be valuable to extend the analysis to other HL7 messages that convey medication information, especially the v2 HL7 ORM medication order message used in inpatient settings. A broader comparison of the HL7 ADT (admission, discharge, transfer) message to the SCRIPT Census message would also be informative, reviewing other aspects such as the range of patient change and transfer events and clinical information supported.

Recommendation: Expand the focus of comparison to other concepts. The initial assessment focused on the medication, adverse reaction and problem concepts. Other concepts are common between the standards, however, especially the patient, prescriber/practitioner, pharmacy and care setting. Comparison of these concepts and others—in both the HL7 version 2.x and 3.x/CDA standards—is necessary to fully assess the compatibility of SCRIPT and HL7.

Recommendation: Consider the mechanics of terminology translation between standards. Review of terminologies used in the C32 CCD and a subset of SCRIPT messages identified differences in the vocabularies used and, in some cases, the particular ranges of values within those vocabularies. While there are

opportunities to bring the standards closer together with respect to vocabulary use in the future, today's implementers must deal with the existing differences when integrating the HL7 and NCPDP standards into system workflows. Identification of practical approaches and methods for bridging these differences would be beneficial to vendors and others using these standards together in their systems.

Particular focus areas identified in the *Standards Compatibility* analysis include:

- Bridging the use of RxNorm in the C32 CCD and representative NDCs in the NCPDP Medication History to identify patient medications
- Resolving dose form, route of administration and unit of measure terms between the NCPDP and CCD standards, which in some cases use different terminologies, and in others differ in their representation of the same concepts: with SCRIPT using NCI Thesaurus code values and the C32 CCD using the underlying FDA and UCUM values
- Translating between proprietary NCPDP and HL7 code sets for date and time concepts including intervals, rates and frequencies
- Dealing with cases where the same standard terminology is used in the standards, but allowed ranges differ (e.g., SNOMED CT problems /conditions and FDA concepts).

Vocabulary-related opportunities

Both the *Standards Compatibility* analysis and the *RxNorm Assessment* identified opportunities to harmonize vocabulary between NCPDP SCRIPT and other standards. In addition, the *RxNorm Assessment* points out that implementers would benefit from guidance and resources to assist in the implementation of standard terminologies into their systems.

Particular opportunities that may yield the most benefit include the following.

Harmonization

A number of harmonization opportunities are identified in *Initial Assessment: Standards Compatibility in Medication Reconciliation*, including the following. See that document for additional opportunities.

Representation of Federal Medication Terminologies. As noted above, the SCRIPT standard and C32 CCD use the same FMT terminologies in some instances, but differ in others. Further, SCRIPT represents FMT concepts using National Cancer Institute's NCI Thesaurus codes rather than the underlying source concept values. A full reconciliation between the standards' in these respects would enable differences to be resolved and/or the appropriate guidance given to implementers for bridging between differences.

SNOMED CT problem list differences. Both the C32 CCD and SCRIPT use SNOMED CT as the source of problem / condition concepts. However, the ranges of concept values allowed differ in certain cases, in particular where the VA / Kaiser Permanente Problem List Subset was used as the basis for SCRIPT's problem concepts, but where subsequent adjustments to the VA/KP subset were not incorporated into SCRIPT. It would be beneficial for the standards organizations to coordinate updates in cases such as these to ensure consistency . It may further be beneficial to consider the current VA/KP subset in comparison to the CORE

Problem List Subset of SNOMED CT maintained by the National Library of Medicine, and provide guidance for implementers of Meaningful Use as well as exchange not covered by Meaningful Use rules.

Proprietary code sets. There are cases in both the HL7 and NCPDP SCRIPT standards where proprietary codes are used to represent common concepts such as time, rates, etc. These situations offer opportunities for removing differences that implementers today need to bridge through translation or other means.

Implementation assistance

Tools for mapping local codes to standard values. Tooling in the form of mapping assistants (possibly so-called wizards) for translating local codes to specific targeted standard value sets would be helpful to those adopting the federally-designated terminologies and others used in the SCRIPT and HL7 standards. A model for such a facility might be the Regenstrief LOINC Mapping Assistant (RELMA) which assists implementers of laboratory messaging.

RxNorm implementation guides. As identified in the *RxNorm Support Assessment*, it would be very useful for implementers of SCRIPT (and likely other standards) to have implementation guidance that addresses general use of RxNorm and related resources such as the RxNorm API and RxTerm in addition to the specific needs of the particular standard within which RxNorm is being used.

Other terminology guidance for SCRIPT. The current NCPDP SCRIPT implementation materials provide limited assistance to implementers with regard to the use of standard terminologies such as SNOMED CT and RxNorm. Creation of terminology guidance focused on the SCRIPT standard is critically important to the consistent implementation of the SCRIPT version 10.6 standard (to which the industry is beginning its migration from earlier SCRIPT versions), and especially the Structured SIG segment, which is also incorporated in the ASTM CCR standard.