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**HL7 Version 2.5.1 Implementation Guide:   
S&I Framework Laboratory Orders from EHR, Release 1 US Realm**

September 2013

**HL7 DSTU Ballot**

**Sponsored by:  
Orders and Observations Work Group**

**in collaboration with the Health and Human Services Standards   
and Interoperability Framework Laboratory Orders Interface Working Group**

|  |  |
| --- | --- |
| LOI Work Group Co-chair: | Hans Buitendijk, Siemens Healthcare |
| LOI Work Group Co-chair: | Ken McCaslin, Quest Diagnostics |
| LOI Vocabulary Work Group Co-chair: | Cindy Johns, LabCorp |
| LOI Vocabulary Work Group Co-chair: | Riki Merrick, iConnect Consulting |
| LOI Vocabulary Work Group Co-chair | Virginia Sturmfels, Quest Diagnostics |

**Questions or comments regarding this document should be directed to the Orders and Observations Workgroup (**[**ord@lists.hl7.org**](mailto:ord@lists.hl7.org)**).**

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|  |  |
| --- | --- |
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| Cindy Johns | LabCorp |
| Craig Newman | Epic |
| Dave Shevlin | Accenture |
| David Burgess | LabCorp |
| Erik Pupo | Deloitte Consulting, LLP |
| Eric Haas | Health eData Inc |
| Ern Grove | SHAPE HITECH, LLC |
| Freida Hall | Quest Diagnostics |
| Glen Moy | California HealthCare Foundation |
| Hans Buitendijk | Siemens Healthcare |
| John Feikema | Feikema and Associates, LLC |
| Jonathan Tadese | Deloitte Consulting, LLP |
| Kathy Walsh | LabCorp |
| Ken McCaslin | American Clinical Laboratory Association (ACLA) |
| Lester Keepper | SHAPE HITECH, LLC |
| Maribeth Gagnon | Vermont Information Technology Leaders |
| Merideth Vida | Accenture |
| Pam Banning | 3M Health Information Systems |
| Riki Merrick | iConnect Consulting |
| Rob Hausam | Hausam Consulting |
| Robert Dieterle | EnableCare, LLC |
| Robert Lutolf | Gensa Corporation |
| Robert Snelick | National Institute of Standards and Technology |
| Sam Faus | Sujansky Associates |
| Sara Stewart | National Institute of Standards and Technology |
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| Scott Robertson | Kaiser Permanente |
| Shalina Wadhwani | Deloitte Consulting, LLP |
| Virginia Sturmfels | Quest Diagnostics |
| Walter Sujanksy | Sujansky Associates |

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Table of Contents

1 Introduction 13

1.1 Purpose 13

1.2 Audience 13

1.2.1 Relevant Laboratory Implementation Guides 13

1.2.2 Requisite Knowledge 14

1.3 Organization of this Guide 14

1.3.1 Conventions 14

1.3.2 Message Element Attributes 15

1.3.3 Keywords 16

1.3.4 Usage Conformance Testing Recommendations 16

2 Use Case – Ambulatory Care Setting 20

2.1 Definitions 20

2.2 Scope 20

2.2.1 In Scope 21

2.2.2 Out Of Scope 21

2.3 Actors 21

2.4 Orders for Ambulatory Care Use Case and Context Diagrams 22

2.5 User Story 22

2.5.1 Use Case Assumptions 23

2.5.2 Pre-Conditions 24

2.5.3 Post Conditions 24

2.5.4 Scenario 1 – Electronic Ordering of New or Scheduled Laboratory Test(s) 25

2.5.4.1 Functional Requirements 25

2.5.4.2 Sequence Diagram 26

2.5.5 Scenario 2 – Electronic Ordering of Add-On Laboratory Test(s) 27

2.5.6 Scenario 3 – Requesting the Cancellation of a Previously Placed Laboratory Order 27

2.5.6.1 Functional Requirements 28

2.5.6.2 Sequence Diagram 29

2.5.7 Scenario 4 – Laboratory Cancellation of a Previously Placed Laboratory Order 30

2.5.7.1 Functional Requirements 30

2.5.7.2 Sequence Diagram 31

2.6 Key Technical Decisions 32

2.6.1 Profile and Component Architecture 32

2.6.2 Use of ISO Object Identifier (OID) 32

2.6.3 Use of Vocabulary Standards 32

2.6.4 Field Length and Truncation 33

2.6.5 Scope of Implementation 33

2.6.6 Ask at Order Entry (AOE) Observations 33

2.6.6.1 Special Considerations 34

2.6.6.2 Examples 34

2.6.7 Communication of Other Clinical Information or Prior Results 35

2.7 Referenced Profiles – Antecedents 35

2.8 Conformance to this Guide 35

2.8.1 Order Profile Components 36

2.8.1.1 LOI\_Common\_Component – ID: 2.16.840.1.113883.9.AA 36

2.8.1.2 LOI\_GU\_Component (Globally Unique) – ID: 2.16.840.1.113883.9.BB 36

2.8.1.3 LOI\_NG\_Component (Non-Globally Unique) – ID: 2.16.840.1.113883.9.CC 37

2.8.1.4 LAB\_PRU\_Component (Unique Placer Order Number) – ID: 2.16.840.1.113883.9.YY 38

2.8.1.5 LAB\_PRN\_Component (Non-Unique Placer Order Number) – ID: 2.16.840.1.113883.9.WW 38

2.8.1.6 LAB\_NB\_Component (Newborn) – ID: 2.16.840.1.113883.9.24 38

2.8.1.7 LAB\_TO\_Component (Time Offset) – ID: 2.16.840.1.113883.9.XX 38

2.8.1.8 LAB\_XO\_Component (Exclusions) – ID: 2.16.840.1.113883.9.23 39

2.8.1.9 LAB\_PH\_Component (Public Health) – ID: 2.16.840.1.113883.9.OO 39

2.8.1.10 LOI\_PR\_Component (Prior Results) – ID: 2.16.840.1.113883.9.QQ 40

2.8.1.11 LOI\_RC\_Component (Results Copies) – ID: 2.16.840.1.113883.9.RR 40

2.8.2 Order Profiles (Pre-Coordinated Components) 40

2.8.2.1 LOI\_GU\_PRU\_Profile – ID: 2.16.840.1.113883.9.FF 40

2.8.2.2 LOI\_GU\_PRN\_Profile – ID: 2.16.840.1.113883.9.GG 41

2.8.2.3 LOI\_NG\_PRU\_Profile – ID: 2.16.840.1.113883.9.HH 41

2.8.2.4 LOI\_NG\_PRN\_Profile – ID: 2.16.840.1.113883.9.II 41

2.8.3 Response Components 41

2.8.3.1 LOI\_Acknowledgement\_Component – ID: 2.16.840.1.113883.9.JJ 41

2.8.3.2 GU\_Acknowledgement\_Component – ID: 2.16.840.1.113883.9.KK 41

2.8.3.3 NG\_Acknowledgement\_ Component – ID: 2.16.840.1.113883.9.LL 41

2.8.4 Response Profiles (Pre-Coordinated Components) 41

2.8.4.1 LOI\_GU\_Response\_Profile – ID: 2.16.840.1.113883.9.MM 41

2.8.4.2 LOI\_NG\_Response\_Profile – ID - 2.16.840.1.113883.9.NN 42

2.8.5 Extended Profile Use 42

2.8.6 Relationship to Results 42

3 Data Types 43

3.1 CE – Coded Element 43

3.2 CNE – Coded With No Exceptions 43

3.3 CWE – Coded with Exceptions 44

3.3.1 CWE – Coded with Exceptions – Base 44

3.3.2 CWE\_CR – Coded with Exceptions – Code Required 45

3.3.3 CWE\_CR1 – Coded with Exceptions – Code Required – Second Triplet Optional 46

3.3.4 CWE\_CRE – Coded with Exceptions – Code Required, but May Be Empty 47

3.3.5 CWE\_CRE1 – Coded with Exceptions – Code Required, but May Be Empty – Second Triplet Optional 49

3.4 CX – Extended Composite ID with Check Digit 50

3.4.1 CX\_GU – Extended Composite ID with Check Digit (Globally Unique) 50

3.4.2 CX\_NG – Extended Composite ID with Check Digit (Non-Globally Unique) 51

3.5 DR\_1 – Date/Time Range 1 52

3.6 EI – Entity Identifier 52

3.6.1 EI\_GU – Entity Identifier (Globally Unique) 52

3.6.2 EI\_NG – Entity Identifier (Non-Globally Unique) 52

3.7 EIP – Entity Identifier Pair 53

3.7.1 EIP\_GU – Entity Identifier Pair (Globally Unique) 53

3.7.2 EIP\_NG – Entity Identifier Pair (Non-Globally Unique) 53

3.8 HD – Hierarchic Designator 53

3.8.1 HD\_GU – Hierarchic Designator (Globally Unique) 53

3.8.2 HD\_NG – Hierarchic Designator (Non-Globally Unique) 54

3.9 JCC – Job Code/Class 54

3.10 MSG – Message Type 54

3.11 PT – Processing Type 54

3.12 SAD – Street Address 55

3.13 SN – Structured Numeric 55

3.14 TS – Time Stamp 55

3.14.1 TS\_0 – Time Stamp 0 55

3.14.2 TS\_1 – Time Stamp 1 56

3.14.3 TS\_2 – Time Stamp 2 56

3.14.4 TS\_3 – Time Stamp 3 57

3.14.5 TS\_4 – Time Stamp 4 57

3.14.6 TS\_5 – Time Stamp 5 57

3.15 VID – Version Identifier 58

3.16 XAD – Extended Address 58

3.17 XCN – Extended Composite ID Number and Name for Persons 59

3.17.1 XCN\_GU – Extended Composite ID Number and Name for Persons (Globally Unique) 59

3.17.2 XCN\_NG – Extended Composite ID Number and Name for Persons (Non-Globally Unique) 60

3.18 XON – Extended Composite Name and Identification Number for Organizations 61

3.18.1 XON\_GU – Extended Composite Name and Identification Number for Organizations (Globally Unique) 61

3.18.2 XON\_NG – Extended Composite Name and Identification Number for Organizations (Non-Globally Unique) 61

3.18.3 XON\_IN1 – Extended Composite Name and Identification Number for Organizations (Name Only for Insurance) 62

3.19 XPN – Extended Person Name 63

3.19.1 XPN – Extended Person Name - Base 63

3.19.2 XPN\_1 – Extended Person Name 1 63

3.20 XTN – Extended Telecommunication Number 64

4 Messages 66

4.1 OML^O21^OML\_O21: Laboratory Order Message – New and Append Order 66

4.2 OML^O21^OML\_O21: Laboratory Order Message – Cancel Order 70

4.3 ACK^O21^ACK\_O21: Laboratory Order Message – System Level Acknowledgement 73

4.4 ORL^O22^ORL\_O22: Laboratory Order Message – Application Level Acknowledgement 73

4.5 Segment and Field Descriptions 74

4.5.1 MSH – Message Header Segment 75

4.5.2 MSA – Acknowledgement Segment 82

4.5.3 ERR – Error Segment 83

4.5.4 PID – Patient Identification Segment 83

4.5.5 NK1 – Next of Kin / Associated Parties Segment 86

4.5.6 PV1 – Patient Visit Segment 88

4.5.7 IN1 – Insurance Segment 90

4.5.8 GT1 – Guarantor Segment 93

4.5.9 ORC – Common Order Segment 96

4.5.10 TQ1 – Timing/Quantity Segment 98

4.5.11 OBR – Observation Request Segment 100

4.5.11.1 Result Handling and Result Copies To 103

4.5.12 NTE – Notes and Comments Segment 103

4.5.13 PRT – Participation Information Segment – From 2.7.1 103

4.5.14 DG1 – Diagnosis Segment 105

4.5.15 OBX – Observation/Result Segment 106

4.5.16 SPM – Specimen Segment 108

5 Code Systems and Value Sets 111

5.1 LOINC 111

5.2 SNOMED CT 112

5.3 Unconstrained Code Systems 112

5.4 Constrained HL7 Tables – Value Sets 114

5.4.1 HL7 Table 0003 – Event Type Code (2.5.1) 115

5.4.2 HL7 Table 0065 – Specimen Action Code (V2.7.1) 115

5.4.3 HL7 Table 0076 – Message Type (V2.5.1) 115

5.4.4 HL7 Table 0104 – Version ID (V2.5.1) 115

5.4.5 HL7 Table 0119 – Order Control Codes (V2.8.1) 115

5.4.6 HL7 Table 0125 – Value Type (V2.5.1) 116

5.4.7 HL7 Table 0200 – Name Type 117

5.4.8 HL7 Table 0287 – Action Code 117

5.4.9 HL7 Table 0301 – Universal ID Type (V2.7.1) 117

5.4.10 HL7 Table 0354 – Message Structure (V2.5.1) 118

5.4.11 HL7 Table 0912 – Participation (V2.7.1) 118

5.5 User-Defined HL7 Tables and Extended Value Sets 119

5.5.1 HL7 Table 0045 – Courtesy Code 120

5.5.2 HL7 Table 0064 – Financial Class Code 120

5.5.3 HL7 Table 0068 – Guarantor Type Code 120

5.5.4 HL7 Table 0072 – Insurance Plan ID 121

5.5.5 HL7 Table 0098 – Agreement Code 121

5.5.6 HL7 Table 0203 – Identifier Type Code (2.7.1) 121

5.5.7 HL7 Table 0396 – Coding Systems Code 121

5.5.8 HL7 Table 0485 – Priority Code (V2.7.1) 121

5.5.9 HL7 Table 0507 – Observation Result Handling (V2.7.1) 122

i. Clinical Laboratory Improvement Amendments Considerations 124

ii. Mandatory Ordering Requirements 124

iii. Regulatory Compliance 125

iv. Authorized Parties 125

Index of Tables

Table 1‑1. Message Element Attributes 15

Table 2‑1. Information Interchange Requirements 25

Table 2‑2. System Requirements 25

Table 2‑3. Scenario 1 – Electronic Ordering Of New Or Scheduled Laboratory Test(s) 26

Table 2‑4. Information Interchange Requirements 28

Table 2‑5. System Requirements 28

Table 2‑6. Scenario 3 – Requesting the Cancellation of a Previously Placed Laboratory Order 29

Table 2‑7. Information Interchange Requirements 30

Table 2‑8. System Requirements 30

Table 2‑9. Scenario 4 – Laboratory Cancellation of a Previously Placed Laboratory Order 31

Table 3‑1. Coded Element (CE) 43

Table 3‑2. Coded With No Exceptions (CNE) 43

Table 3‑3. Coded With Exceptions – Base (CWE) 44

Table 3‑4. Coded with Exceptions – Code Required (CWE\_CR) 45

Table 3‑5. Coded with Exceptions – Code Required 1 – Second Triplet Optional (CWE\_CR1) 46

Table 3‑6. Coded with Exceptions − Code Required But May Be Empty (CWE\_CRE) 47

Table 3‑7. Coded with Exceptions − Code Required But May Be Empty – Second Triplet Optional (CWE\_CRE1) 48

Table 3‑8. Extended Composite ID with Check Digit (CX\_GU) 50

Table 3‑9. Extended Composite ID with Check Digit (CX\_NG) 51

Table 3‑10. Date/Time Range 1 (DR) 51

Table 3‑11. Entity Identifier (EI\_GU) 52

Table 3‑12. Entity Identifier (EI\_NG) 52

Table 3‑13. Entity Identifier Pair (EIP\_GU) 52

Table 3‑14. Entity Identifier Pair (EIP\_NG) 53

Table 3‑15. Hierarchic Designator (HD\_GU) 53

Table 3‑16. Hierarchic Designator (HD\_NG) 53

Table 3‑17. Job Code/Class (JCC) 54

Table 3‑18. Message Type (MSG) 54

Table 3‑19. Processing Type (PT) 54

Table 3‑20. Street Address (SAD) 54

Table 3‑21. Structured Numeric (SN) 55

Table 3‑22. Time Stamp 0 (TS\_0) 55

Table 3‑23. Stamp 1 (TS\_1) 56

Table 3‑24. Time Stamp 2 (TS\_2) 56

Table 3‑25. Time Stamp 3 (TS\_3) 56

Table 3‑26. Time Stamp 4 (TS\_4) 57

Table 3‑27. Time Stamp 5 (TS\_5) 57

Table 3‑28. Version Identifier (VID) 58

Table 3‑29. Extended Address (XAD) 58

Table 3‑30. Extended Composite ID Number and Name for Persons (XCN\_GU) 59

Table 3‑31. Extended Composite ID Number and Name for Persons (XCN\_NG) 60

Table 3‑32. Extended Composite Name and Identification Number for Organizations (XON\_GU) 61

Table 3‑33. Extended Composite Name and Identification Number for Organizations (XON\_NG) 61

Table 3‑34. Extended Composite Name and Identification Number for Organizations (Name Only for Insurance) (XON\_IN1) 62

Table 3‑35. Extended Person Name (XPN) 63

Table 3‑36. Extended Person Name 1 (XPN\_1) 63

Table 3‑37. Extended Telecommunication Number (XTN) 64

Table 4‑1. OML^O21^OML\_O21 New and Append Order 65

Table 4‑2. OML^O21^OML\_O21 Cancel Order – Ordering Provider Initiated 69

Table 4‑3. ACK^O21^ACK\_O21 Abstract Message Syntax 72

Table 4‑4. ORL^O22^ORL\_O22 Abstract Message Syntax 72

Table 4‑5. Message Header Segment (MSH) 74

Table 4‑6. MSH 21 Orders Profile Combinations 76

Table 4‑7. Valid Order and Acknowledgement Code Combinations 78

Table 4‑8. MSH 21 Acknowledgment Profile Combinations 81

Table 4‑9. Acknowledgment Segment (MSA) 82

Table 4‑10. Error Segment (ERR) 82

Table 4‑11. Patient Identification Segment (PID) 83

Table 4‑12. Next of Kin / Associated Parties Segment (NK1) 85

Table 4‑13. Patient Visit Segment (PV1) 87

Table 4‑14. Insurance Segment (IN1) 90

Table 4‑15. Guarantor Segment (GT1) 92

Table 4‑16. Common Order Segment (ORC) 95

Table 4‑17. Timing/Quantity Segment for Order Group (TQ1) 98

Table 4‑18. Observation Request Segment (OBR) 99

Table 4‑19. Notes and Comments Segment (NTE) 102

Table 4‑20. Participation Information Segment (PRT) 103

Table 4‑21. Diagnosis Segment (DG1) 104

Table 4‑22. Observation Result Segment (OBX) 105

Table 5‑1. Unconstrained Code System Summary 113

Table 5‑2. Constrained Code System Summary 114

Table 5‑3. HL7 Table 0003 Event Type Code (V2.5.1) 115

Table 5‑4. HL7 Table 0065 Specimen Action Code (V2.7.1) 115

Table 5‑5. HL7 Table 0076 Message Type (v2.5.1) 115

Table 5‑6. HL7 Table 0104 – Version ID (V2.5.1) 115

Table 5‑7. HL7 Table 0119 - Order Control Codes (V2.8.1) 115

Table 5‑8. HL7 Table 0125 – Value Type (V2.5.1) 116

Table 5‑9. HL7 Table 0287 – Action Code 117

Table 5‑10. HL7 Table 0287 – Action Code 117

Table 5‑11. HL7 Table 0301 - Universal ID Type (V2.7.1) 118

Table 5‑12. HL7 Table 0354 (V2.5.1) 118

Table 5‑13. HL7 Table 0912 – Participation (V2.7.1) 119

Table 5‑14. User Defined or Extended Code System Summary 119

Table 5‑15. HL7 Table 0045 Courtesy Code 120

Table 5‑16. HL7 Table 0064 – Financial Class Code 121

Table 5‑17. HL7 Table 0068 – Guarantor Type Code 121

Table 5‑18. HL7 Table 0072 – Insurance Plan ID 121

Table 5‑19. HL7 Table 0098 – Agreement Code 121

Table 5‑20. HL7 Table 0203 – Identifier Type Code (2.7.1) 121

Table 5‑21. HL7 Table 0396 – Coding Systems Code 122

Table 5‑22. HL7 Table 0485 – Priority Code (V2.7.1) 122

Table 5‑23. HL7 Table 0507 - Observation Result Handling (V2.7.1) 122

Table 5‑24. HL7 Table 0552 - Advanced beneficiary notice override reason 123

Table B‑1. Mandatory Test Request Requirements 125

Table C-1. Order Profile Components 127

Table C-2. Order Profiles (Pre-Coordinated Components) 127

Table C-3. Response Components 127

Table C-4. Response Profiles (Pre-Coordinated Components) 127

Table D-1. Glossary 128

Index of Figures

Figure 2‑1. Use Case Diagram 22

Figure 2‑2. Context Diagram 22

Figure 2‑3. Scenario 1 Sequence Diagram 26

Figure 2‑4. Scenario 3 Sequence Diagram 29

Figure 2‑5. Scenario 4 Sequence Diagram 31

# Introduction

The *HL7 Version 2.5.1 Implementation Guide: Laboratory Orders Interface for US Realm, Release 1 (US Realm)* is the result of collaborative efforts between HL7, the California Health Care Foundation, and the Health and Human Services Office of National Coordinator’s Standards and Interoperability Framework Laboratory Orders Interface Initiative.

By consensus the HL7 V2.5.1 OML^O21 Message was selected as the basis to define the profile constraints expressed in this guide to meet the requirements of the transmission of laboratory orders. The California Health Care Foundation’s *EHR-Laboratory Interoperability and Connectivity Specification for Orders, ELINCS Orders, v1.0 June 28, 2011* and the Standards and Interoperability (S&I) Framework’s Laboratory Orders Interface Use Case (LOI UC) were leveraged for the development of this Implementation Guide. In addition, the ELINCS Orders and LOI UC were revised, where agreed upon by the Standards and Interoperability (S&I) Framework’s Laboratory Orders Interface and HL7 communities, to provide the Use Case content, diagrams and requirements for this Implementation Guide.

## Purpose

The Laboratory Orders Interface Initiative focuses on identifying the requirements, specifications and standards, and on providing the implementation guidance for electronic ordering of laboratory tests in the US Realm. The scope of the Laboratory Orders Interface Use Case includes requirements to enable a particular implementation of Electronic Health Record System (EHR-S) to use standardized structured data in a defined inter-organizational laboratory transaction. The Use Case requirements are directed at laboratory test orders between an Ambulatory Provider’s EHR-S and a Laboratory’s Laboratory Information System (LIS). Future versions of this guide may harmonize with existing guides to extend interoperability of laboratory results across care settings, e.g., acute care.

## Audience

This guide is designed for use by analysts and developers who require guidance on data elements and components of the *HL7 Version 2.5.1 OML Laboratory Order Message* relative to the Laboratory Orders Interface (LOI) initiative. Users of this guide must be familiar with the details of HL7 message construction and processing. This guide is not intended to be a tutorial on that subject.

### Relevant Laboratory Implementation Guides

There are multiple Implementation Guides in support of the Office of the National Coordinator (ONC) that have been developed under the Standards and Interoperability Framework Initiative (S&I Framework). These guides have been created using the same processes, are stylistically similar and designed to work together. The set includes but is not limited to:

* This publication; the Laboratory Orders Interface Implementation Guide (LOI IG)
* [Standards and Interoperability Laboratory Results Interface Use Case, Laboratory Results Reporting to Primary Care Providers (in an Ambulatory Setting) v1.0](http://sibrowser.siframework.org/siclient/view?type=artifact&id=39481918-9dc7-4f55-aa77-f978b4c13d8b&name=SIFramework_LRI_UC.docx) (LRI IG)
* HL7 Version 2.5.1 Implementation Guide: S&I Framework Laboratory Test Compendium Framework, Release 2, US Realm June 2013 (eDOS)
* The profiles that make up modifications of both the LRI and LOI IG to support the Electronic Laboratory Reporting (ELR) or the addendum to those guides.

As part of that design, some components are prefaced by LAB\_, LOI\_ or LRI\_, which indicates the following use:

* LAB\_*xxx* – the component declares behaviors and constraints that apply to all guides.
* LOI\_*xxx* – the component declares behaviors and constraints that apply specifically to laboratory orders.
* LRI\_*xxx* – the component declares behaviors and constraints that apply specifically to laboratory results.

The EHR System and LIS will conform to this family of implementation guides; a laboratory that receives an order conforming to this guide should be capable of reporting with a conformant LRI message.

### Requisite Knowledge

* HL7 V2.5.1, V2.7, V2.7.1 Messaging ([www.HL7.org](http://www.HL7.org))
* SNOMED (www. <http://www.ihtsdo.org/snomed-ct>)
* LOINC (<http://loinc.org>)
* OIDS (<http://www.hl7.org/oid>)
* [Standards and Interoperability Laboratory Results Interface Use Case, Laboratory Results Reporting to Primary Care Providers (in an Ambulatory Setting) v1.0](http://sibrowser.siframework.org/siclient/view?type=artifact&id=39481918-9dc7-4f55-aa77-f978b4c13d8b&name=SIFramework_LRI_UC.docx)

## Organization of this Guide

### Conventions

This guide adheres to the following conventions:

* The guide is constructed assuming the implementer has access to the 2.5.1 and 2.7.1 versions of the HL7 Standard. Although some information from the standard is included in this implementation guide, much information from the standard has not been repeated here.
* The rules outlined in *HL7 2.7.1*, *Chapter 2B*, *Section 2B5*, *Conformance Using Message Profiles*, were used to document the use case for, and constraints applied to, the messages described in this guide.
* Data types have been described separately from the fields that use the data types.
* No conformance information is provided for optional message elements and segments (“O”) or unsupported message elements and segments (“X”). This includes cardinality, value sets and descriptive information. Implementers who want to use optional message elements should refer to the base HL7 V2.5.1 Standard to determine how these optional message elements will be used. Conformance information is provided when a conditional predicate resolves to an “R” or “RE” on either the “a” or “b” part of the expression, regardless of the opposite value, e.g., C(R/O).
* This guide provides conditional predicates for some fields; note that the condition may be dependent on data elements that are marked as “O” (optional). In these cases, the interpretation by the reader should be “if the optional element is used, then these additional constraints are now required.” That is, if the optional element is present, then these additional constraints are now active. This guidance is included as it is logically true but these conditional elements are not tested.
* This guide uses “X” as a conformance usage indicator very sparingly. Where the underlying standard indicates the segments/field/component is present for backwards compatibility (“B”) or withdrawn ("W") an “X” will be used. A small number of other message elements that are clearly out of scope for the use case have been given the "X" usage. All other message elements have either been further constrained to R/RE/C(a/b) or have been left as "O" to enable trading partners to explore additional capabilities. Note that without a clearly agreed to complementary profile between trading partners, an EHR that is compliant with this implementation guide does not have to send any elements marked as an "O", nor does a receiver of a lab order that is compliant with this implementation guide have to process any elements marked as an "O". Neither trading partner can mandate the other to accept any such complementary profiles to enable basic laboratory orders interfacing "out-of-the-box".

### Message Element Attributes

The following table describes the various attributes used by this guide to document data type attribute tables, message structure attribute tables and segment attribute tables. Not all attributes apply to all attribute tables.

| Table 1‑1. Message Element Attributes | |
| --- | --- |
| Attribute | Definition |
| SEQ | Sequence of the elements as numbered in the HL7 message element. The SEQ attribute applies to the data type attribute table and the segment attribute table. |
| Component Name | Short name for the component. |
| Segment | Three-character code for the segment and the abstract syntax (e.g., the square and curly braces).  [ XXX ] Optional and singular  { XXX } Required and may repeat  XXX Required and singular  [{ XXX }] Optional and may repeat  Note that for segment groups there is no segment code present, but the square and curly braces will still be present.  The Segment attribute only applies to the Message attribute table. |
| DT | Data type used by this profile for HL7 element.  The data type attribute applies to data type attribute tables and segment attribute tables. |
| Usage | Usage of the message element for this profile. Indicates whether the message element (segment, segment group, field, component, or subcomponent) is R, RE, O, X or C(a/b) in the corresponding message element. Usage applies to the message attribute table, data type attribute table and the segment attribute table; see Section 1.3.4 Usage Conformance Testing Recommendations. |
| Cardinality | Minimum and maximum number of times the element may appear.  [0..0] Element never present.  [0..1] Element may be omitted and can have, at most, one occurrence.  [1..1] Element must have exactly one occurrence.  [0..n] Element may be omitted or may repeat up to n times.  [1..n] Element must appear at least once, and may repeat up to n times.  [0..\*] Element may be omitted or repeat an unlimited number of times.  [1..\*] Element must appear at least once, and may repeat unlimited number of times.  [m..n] Element must appear at least m, and at most, n times.  Cardinality applies only to message attribute tables and segment attribute tables. |
| Value Set | The set of coded values to be used with the field. The value set attribute applies only to the data type attribute tables and the segment attribute tables. The value set may equate with an entire code system part of a code system, or codes drawn from multiple code systems.  Unconstrained, Constrained and User Defined tables are listed or included in Section 5 Code Systems and Value Sets. |
| Name | HL7 descriptor of the message element. Name applies to the message attribute table, data type attribute table and the segment attribute table. |
| Description/Comments | Context and usage for the element. Description/Comments applies to the message attribute table, data type attribute table and the segment attribute table. |

### Keywords

The key words "**MUST**", "**MUST NOT**", "**REQUIRED**", "**SHALL**", "**SHALL** **NOT**", "**SHOULD**", "**SHOULD** **NOT**", "**RECOMMENDED**", "**MAY**", and "**OPTIONAL**" in this document are to be interpreted as described in RFC 2119[[1]](#footnote-2). The following definitions are excerpted from the RFC:

**MUST** or the terms "**REQUIRED**" or "**SHALL**", mean that the definition is an absolute requirement of the specification.

**MUST** **NOT** or the phrase "**SHALL NOT**", mean that the definition is an absolute prohibition of the specification.

**SHOULD** or the adjective "**RECOMMENDED**", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

**SHOULD NOT** or the phrase "**NOT RECOMMENDED**" mean that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.

**MAY** or the adjective "**OPTIONAL**", mean that an item is truly optional. One software supplier may choose to include the item to enable certain capabilities while another software supplier may omit the same item. In either case, the communication partner cannot be expected to either provide it (sender) or process it (receiver) without clear and voluntary agreement between the partners.

An implementation which does not include a particular segment/field/component marked as optional **MUST** be prepared to interoperate with another implementation which does include the optional segment/field/component, though perhaps with reduced functionality. In the same vein an implementation that includes a particular segment/field/component marked as optional **MUST** be prepared to interoperate with another implementation that does not include the optional segment/field/component.

### Usage Conformance Testing Recommendations

The following text is pre-adopted from the HL7 V2.7.1 Conformance (Chapter 2B, 2.B.7.5). Please refer to the base standard documentation for a full explanation of conformance concepts. Usage is described here as it introduces the revised approach to conditional element handling.

*---------- start citation---------*

2.B.7.5 USAGE

Message content is governed by the cardinality specification associated (explicitly or implicitly) with each element of an HL7 message. Usage rules govern the expected behavior of the sending application and receiving application with respect to the element. The usage codes expand/clarify the optionality codes defined in the HL7 standard. Usage codes are employed in a message profile to constrain the use of elements defined in the standard. The usage code definitions are given from a sender and receiver perspective and specify implementation and operational requirements.

The standard allows broad flexibility for the message structures that HL7 applications must be able to receive without failing. But while the standard allows that messages may be missing data elements or may contain extra data elements, it should not be inferred from this requirement that such messages are conformant. In fact, the usage codes specified in a message profile place strict conformance requirements on the behavior of the application.

*DEFINITION OF CONDITIONAL USAGE*

The conditional usage is defined as follows:

C(a/b) - “a” and “b” in the expression are placeholders for usage codes representing the true (“a”) predicate outcome and the false (“b”) predicate outcome of the condition. The condition is expressed by a conditional predicate associated with the element (“See section 2.b.7.9, "Condition predicate"). “a” and “b” shall be one of “R”, “RE”, “O” and/or “X”. The values of “a” and “b” can be the same.

The example C(R/RE) is interpreted as follows. If the condition predicate associated with the element is true then the usage for the element is R-Required. If the condition predicate associated with the element is false then the usage for the element is RE-Required but may be empty.

There are cases where it is appropriate to value “a” and “b” the same. For example, the base standard defines the usage of an element as “C” and the condition predicate is dependent on the presence or non-presence of another element. The profile may constrain the element that the condition is dependent on to X; in such a case the condition should always evaluate to false. Therefore, the condition is profiled to C(X/X) since the desired effect is for the element to be not supported. Note it is not appropriate to profile the element to X since this breaks the rules of allowable usage profiling (see table HL7 Optionality and Conformance Usage).

Usage Rules for a Sending Application

| Optionality/Usage Indicator | Description | Implementation Requirement | Operational Requirement |
| --- | --- | --- | --- |
| R | Required | The application shall implement “R” elements. | The application shall populate “R” elements with a non-empty value. |
| RE | Required but may be empty | The application shall implement “RE” elements. | The application shall populate “RE” elements with a non-empty value if there is relevant data. The term “relevant” has a confounding interpretation in this definition[[2]](#footnote-3). |
| C(a/b) | Conditional | An element with a conditional usage code has an associated condition predicate (See section 2.B.7.9, “Condition predicate” that determines the operational requirements (usage code) of the element.  **If the condition predicate associated with the element is true, follow the rules for *a* which shall be one of “R”, “RE”, “O” or X”:**  **If the condition predicate associated with the element is false, follow the rules for *b* which shall be one of “R”, “RE”, “O” or X”**.  ***a*** and ***b*** can be valued the same. | |
| X | Not supported | The application (or as configured) shall not implement “X” elements. | The application shall not populate “X” elements. |
| O | Optional | None. The usage indicator for this element has not yet been defined. For an implementation profile all optional elements must be profiled to R, RE, C(a/b), or X. | Not Applicable. |

Usage Rules for a Receiving Application

| Optionality/Usage Indicator | Description | Implementation Requirement | Operational Requirement |
| --- | --- | --- | --- |
| R | Required | The application shall implement “R” elements. | The receiving application shall process (save/print/archive/etc.) the information conveyed by a required element.  A receiving application shall raise an exception due to the absence of a required element. A receiving application shall not raise an error due to the presence of a required element, |
| RE | Required but may be empty | The application shall implement “RE” elements. | The receiving application shall process (save/print/archive/etc.) the information conveyed by a required but may be empty element. The receiving application shall process the message if the element is omitted (that is, an exception shall not be raised because the element is missing). |
| C(a/b) | Conditional | The usage code has an associated condition predicate true (See section 2.B.7.9, “Condition predicate").  **If the condition predicate associated with the element is true, follow the rules for *a* which shall one of “R”, “RE”, “O” or X”:**  **If the condition predicate associated with the element is false, follow the rules for *b* which shall one of “R”, “RE”, “O” or X”**.  ***a*** and ***b*** can be the same. | |
| X | Not supported | The application (or configured) shall not implement “X” elements. | None, if the element is not sent.  If the element is sent the receiving application may process the message, shall ignore the element, and may raise an exception. The receiving application shall not process (save/print/archive/etc.) the information conveyed by a not-supported element. |
| O | Optional | None. The usage indicator for this element has not yet been defined. For an implementation profile all optional elements must be profiled to R, RE, C(a/b), or X. | None. |

*--------- end citation ---------*

# Use Case – Ambulatory Care Setting

This use case was developed as a collaborative effort between the HHS/ONC Standards and Interoperability Framework Laboratory Orders Initiative, the California Health Care Foundation, and the HL7 Orders and Observations Work Group.

## Definitions

This guide defines the following terms from the historic paper-based workflows in relation to the supported use cases for electronic exchange of laboratory order information to the OML message structure as:

**Measurement** – a single observation value or calculation recorded using a single Observation Segment (OBX). Note that multiple representations of the same measurement may require multiple observation segments, e.g., quantitative and qualitative statement of the same measurement.

**Orderable Test or Laboratory Order –** an Observation Request Group (ORC/OBR pair) requesting one or more measurements (Observation Groups (OBXs)).

|  |  |  |  |
| --- | --- | --- | --- |
| A single Laboratory Order (ORC) | ORC | | |
| Which contains an Orderable Test (OBR) | OBR | | |
| Which requests one or more Measurements (OBXs) | OBX | ... | OBX |

**Requisition –** One or more Orderable Test(s) transmitted as a new or appended order message (OML^O21^OML\_O21).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| A requisition (OML) | OML^O21^OML\_O21 | | | | |
| Contains multiple Laboratory Orders (ORCs) | ORC | ... | ORC | | |
| Which contains an Orderable Test (OBR) | OBR | ... | OBR | | |
| Which requests one or more Measurements (OBXs) | OBX |  | OBX | ... | OBX |

## Scope

The scope of this Use Case is the electronic communication of laboratory order information between an EHR-S and a LIS in an ambulatory care setting. This includes new, scheduled, add-on laboratory orders and the cancellation of laboratory orders that were previously placed.

This Use Case has four scenarios:

* Scenario 1: Electronic Ordering of New or Scheduled Laboratory Test(s)
* Scenario 2: Electronic Ordering of Add-On Laboratory Test(s)
* Scenario 3: Requesting the Cancellation of a Previously Placed Laboratory Order
* Scenario 4: Laboratory Cancellation of a Previously Placed Laboratory Order

### In Scope

* Electronic ordering of laboratory tests and/or panels in the ambulatory setting for the US Realm.
* Reflex tests initiated by the Laboratory in response to prior test results.
* Defining the core data elements required for ordering ambulatory laboratory tests and/or panels.
* Laboratory Order Placer (i.e., Ordering Provider) may designate other non-order placers to receive results.
* Harmonization of data elements that are used in both laboratory orders and results.

### Out Of Scope

* Requesting Status on a Previously Placed Laboratory Order
* Electronic ordering of laboratory tests and/or panels in an acute care setting, internally within a laboratory, referral orders placed between laboratories, and laboratory orders outside the US Realm.
  + Note that this guide did not validate whether constraints on components should be loosened to enable implementers to add further profiles to support these use cases. This will be addressed in a future version, including definition of minimal incremental profiles to support these use cases. Until such time, implementers are not discouraged from attempting to use this guide but should recognize that they may not be able to remain fully conformant.
* Concepts related to: order queues, clearing houses, or other transport-level mechanisms and protocols that may be used to transfer or hold laboratory orders for later retrieval by a laboratory selected to perform the laboratory service.
* Multi-order status requests (for one patient or multiple patients).
* Specification of the required/supported error condition codes as part of acknowledgement messages.
* Laboratory orders not transmitted electronically.
* Secondary uses of laboratory order data.
* The human mechanisms required to resolve any differences between the order identifier and the specimen label.
* Specimen labeling and transport.
* Physical transport level confirmations.
* Interactions between the LIS and EHR System for Add-On orders beyond the transmission of the order (to address scenarios such as insufficient specimen or late arrivals of Add-On orders).

## Actors

There are two actors that have responsibilities related to the conformance profiles defined in this document:

* Laboratory Order Sender – A sender of laboratory order messages that declares conformance to a profile defined in this guide.
* Laboratory Order Receiver – A receiver of laboratory order messages that declares conformance to a profile defined in this guide.

## Orders for Ambulatory Care Use Case and Context Diagrams

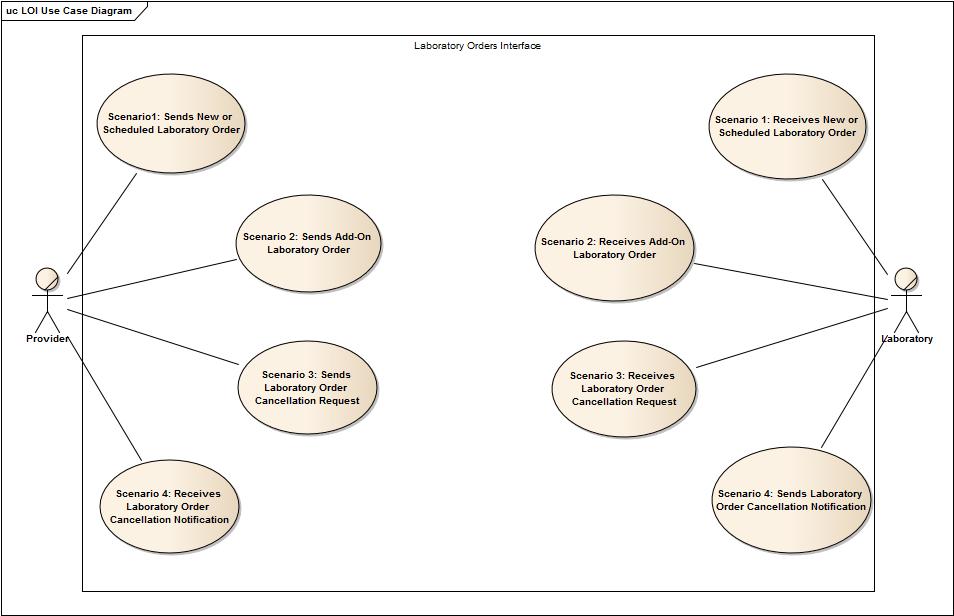


Figure 2‑1. Use Case Diagram

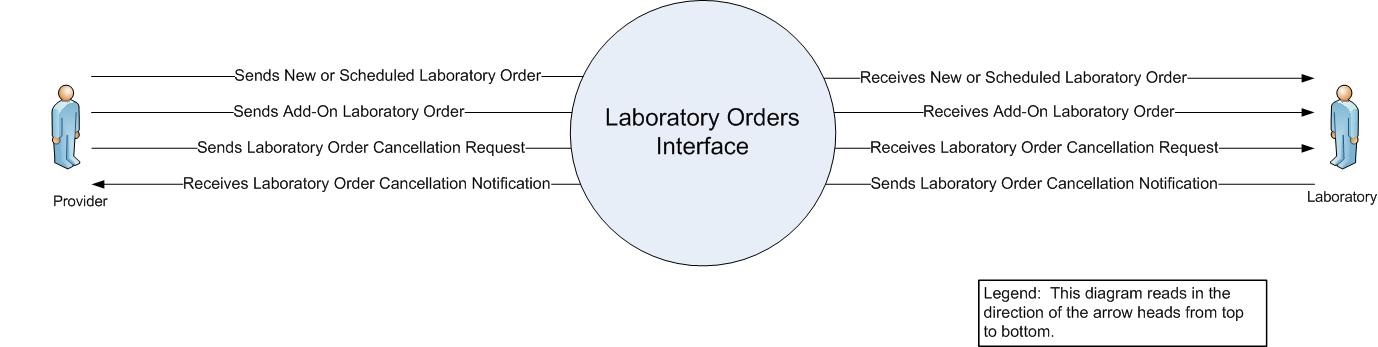


Figure 2‑2. Context Diagram

## User Story

Laboratory orders interfaces automate the electronic communication of test order information between EHR Systems and LIS. To date, there is no consistent implementation guidance available for electronic laboratory order interfaces across the ambulatory setting. Implementation guidance that defines the communication (the message structure, data elements, and vocabularies) of laboratory orders between an EHR System and an LIS, based on accepted industry standards, can:

* Improve care delivery and clinical outcomes through the tight coupling of order and result messages;
* Reduce implementation efforts and costs;
* Reduce on-going support and maintenance-related activities and costs; and
* Provide an extensible foundation for use in other settings such as acute care and public health.

### Use Case Assumptions

* Providers *(Order Placers)* securely access clinical information through an EHR system.
* Users have a need to exchange laboratory order data between ambulatory care EHRs and laboratories.
* An EHR system has the ability to manage a laboratory order, including generating the laboratory requisition and sending it to a laboratory.
  + Requisitions are defined by laboratory practice and their exact instantiation is determined by trading partner agreement.
* An EHR system is capable of generating an order electronically and is capable of receiving and processing acknowledgements, results and cancellations.
* A LIS is capable of receiving orders and cancellation requests, and generating acknowledgements and cancelation notifications.
* The Laboratory is capable of receiving laboratory orders electronically and in standardized structured format.
* The EHR System and LIS both use data models that include discrete representations of patients, clinician end-users, laboratory requisitions, laboratory orders (which include tests and panels), and laboratory test results (minimally at the level of individual analytes).
* The Laboratory Results Interface (LRI) Implementation Guide (IG)[[3]](#footnote-4) and the LOI IG will be synchronized with the goal that a laboratory that receives an order conforming to the LOI should be capable of responding with a message conforming to the LRI.
* Appropriate security and transport protocols, patient identification methodology, order identification methodology, patient consent, privacy and security procedures, coding, vocabulary, error handling, and normalization standards have been agreed to by all relevant participants.
* Legal and governance issues regarding data access authorizations, data ownership, and data use are in effect.
* Established network and policy infrastructure exists to enable consistent, appropriate, and accurate information exchange across provider systems, data repositories and locator services. This includes, but is not limited to:
  + Methods to identify and authenticate users;
  + Methods to identify and determine Providers of care;
  + Methods to enforce data access authorization policies;
  + Methods to ensure the veracity of data;
* Detailed audit trails are kept as necessary by all participating systems.
* Security and privacy policies, procedures and practices are commonly implemented to support acceptable levels of patient privacy and security; i.e. HIPAA, HITECH and EHR certification criteria.

### Pre-Conditions

**Note:** The pre- and post conditions may not apply to all scenarios.

* The Provider *(Order Placer)* has performed all of the necessary checks for medical necessity, insurance eligibility and any needed pre-authorizations.
* After a Provider *(Order Placer)* enters a laboratory order, the EHR system generates an electronic laboratory requisition containing pertinent information as well as appropriate identifiers, such as patient, order, and specimen.
* The Laboratory’s test compendium has been entered (manually or via automation) into the EHR system.
* Information for the cancellation requests for laboratory orders has been accurately captured within the EHR System.
* All appropriate billing information is available within the EHR system.
* Specimens are labeled in accordance with established policies and procedures for specimen submission and can be linked to the order[[4]](#footnote-5).

### Post Conditions

* Laboratory orders are successfully transmitted electronically from the Provider’s *(Order Placer’s)* EHR System to the Laboratory’s LIS. The Receiving Laboratory electronically transmits acknowledgement of receipt of the laboratory order. The received order may be placed into an electronic queue for further processing depending on laboratory workflow (although order queues are out of scope for this Use Case).
* Specimen(s) associated with the laboratory order are collected and, if necessary, transported to the laboratory.
* The laboratory processes the laboratory order and associated specimen(s). This step may include retrieval and processing of laboratory orders from a queue or list of received orders. Order queues may be used in the LIS to hold electronic laboratory orders until associated specimens are received and the appropriate patient matching and registration occur (although order queues are out of scope for this Use Case). After patient matching and registration, the electronic order may be electronically processed in the LIS.
* If the laboratory order and specimen(s) are satisfactory for testing the laboratory will perform, or attempt to perform, the test(s).
* The laboratory test result is obtained, entered/released in the LIS, and sent to the Provider’s *(Order Placer’s)* EHR System. This is covered within the Laboratory Results Interface Use Case.
* Successfully transmit laboratory order cancellation request from the Provider’s *(Order Placer’s)* EHR system to the Laboratory’s LIS.
* The Laboratory’s LIS has electronically received the laboratory order cancellation request.
* The Laboratory’s cancellation of a requisition (one or more orders) or an individual order has been electronically received by the Provider’s *(Order Placer’s)* EHR System. Note that cancellation of part of an order must be done through a results message as defined in the LRI IG.

### Scenario 1 – Electronic Ordering of New or Scheduled Laboratory Test(s)

Using an EHR System, a Provider *(Order Placer)* orders one or more new laboratory tests or scheduled laboratory tests (including future tests) to be performed by a laboratory.

#### Functional Requirements

| Table 2‑1. Information Interchange Requirements | | | | |
| --- | --- | --- | --- | --- |
| Initiating System | Action | Requirement | Action | Receiving System |
| EHR-S | Send | Laboratory Test Order | Receive | LIS |
| LIS | Send | Acknowledgement for Received Laboratory Order | Receive | EHR-S |

| Table 2‑2. System Requirements | |
| --- | --- |
| System | System Requirement |
| EHR-S | Generate an Electronic Laboratory Order with Standardized Structured Data |
| LIS | Process Electronic Laboratory Order |
| LIS | Generate and Send Laboratory Order Acknowledgement |
| EHR-S | Process Laboratory Order Acknowledgement |

#### Sequence Diagram

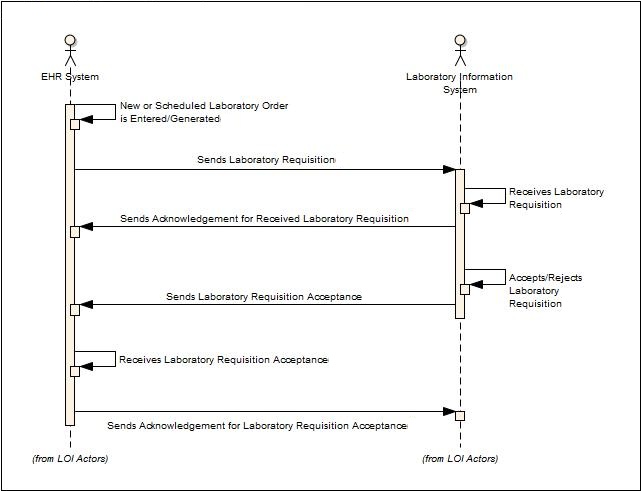


Figure 2‑3. Scenario 1 Sequence Diagram

| Table 2‑3. Scenario 1 – Electronic Ordering Of New Or Scheduled Laboratory Test(s)[[5]](#footnote-6) | | | |
| --- | --- | --- | --- |
| SEQ | System(s) | Transaction | Requirements |
| 1 | EHR-S | New or Scheduled Laboratory Order is entered/generated |  |
| 2 | EHR-S to LIS | Sends Laboratory Requisition | OML^O21^OML\_O21: ORC-1 is valued ‘NW’, ORC-2/OBR-2 is valued, ORC-3/OBR-3 is empty, MSH-15 is valued ‘(AL)’, MSH-16 is valued ‘(AL)’.  Not allowed: both MSH-15 valued ‘NE’ and MSH-16 valued ‘NE’ in the same message. |
| 3 | LIS | Receives Laboratory Requisition |  |
| 4 | LIS to IE/EHR-S | Sends Acknowledgement for Received Laboratory Requisition | ACK^O21^ACK: MSH-15 is valued ‘NE’, MSH-16 is valued ‘NE’. |
| 5 | LIS to EHR-S | Sends Laboratory Requisition Acceptance | ORL^O22^ORL\_O22: ORC-1 is valued ‘OK’ or ‘UA’, ORC-2/OBR-2 is valued with the placer order number (echoed), ORC-3/OBR-3 is valued with the filler order number, MSH-15 is valued ‘(AL)’, MSH-16 is valued ‘NE’. |
| 6 | EHR-S/IE to LIS | Sends Acknowledgement for Laboratory Requisition Acceptance | ACK^O22^ACK: MSH-15 is valued ’NE’, MSH-16 is valued ’NE’. |

**Note:** Step 4 can only be supported if MSH-16 is not ‘NE’, rather ‘AL’ or ‘SU’ is to be used, or ‘ER’, which would yield ‘UA’.

### Scenario 2 – Electronic Ordering of Add-On Laboratory Test(s)

Using an EHR System, a Provider *(Order Placer)* adds one or more additional tests to a previously transmitted test requisition.

Note that if there is no need to relate the additional order to the specimen associated with a prior order, the regular new order must be followed.

At the time the provider requests an order to be added, this may occur when the specimen is already drawn or still needs to be drawn. The provider may not know which situation is in place.

Therefore, this guide suggests that until there is more clarity on how the provider’s ordering system is updated with specimen collection information, the provider’s add-on order request is communicated as a regular order and may use, if known:

* The placer order number, when using non-unique order numbers, of the original order; and/or
* The placer group number that was used when the original order was placed; and/or
* The specimen data of the specimen the order is intended to be added to.

Using the first two methods make it appear, other than the transaction date/time, as if the order was placed together and consistent with the original order.

The third method clearly associates the new order with the same specimen that was already collected for a prior order. Note that depending on the state of the order fulfillment, the Laboratory may not be able to perform the requested test against the intended specimen as it may be too late for a number of reasons (e.g., insufficient specimen, specimen too old).

### Scenario 3 – Requesting the Cancellation of a Previously Placed Laboratory Order

The Provider (*Order Placer)* determines that one or more orders from a previously transmitted electronic laboratory requisition needs to be cancelled and requests via the EHR that the Laboratory cancel the performance of the laboratory order(s).

Since the Provider does not know how far the Laboratory has progressed with the performance of the test, or may not even have received the specimen, the Provider must use the LOI Cancel Request message in Section 4.2 OML^O21^OML\_O21: Laboratory Order Message – Cancel Order.

The Laboratory determines whether the test can be cancelled, or whether the order has progressed too far to cancel. The Laboratory is strongly encouraged to use the LOI Cancel Notification indicating “Cancelled as Requested”, or “Unable to Cancel” as described in Section 4.2. However, this guide recognizes that some Laboratories may still use the LRI Result message using the result status as described in the LRI Implementation Guide.

Once the Provider receives any preliminary or final results, the test cannot be cancelled anymore and the Provider shall not use the LOI Cancel Request message anymore.

#### Functional Requirements

| Table 2‑4. Information Interchange Requirements | | | | |
| --- | --- | --- | --- | --- |
| Initiating System | Action | Requirement | Action | Receiving System |
| EHR-S | Send | Laboratory Order Cancellation Request | Receive | LIS |
| LIS | Send | Acknowledgement of Laboratory Order Cancellation Request | Receive | EHR-S |
| LIS | Send | Notification of Laboratory Order Cancellation | Receive | EHR-S |
| EHR-S | Send | Acknowledgement of Laboratory Order Cancellation Notification | Receive | LIS |

| Table 2‑5. System Requirements | |
| --- | --- |
| System | System Requirement |
| EHR | Generate Laboratory Order Cancellation Request |
| LIS | Process Order Cancellation Request |

#### Sequence Diagram

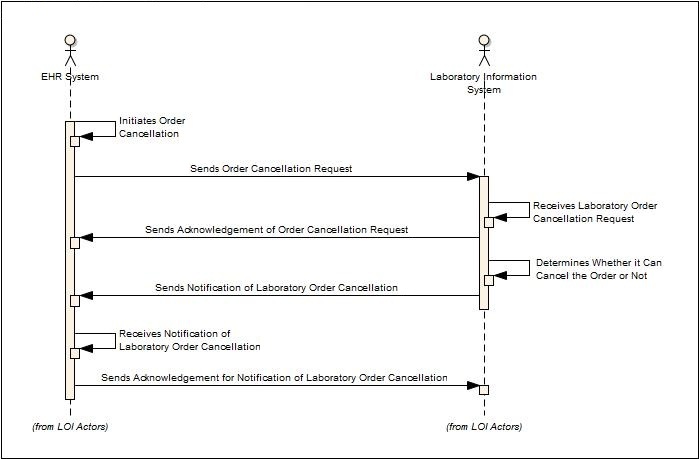


Figure 2‑4. Scenario 3 Sequence Diagram

| Table 2‑6. Scenario 3 – Requesting the Cancellation of a Previously Placed Laboratory Order | | | |
| --- | --- | --- | --- |
| Seq # | System(s) | Transaction | Requirements |
| 1 | EHR-S | Initiates Order Cancellation |  |
| 2 | EHR-S to LIS | Sends Cancellation Request | OML^O21^OML\_O21: ORC-2/OBR-2 is valued, ORC-3/OBR-3 is valued if known, ORC-1 is valued ‘CA’, MSH-15 is valued ‘(AL)’, MSH-16 is valued ‘(AL)’  Not allowed: MSH-15 valued ‘NE’, MSH-16 valued ‘NE’. |
| 3 | LIS | Receives Laboratory Order Cancellation Request |  |
| 4 | LIS to IE/EHR-S | Sends Acknowledgement of Cancellation Request | ACK^O21^ACK: MSH-15 is valued ‘NE’, MSH-16 is valued ‘NE’. |
| 5 | LIS | Determines whether it can cancel the order or not |  |
| 6 | LIS to EHR-S | Sends Notification of Laboratory Order Cancellation | ORL^O22^ORL\_O22: ORC-1 is valued ‘CR’ or ‘UC’, ORC-2/OBR-2 is valued with the placer order number, ORC-3/OBR-3 is valued with the filler order number, MSH-15 is valued ‘(AL)’, MSH-16 is valued ‘(NE)’. |
| 7 | EHR-S | Receives Notification of Laboratory Order Cancellation |  |
| 8 | IE/EHR-S to LIS | Sends Acknowledgement for Notification of Laboratory Order Cancellation | ACK^O22^ACK: MSH-15 is valued ‘NE’, MSH-16 is valued ‘NE’. |

### Scenario 4 – Laboratory Cancellation of a Previously Placed Laboratory Order

The Laboratory *(Order Filler)* may cancel laboratory orders and send a cancellation notification message to the Provider *(Order Placer)* because it is unable to perform the laboratory order, independent of the Provider requesting cancellation. This applies to an original/initial order or an add-on order.

Laboratories can cancel a test request received by the LIS (or queue for this purpose) any time before the test report (preliminary or final) is transmitted to the provider(s).

It is strongly recommended the Laboratory use the LOI Cancel Order up to the point that the specimen starts to be processed.

After that, the Laboratory could either use the LOI Cancel Order message described in Section 4.2, or use the LRI Result Cancel Notification depending on how far it progressed with the test before it determined to cancel.

#### Functional Requirements

| Table 2‑7. Information Interchange Requirements | | | | |
| --- | --- | --- | --- | --- |
| Initiating System | Action | Requirement | Action | Receiving System |
| LIS | Send | Cancellation Notification | Receive | EHR-S |
| EHR-S | Send | Acknowledgment (this should include information on the receipt of the transmission) | Receive | LIS |

| Table 2‑8. System Requirements | |
| --- | --- |
| System | System Requirement |
| LIS | Generate Laboratory Order Cancellation Notification |
| EHR | Receive Cancellation Notification |
| EHR | Process Cancellation Notification |

#### Sequence Diagram

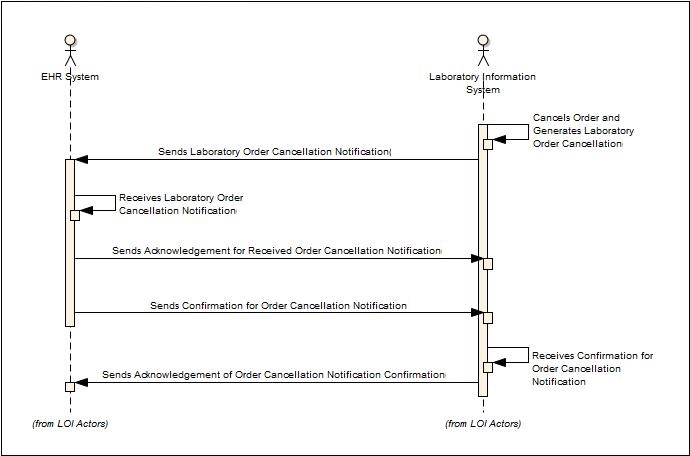


Figure 2‑5. Scenario 4 Sequence Diagram

| Table 2‑9. Scenario 4 – Laboratory Cancellation of a Previously Placed Laboratory Order | | | |
| --- | --- | --- | --- |
| Seq # | System(s) | Transaction | Requirements |
| 1 | LIS | Cancels order and generates Laboratory Order Cancellation |  |
| 2 | LIS to EHR-S | Sends Laboratory Order Cancellation Notification | OML^O21^OML\_O21: ORC-1 is valued ‘OC’, ORC-2/OBR-2 is valued with the placer order number, ORC-3/OBR-3 is valued with the filler order number, MSH-15 is valued ‘(AL)’, MSH-16 is valued ‘(AL)’. |
| 3 | EHR-S | Receives Laboratory Order Cancellation Notification |  |
| 4 | EHR-S/IE to LIS | Sends Acknowledgement for Received Cancellation Notification | ACK^O21^ACK: MSH-15 is valued ‘NE’, MSH-16 is valued ‘NE’. |
| 5 | EHR-S to LIS | Sends confirmation for Order Cancel Notification | ORL^O22^ORL\_O22: ORC-1 is valued ‘NR’, MSH-15 is valued ‘(AL)’, MSH-16 is valued ‘NE’. |
| 6 | LIS to IE/EHR-S | Sends Acknowledgement of Order Cancellation Notification Confirmation | ACK^O22^ACK: MSH-15 is valued ‘NE’, MSH-16 is valued ‘NE’. |

## Key Technical Decisions

One of the primary features of this implementation guide is its focus on key points of broad interoperability. The HL7 implementation guides in Sections 1.2.1 Relevant Laboratory Implementation Guides and 1.2.2 Requisite Knowledge informed the content of this specification as analysis indicated that none of the candidate guides could satisfy the use case requirements without some adjustment. This guide is the result of combining the best practices from the current body of work while making further adjustment to meet the needs of ambulatory ordering and preparing for increased consistency of laboratory orders across care settings.

### Profile and Component Architecture

This guide extensively uses constrainable profiles to define a minimum set of requirements to enable the successful exchange of laboratory orders. The main objective is to ensure that EHR systems and Laboratory systems can exchange laboratory orders with minimum if any modifications from one combination to another combination of software, while maintaining flexibility to enable software developers to provide more capabilities using the same core message definitions. Section 2.8 Conformance to this Guide describes the mandatory and optional profiles to be used, as well as the rules on further constraining the guide.

### Use of ISO Object Identifier (OID)

OIDs, or Object Identifiers, provide a strong identifier that uniquely identifies the object in question and is global in scope. Examples of information that OIDs can identify are items about patients, orders, providers and organizations. This means the identifier includes enough information to remain unique when taken out of the context within which the identifier was created. The ISO OID specification (ISO/IEC 8824:1990(E)) is the globally accepted technology for this purpose and is recommended as the means to satisfy the requirement for a universally unique identifier.

This guide defines a Globally Unique Component (LOI\_GU\_Component) (see Section 2.8.1.2) that prescribes the use of an ISO Object Identifier (OID) for a specific set of fields.

The GU/NG profile definition discusses use of OIDs for identifiers' assigning authority only. Other identifiers could use OIDs as well for the assigning authority. Note that OIDs are not intended to be used to identify a coding system as referenced in CWE-03/CWE-06 and further enumerated in Table 5‑21. HL7 Table 0396 – Coding Systems Code.

HL7 has developed an implementation guide for the use of OIDs, “HL7 Implementation Guidance for Unique Object Identifiers (OIDs), Release 1”[[6]](#footnote-7), which provides guidance on how organizations can use and manage OIDs.

### Use of Vocabulary Standards

This guide calls for specific vocabulary standards for the exchange of laboratory information such as LOINC and SNOMED. Standard vocabularies, particularly coded laboratory tests and their results, enable automated decision support for patient healthcare, as well as for public health surveillance of populations. Terminology is updated periodically and it is best practice to use the most current version of the coding system.

### Field Length and Truncation

This guide is silent as to the field length definition conventions, lengths, and truncation rules and directs the reader to HL7 Version 2.7.1, Chapter 2 Control for informative guidance.

### Scope of Implementation

The base standard indicates that receiving applications “…shall process (save/print/archive/etc.)…”. For order-specific segments, e.g., ORC, OBR, SPM, this typically means saving that data. For other segments, e.g., MSH, the receiving application may not always have to save the data as the segment is focused on ensuring the order-specific data arrives in the appropriate place and therefore may have shorter-term value.

Due to receiving system variations and need, this guide does not specifically indicate for each field whether to store it or not. This is left to the individual system's scope and purpose.

### Ask at Order Entry (AOE) Observations

Ask at Order Entry (AOE) responses are recorded as observations that provide critical information for the calculation or interpretation of some lab results or to satisfy state and federal health agency mandated information gathering requirements, e.g., for blood lead testing. Not every order will have the need for AOE questions and associated observations. The lab will indicate if and which AOEs to include with the order in their test compendium.

Examples of the type of information gathered from a patient include employment information, pregnancy status, the date of the last menstrual period, mother’s age, and questions about family and personal history. In some cases there may be AOEs that request the outcome of previous results phrased as a question, e.g., “Was your previous pap abnormal?”

AOE responses can take several formats, including but not limited to:

* Yes/No (and coded) to answer questions like “Is this your first pregnancy?”
* A code drawn from a value set to provide a coded response to, e.g., “What ethnicity do you consider yourself to be?”
* A number with units for the mother’s age
* A date format for the patient’s last menstrual period.

The OBX segments under the ORC/OBR pair must be used in the order messages to convey these Ask at Order Entry questions.

Although not strictly asked at order entry, other supporting clinical information about the patient collected during specimen collection, e.g., fasting status of the patient, are considered AOE observations for purposes of this guide and must be communicated using the OBX segment under the ORC/OBR segments as well.

LOINC shall be used as the standard coding system for AOE questions if an appropriate and valid LOINC code exists. The LOINC and local code describing the question will be placed in OBX-3 (Observation Identifier). Appropriate and valid status is defined in the LOINC Manual Section 11.2 Classification of LOINC Term Status. If a local coding system is in use, both the LOINC and the local code should also be sent to help with identification of coding issues. When no valid LOINC exists, the local code may be the only code sent.

#### Special Considerations

Note that various Ask at Order Entry questions may appear to have specific fields in PID, NK1, or other segments. When a clinically relevant value is asked through an Ask at Order Entry question it must be conveyed through the OBX segments as described above as these values are used for clinical interpretations rather than through a seemingly similar field in PID, NK1, or other segment. The following provide specific examples and guidance whether to use an existing field or the OBX segment. This is list is not meant to be exhaustive.

* Date of Birth - Always use PID-7 (Date/Time of Birth) and should never be asked as an AOE as there is only one at any point in time.
* Race - PID-10 (Race) is provided for demographic (administrative/billing), not clinical use. The lab must provide an AOE for those tests where Race drives the interpretation of results. The value must be determined by the Ordering Provider and must be sent as an AOE OBX. Note that state and/or national regulations may dictate other behaviors.
* Ethnicity – PID-22 (Ethnic Group) is provided for demographic (administrative/billing), not clinical use. The lab must provide an AOE where Ethnicity drives the interpretation of results. The value must be determined by the Ordering Provider and must be sent as an AOE OBX. Note that state and/or national regulations may dictate other behaviors.

**Note:** More specific PID-10 (Race) and PID-22 (Ethnicity) values are available, but not limited to, those found in the CDCREC document (<http://www.cdc.gov/nchs/data/dvs/Race_Ethnicity_CodeSet.pdf>).

#### Examples

Example AOE using OBX for blood lead test in adults; the highlighted 1 and 2 indicate how to use OBX-4 (Observation Sub-ID) to link the Name to an Address when more than one employer is communicated.

1. Employer Name – Organization

|  |
| --- |
| OBX|1|XON|63741-3^For whom did you work at your main job or business?^LN^123^Employer^99Lab|1|Good Health Hospital^L^4544^3^M10^CMS^XX^^A|||||||||201210310800| |

2. Employer Address

|  |
| --- |
| OBX|2|XAD|63758-7^What was the location of this company?^LN ^345^EmpAdd^99lab|1|1000 Hospital Lane^Suite 123^Ann Arbor ^MI^99999^USA^B^^WA|||||||||201210310800| |

3. Employer Name – Person

|  |
| --- |
| OBX|4|XPN|63741-3^For whom did you work at your main job or business?^LN^123^Employer^99lab|2| Everyman^Adam^A^III^DR^^L^^^^^^^PHD|||||||||201210310800| |

4. Employer Address

|  |
| --- |
| OBX|5|XAD|63758-7^What was the location of this company?^LN ^345^EmpAdd^99lab|2|65 South Street^^Ann Arbor ^MI^99999^USA^B^^WA|||||||||201210310800| |

### Communication of Other Clinical Information or Prior Results

Should the need arise to send results not obtained at the time of order entry or specimen collection and/or those requiring full results report structure such as culture/sensitivity reports, the Prior Results segment group in the message structure should be used.

## Referenced Profiles – Antecedents

This specification documents a message profile for Laboratory Orders Interface (LOI) profile for Senders and Receivers based on the HL7 version 2.5.1[[7]](#footnote-8). Other laboratory ordering profiles were referenced and used as source materials in the development of this guide, including:

* EHR-Laboratory Interoperability and Connectivity Specification for Orders, ELINCS Orders, v1.0 June 28, 2011

This document should not be considered the source of truth for any statement or assertion in regards to the referenced profiles. They are provided here as antecedent documentation and are not required for successful implementation of this guide.

## Conformance to this Guide

This implementation guide defines components that are combined into profiles to define specific conformance requirements.

The components must be combined to create a valid profile for a particular transaction by populating MSH-21 (Message Profile Identifier) with the profile identifiers. Multiple profiles or component profiles can be present in MSH.21 provided the combination of profiles does not conflict with each other. Additional definitions and guidance for MSH-21 can be found in Section 4.5.1 MSH – Message Header Segment.

As of this version a valid order profile consists of a minimum of three components:

1. The LOI\_Common\_Component (2.8.1.1)
2. The LOI\_GU\_Component (Globally Unique) OR the LOI\_NG\_Component (Non-Globally Unique) (2.8.1.2, 2.8.1.3)
3. The LAB\_PRU\_Component (Unique Placer Order Number) OR the LAB\_PRN\_Component (Non-Unique Placer Order Number) (2.8.1.4, 2.8.1.5)

The LOI\_GU and LOI\_NG components declare that the message conforms (or not) to the use of ISO Object Identifiers (OIDS) to establish global uniqueness for identifier fields as noted in Section 2.8.1.2 and Section 2.8.1.3.

The LAB\_PRU and the LAB\_PRN components declare if the placer order number is globally unique (or not), see Section 2.8.1.4 and Section 2.8.1.5.

Additional components are optional but may be included when supported by both trading partners. This guide defines seven such components:

1. LAB\_NB\_Component (Newborn) (2.8.1.6)
2. LAB\_TO\_Component (Time Offset) (2.8.1.7)
3. LAB\_XO\_Component (Exclusions) (2.8.1.8)
4. LAB\_PH\_Component (Public Health) (2.8.1.9)
5. LOI\_PR\_Component (Prior Results) (2.8.1.10)
6. LOI\_RC\_Component (Results Copies) (2.8.1.11)
7. LAB\_FI\_Component (Financial Information)

As of this version a valid response profile consists of a minimum of two components:

1. The LOI\_Acknowledgement\_Component (2.8.3.1)
2. The GU\_Acknowledgement\_Component (2.8.3.2) OR the NG\_Acknowledgement\_Component (2.8.3.3)

### Order Profile Components

**Note:** the OIDs with red text will be updated once comment resolution is completed.

Note that the TO, XO, NB, PH, PR and RC components are not included in the pre-coordinated profiles; rather they are included when applicable, e.g., the LAB\_NB\_Component would be included to support the level of precision a Newborn use case requires on time-related data elements if the tests are related to newborn screening. A receiver shall reject the message with optional profiles if not addressed by partner agreements.

In addition to trading partner agreement on the use of optional profiles, trading partners need to agree on the required profile, either NG or GU.

The components that can be assembled into profiles are:

#### LOI\_Common\_Component – ID: 2.16.840.1.113883.9.AA

This component indicates that the message adheres to the rules set out in this implementation guide.

**Note:** This component sets the minimum constraints on the base specification for all profiles defined by this guide and may be further constrained by additional components.

#### LOI\_GU\_Component (Globally Unique) – ID: 2.16.840.1.113883.9.BB

This component indicates that the following fields use Globally Unique Identifiers according to Section 2.6.2 Use of ISO Object Identifier (OID) for at least the assigning authority within the data type used.

* MSH-3 – Sending Application
* MSH-4 – Sending Facility
* MSH-5 – Receiving Application
* MSH-6 – Receiving Facility
* PID-3 – Patient Identifier List
* ORC-2 – Placer Order Number
* ORC-3 – Filler Order Number
* ORC-4 – Placer Group Number
* ORC-12 – Ordering Provider
* ORC-21 – Ordering Facility Name
* OBR-2 – Placer Order Number
* OBR-3 – Filler Order Number
* OBR-16 – Ordering Provider
* OBR-28 – Result Copies To
* OBR-29 – Parent
* OBX-16 – Responsible Observer
* OBX-23 – Performing Organization Name
* OBX-25 – Performing Organization Medical Director
* SPM-2 – Specimen ID
* NK1-13 – Organization Name - NK13
* IN1-3 – Insurance Company ID
* IN1-4 – Insurance Company Name
* IN1-11 – Insured’s Group Emp Name
* GT1-21 – Guarantor Organization Name
* PRT-1 – Participation Instance ID
* PRT-5 – Participation Person

These fields must use the GU version of their data type definition.

#### LOI\_NG\_Component (Non-Globally Unique) – ID: 2.16.840.1.113883.9.CC

This component indicates that the identification method has been negotiated between the trading partners where none or some may use ISO OIDs according to Section 2.6.2 Use of ISO Object Identifier (OID) while others use any of the identification methods allowed through the base standard. Consequently, these identifiers are not guaranteed to be globally unique.

* MSH-3 – Sending Application
* MSH-4 – Sending Facility
* MSH-5 – Receiving Application
* MSH-6 – Receiving Facility
* PID-3 – Patient Identifier List
* ORC-2 – Placer Order Number
* ORC-3 – Filler Order Number
* ORC-4 – Placer Group Number
* ORC-12 – Ordering Provider
* ORC-21 – Ordering Facility Name
* OBR-2 – Placer Order Number
* OBR-3 – Filler Order Number
* OBR-16 – Ordering Provider
* OBR-28 – Result Copies To
* OBR-29 – Parent
* SPM-2 – Specimen ID
* NK1-13 – Organization Name - NK13
* IN1-3 – Insurance Company ID
* IN1-4 – Insurance Company Name
* IN1-11 – Insured’s Group Emp Name
* GT1-21 – Guarantor Organization Name
* PRT-1 – Participation Instance ID
* PRT-5 – Participation Person

These fields must use the NG version of their data type definition.

#### LAB\_PRU\_Component (Unique Placer Order Number) – ID: 2.16.840.1.113883.9.YY

This component indicates that the test can be identified using the placer order. No additional information is necessary since the identifier on its own is unique.

#### LAB\_PRN\_Component (Non-Unique Placer Order Number) – ID: 2.16.840.1.113883.9.WW

This component indicates that the test shall be identified using the universal service identifier in conjunction with the placer order number. The order numbers must be combined with the universal service identifier to uniquely identify the order.

#### LAB\_NB\_Component (Newborn) – ID: 2.16.840.1.113883.9.24

This component indicates that the data type TS\_3 is used in PID-7 (Date/Time of Birth) to support Newborn Screening.

**Note:** for the purposes of this guide Newborn is defined as up to 28 days, see Section APPENDIX D Glossary

#### LAB\_TO\_Component (Time Offset) – ID: 2.16.840.1.113883.9.XX

This component indicates the time zone component of the TS/TM data type used for the following fields is required. Note that the base standard's default use of MSH-7 (Date/Time of Message) time zone offset dictates that if the time zone offset is present in MSH-7 it becomes the default time zone for the message instance and applies to all other date/time fields in that same message instance where a time zone offset is not valued. This profile requires that all date/time fields indicated below when populated carry a time zone offset.

Note that this is a domain component and the following fields may or may not be required in this IG.

* PID-7 – Date/Time of Birth‬
* IN1-18 - Insured’s Date Of Birth
* OBR-7 – Observation Date/Time‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬
* OBR-8 – Observation End Date/Time‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬
* OBR-22 – Results Rpt/Status Chng – Date/Time‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬
* TQ1-7 – Start Date/Time‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬
* TQ1-8 – End Date/Time‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬
* OBX-5 – Observation Value (when OBX-2 is ‘TM’ or ‘TS’)‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬
* OBX-14 – Date/Time of the Observation‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬
* OBX-19 – Date/Time of the Analysis‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬
* SPM-17 – Specimen Collection Date/Time‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬

It is important that the sending application has appropriately resolved the time zone offsets for PID-7, TQ1-7, TQ1-8, OBR-7, OBR-8, and SPM-17 as these date/times are managed through ADT/Registration and Orders interfaces.

#### LAB\_XO\_Component (Exclusions) – ID: 2.16.840.1.113883.9.23

One of the basic premises of this guide is to enable senders to compose transactions that may satisfy multiple purposes, e.g., multiple implementation guides that share the same required fields and vocabulary. They therefore may populate any of the fields/components marked O (optional). At the same time this implementation guide wants to expressly reinforce that if data is sent in optional fields/segments, the receiver can completely ignore those. Therefore, the usage code X is used sparingly, while the usage code O is mostly used when the field/component is not necessary for the use case at hand. The rationale is that according to the definition of “X” per the base standard is "For conformant sending applications, the element shall not be sent. Conformant receiving applications may ignore the element if it is sent, or may raise an application error."

However to accommodate those implementations where the population of any optional fields remaining is not desirable, the LAB\_XO\_Component is defined to indicate that all of the remaining optional segments and fields that are marked O (Optional) are now considered to be marked with an X (Not Supported). Its use yields, in combination with the other profile components, a fully implementable profile in accordance with Chapter 2B. Note though that this component is strictly voluntary and cannot be mandated by either trading partner to be used to enable a successful results transaction.

#### LAB\_PH\_Component (Public Health) – ID: 2.16.840.1.113883.9.OO

When a laboratory result is sent to public health, additional data is required. The PH component facilitates the inclusion of information necessary for public health reporting in the larger test order and result process between ordering providers/laboratories and performing laboratories to ensure that the data is available to be sent to PH when necessary. This profile is used to identify those fields that are to be considered for Public Health according to condition predicates and conformance statements referencing this profile component. The fields that are effectively added and/or modified by this profile are:

* PID-6 – Mother’s Maiden Name
* PID-13 – Phone Number – Home
* PID-14 – Phone Number – Business
* NK1-30 – Contact Person’s Name
* NK1-32 – Contact Person’s Address
* ORC-21 – Ordering Facility Name
* ORC-22 – Ordering Facility Address
* ORC-23 – Ordering Facility Phone Number
* SPM-5 – Specimen Type Modifier
* SPM-6 – Specimen Additives
* SPM-7 – Specimen Collection Method
* SPM-8 – Specimen Source Site
* SPM-9 – Specimen Source Site Modifier
* SPM-10 – Specimen Collection Site

#### LOI\_PR\_Component (Prior Results) – ID: 2.16.840.1.113883.9.QQ

Inclusion of this optional profile component in MSH-21 (Message Profile Identifier) indicates that prior results are included in the message using the Prior Results segment group. Results that were obtained before this order was placed are considered prior results. When the original structure needs to be preserved, e.g., microbiology results, the Prior Results segment group would enable the transmission of a fully structured result set.

Prior results shall be encoded so as to conform to the LRI IG.

#### LOI\_RC\_Component (Results Copies) – ID: 2.16.840.1.113883.9.RR

Inclusion of this profile component in MSH-21 (Message Profile Identifier) indicates that the number of recipients of copies of the results can be greater than five.

### Order Profiles (Pre-Coordinated Components)

One may either enumerate the component IDs in MSH-21 (Message Profile Identifier) in no particular order or use one of the profile IDs provided for each of the valid combinations:

#### LOI\_GU\_PRU\_Profile – ID: 2.16.840.1.113883.9.FF

This profile pre-coordinates the use of the LOI\_Common\_Component, LOI\_GU\_Component, and the LAB\_PRU\_Component.

#### LOI\_GU\_PRN\_Profile – ID: 2.16.840.1.113883.9.GG

This profile pre-coordinates the use of the LOI\_Common\_Component, LOI\_GU\_Component, and the LAB\_PRN\_Component.

#### LOI\_NG\_PRU\_Profile – ID: 2.16.840.1.113883.9.HH

This profile pre-coordinates the use of the LOI\_Common\_Component, LOI\_NG\_Component, and the LAB\_PRU\_Component.

#### LOI\_NG\_PRN\_Profile – ID: 2.16.840.1.113883.9.II

This profile pre-coordinates the use of the LOI\_Common\_Component, LOI\_NG\_Component, and the LAB\_PRN\_Component.

### Response Components

The following profile components are used in either the accept acknowledgement or the application acknowledgement messages.

#### LOI\_Acknowledgement\_Component – ID: 2.16.840.1.113883.9.JJ

This component indicates that the acknowledgement message adheres to the rules set out in this implementation guide.

**Note:** This component sets the minimum constraints on the base specification for the acknowledgement and may be further constrained by additional components.

#### GU\_Acknowledgement\_Component – ID: 2.16.840.1.113883.9.KK

This profile ID is used to identify an ACK that is constrained for the profiles defined within this guide in response to the OML message where MSH-21 (Message Profile Identifier) contains ‘2.16.840.1.113883.9.FF’ (LOI\_GU\_PRU\_Profile), **OR** ‘2.16.840.1.113883.9.GG’ (LOI\_GU\_PRN\_Profile), **OR** ‘2.16.840.1.113883.9.BB’ (LOI\_GU\_Component)

#### NG\_Acknowledgement\_ Component – ID: 2.16.840.1.113883.9.LL

This profile ID is used to identify an ACK that is constrained for the profiles defined within this guide in response to the OML message where MSH-21 (Message Profile Identifier) contains ‘2.16.840.1.113883.9.HH’ (LOI\_NG\_PRU\_Profile), **OR** ‘2.16.840.1.113883.9.II’ (LOI\_NG\_PRN\_Profile), **OR** ‘2.16.840.1.113883.9.CC’ (LOI\_NG\_Component).

### Response Profiles (Pre-Coordinated Components)

One may either enumerate the component IDs in MSH-21 (Message Profile Identifier) in no particular order or use one of the profile IDs provided for each of the valid combinations:

#### LOI\_GU\_Response\_Profile – ID: 2.16.840.1.113883.9.MM

This profile pre-coordinates the use of the LOI\_Acknowledgement\_Component and the GU\_Acknowledgement\_Component

#### LOI\_NG\_Response\_Profile – ID - 2.16.840.1.113883.9.NN

This profile pre-coordinates the use of the LOI\_Acknowledgement\_Component and the NG\_Acknowledgement\_Component

### Extended Profile Use

The sender may create other components or profiles that are defined outside of this implementation guide for use in conjunction with the profiles and components defined in this guide. However, those profiles and components are strictly voluntary and shall be properly constrained against the base standard and the profiles and components defined in this IG. Neither the sender nor the receiver shall require the use of any additional profiles and components in combination with the profiles/components defined in this guide to achieve a successful send or receive of Lab Orders.

### Relationship to Results

This implementation guide imposes constraints on data elements where the origination of the content for those data elements is a lab order. For all such data elements, the expectation is that the result message will support those elements as defined in the guide with the expectation that the lab will provide either the original value from the order, or the best value the lab is aware of in the result message at the time the result message is generated.

This guide is intended to be compatible with the [HL7 Version 2.5.1 IG: Laboratory Results Interface for US Realm, Release 1, July 2012](http://www.hl7.org/implement/standards/product_brief.cfm?product_id=279).

# Data Types

Data types are further defined in this implementation guide for all fields that have a usage of R, RE, C(a/b). Data types used only for optional fields are not included. Please refer to the base standard for those data types.

Depending on the components used, the usage of data type components for some data types varies. To clearly indicate when to use specific data type components, each data type that has a varying definition based on profile will be documented with multiple variations, e.g., CX\_GU vs. CX\_NG. Composite data types indicate which variety of the component's data type is applicable, while the data type of a field is marked as "varies" where the comment indicates the data type choices based on the declared profile or component.

## CE – Coded Element

| Table 3‑1. Coded Element (CE) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Identifier | ST | R |  |  |
| 2 | Text | ST | RE |  | It is strongly recommended that text be sent to accompany any identifier. |
| 3 | Name of Coding System | ID | R | HL70396 |  |
| 4 | Alternate Identifier | ST | RE |  | The alternate identifier (from the alternate coding system) should be the closest match for the identifier found in component 1. |
| 5 | Alternate Text | ST | RE |  | It is strongly recommended that alternate text be sent to accompany any alternate identifier. |
| 6 | Name of Alternate Coding System | ID | C(R/X) | HL70396 | Condition Predicate: If CE.4 (Alternate Identifier) is valued. |

## CNE – Coded With No Exceptions

| Table 3‑2. Coded With No Exceptions (CNE) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Identifier | ST | R |  |  |
| 2 | Text | ST | R |  |  |
| 3 | Name of Coding System | ID | R | HL70396 |  |
| 4 | Alternate Identifier |  | O |  |  |
| 5 | Alternate Text |  | O |  |  |
| 6 | Name of Alternate Coding System |  | O |  |  |
| 7 | Coding System Version ID | ST | C(RE/X) |  | Condition Predicate: If CNE.3 (Name Of Coding System) is valued. |
| 8 | Alternate Coding System Version ID |  | O |  |  |
| 9 | Original Text |  | O |  |  |

## CWE – Coded with Exceptions

### CWE – Coded with Exceptions – Base

**Note:** Components 10-22 are pre-adopted from V2.7.1 CWE.

| Table 3‑3. Coded With Exceptions – Base (CWE) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments | |
| 1 | Identifier | ST | C(R/O) |  | Condition Predicate: if CWE.2 is not valued. | |
| 2 | Text | ST | C(R/RE) |  | Condition Predicate: if CWE.1 is not valued. | |
| 3 | Name of Coding System | ID | C(R/X) | HL70396 | Condition Predicate: if CWE.1 is valued. | |
| 4 | Alternate Identifier |  | O |  |  | |
| 5 | Alternate Text |  | O |  |  | |
| 6 | Name of Alternate Coding System |  | O |  |  | |
| 7 | Coding System Version ID | ST | C(RE/X) |  | Condition Predicate: If CWE.3 (Name Of Coding System) is valued. | |
| 8 | Alternate Coding System Version ID | ST | C(RE/X) |  | Condition Predicate: If CWE.6 (Name Of Alternate Coding System) is valued. | |
| 9 | Original Text |  | O |  |  | |
| 10 | Second Alternate Identifier |  | O |  |  |
| 11 | Second Alternate Text |  | O |  |  |
| 12 | Second Name of Alternate Coding System |  | O |  |  |
| 13 | Second Alternate Coding System Version ID |  | O |  |  |
| 14 | Coding System OID |  | O |  |  |
| 15 | Value Set OID |  | O |  |  |
| 16 | Value Set Version ID |  | O |  |  |
| 17 | Alternate Coding System OID |  | O |  |  |
| 18 | Alternate Value Set OID |  | O |  |  |
| 19 | Alternate Value Set Version ID |  | O |  |  |
| 20 | Second Alternate Coding System OID |  | O |  |  |
| 21 | Second Alternate Value Set OID |  | O |  |  |
| 22 | Second Alternate Value Set Version ID |  | O |  |  |

Usage Note

The CWE data type is used where it is necessary to communicate a code, text, or coding system and the version of the coding system the code was drawn from and alternate codes drawn from another coding system. Many coded fields in this specification identify coding systems or value set attributes that must be used for the field. When populating the CWE data types with these values, this guide does not give preference to the triplet in which the standard code should appear.

### CWE\_CR – Coded with Exceptions – Code Required

**Note:** Components 10-22 are pre-adopted from V2.7.1 CWE.

| Table 3‑4. Coded with Exceptions – Code Required (CWE\_CR) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments | |
| 1 | Identifier | ST | R |  |  | |
| 2 | Text  (for CWE\_CR.1 from code system – this is human readable label of the identifier) | ST | RE |  | It is strongly recommended that text be sent to accompany any identifier. | |
| 3 | Name of Coding System | ID | R | HL70396 |  | |
| 4 | Alternate Identifier | ST | RE |  | The alternate identifier (from the alternate coding system) should be the closest match for the identifier found in CWE\_CR.1 (Identifier). | |
| 5 | Alternate Text (for CWE\_CR.4 from code system) | ST | RE |  | It is strongly recommended that alternate text be sent to accompany any alternate identifier. | |
| 6 | Name of Alternate Coding System | ID | C(R/X) | HL70396 | Condition Predicate: If CWE\_CR.4 (Alternate Identifier) is valued. | |
| 7 | Coding System Version ID | ST | RE |  |  | |
| 8 | Alternate Coding System Version ID | ST | C(RE/X) |  | Condition Predicate: If CWE\_CR.6 (Name Of Alternate Coding System) is valued. | |
| 9 | Original Text – pre-coding info, this is “free text” | ST | RE |  | Original Text is used to convey the text that was the basis for coding. | |
| 10 | Second Alternate Identifier |  | O |  |  | |
| 11 | Second Alternate Text |  | O |  |  | |
| 12 | Second Name of Alternate Coding System |  | O |  |  | |
| 13 | Second Alternate Coding System Version ID |  | O |  |  | |
| 14 | Coding System OID |  | O |  |  | |
| 15 | Value Set OID |  | O |  |  | |
| 16 | Value Set Version ID |  | O |  |  | |
| 17 | Alternate Coding System OID |  | O |  |  | |
| 18 | Alternate Value Set OID |  | O |  |  | |
| 19 | Alternate Value Set Version ID |  | O |  |  | |
| 20 | Second Alternate Coding System OID |  | O |  |  | |
| 21 | Second Alternate Value Set OID |  | O |  |  | |
| 22 | Second Alternate Value Set Version ID |  | O |  |  | |

Usage Note

The CWE\_CR data type is used where it is necessary to communicate a code, text, or coding system and the version of the coding system the code was drawn from and alternate codes drawn from another coding system. Many coded fields in this specification identify coding systems or value set attributes that must be used for the field. When populating the CWE\_CR data types with these values, this guide does not give preference to the triplet in which the standard code should appear. The receiver is expected to examine the coding system names in components CWE\_CR-3 (Name of Coding System) and, if valued, CWE\_CR-6 (Alternate Name of Coding System) and, if valued, CWE\_CR-20 (Second Alternate Name of Coding System) to determine if it recognizes the coding system or value set.

CWE\_CR.9 (Original Text) is used for…..

### CWE\_CR1 – Coded with Exceptions – Code Required – Second Triplet Optional

**Note:** Components 10-22 are pre-adopted from V2.7.1 CWE.

| Table 3‑5. Coded with Exceptions – Code Required 1 – Second Triplet Optional (CWE\_CR1) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments | |
| 1 | Identifier | ST | R |  |  | |
| 2 | Text | ST | RE |  | It is strongly recommended that text be sent to accompany any identifier. | |
| 3 | Name of Coding System | ID | R | HL70396 |  | |
| 4 | Alternate Identifier |  | O |  |  | |
| 5 | Alternate Text |  | O |  |  | |
| 6 | Name of Alternate Coding System | ID | C(R/X) | HL70396 | Condition Predicate: If CWE\_CR1.4 (Alternate Identifier) is valued. | |
| 7 | Coding System Version ID | ST | C(RE/X) |  | Condition Predicate: If CWE\_CR1.3 (Name Of Coding System) is valued. | |
| 8 | Alternate Coding System Version ID | ST | C(RE/X) |  | Condition Predicate: If CWE\_CR1.6 (Name Of Alternate Coding System) is valued. | |
| 9 | Original Text | ST | RE |  | Original Text is used to convey the text that was the basis for coding. | |
| 10 | Second Alternate Identifier |  | O |  |  | |
| 11 | Second Alternate Text |  | O |  |  | |
| 12 | Second Name of Alternate Coding System |  | O |  |  | |
| 13 | Second Alternate Coding System Version ID |  | O |  |  | |
| 14 | Coding System OID |  | O |  |  | |
| 15 | Value Set OID |  | O |  |  | |
| 16 | Value Set Version ID |  | O |  |  | |
| 17 | Alternate Coding System OID |  | O |  |  | |
| 18 | Alternate Value Set OID |  | O |  |  | |
| 19 | Alternate Value Set Version ID |  | O |  |  | |
| 20 | Second Alternate Coding System OID |  | O |  |  | |
| 21 | Second Alternate Value Set OID |  | O |  |  | |
| 22 | Second Alternate Value Set Version ID |  | O |  |  | |

Usage Note

The CWE\_CR1 data type is used where it is necessary to communicate a code, text, or coding system and the version of the coding system the code was drawn from and alternate codes drawn from another coding system. Many coded fields in this specification identify coding systems or value set attributes that must be used for the field. When populating the CWE\_CR1 data types with these values, this guide does not give preference to the triplet in which the standard code should appear. The receiver is expected to examine the coding system names in components CWE\_CR1-3 (Name of Coding System) and, if valued, CWE\_CR1-6 (Alternate Name of Coding System) and, if valued, CWE\_CR1-20 (Second Alternate Name of Coding System) to determine if it recognizes the coding system or value set.

### CWE\_CRE – Coded with Exceptions – Code Required, but May Be Empty

**Note:** Components 10-22 are pre-adopted from V2.7.1 CWE.

| Table 3‑6. Coded with Exceptions − Code Required But May Be Empty (CWE\_CRE) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Identifier | ST | RE |  |  |
| 2 | Text | ST | C(RE/X) |  | Condition Predicate: If CWE\_CRE.1 (Identifier) is valued.  It is strongly recommended that text be sent to accompany any identifier. When a coded value is not known, the original text element (CWE\_CRE.9) is used to carry the text, not the text (CWE\_CRE.2) element. |
| 3 | Name of Coding System | ID | C(R/X) | HL70396 | Condition Predicate: If CWE\_CRE.1 (Identifier) is valued. |
| 4 | Alternate Identifier | ST | C(RE/X) |  | Condition Predicate: If CWE\_CRE.1 (Identifier) is valued.  The alternate identifier (from the alternate coding system) should be the closest match for the identifier found in CWE\_CRE.1 (Identifier). |
| 5 | Alternate Text | ST | C(RE/X) |  | Condition Predicate: If CWE\_CRE.4 (Alternate Identifier) is valued.  It is strongly recommended that alternate text be sent to accompany any alternate identifier. |
| 6 | Name of Alternate Coding System | ID | C(R/X) | HL70396 | Condition Predicate: If CWE\_CRE.4 (Alternate Identifier) is valued. |
| 7 | Coding System Version ID | ST | C(RE/X) |  | Condition Predicate: If CWE\_CRE.3 (Name Of Coding System) is valued. |
| 8 | Alternate Coding System Version ID | ST | C(RE/X) |  | Condition Predicate: If CWE\_CRE.6 (Name Of Alternate Coding System) is valued. |
| 9 | Original Text | ST | C(R/RE) |  | Condition Predicate: If CWE\_CRE.1 (Identifier) and CWE.4\_CRE (Alternate Identifier) are not valued.  Original Text is used to convey the text that was the basis for coding.  If neither the first or second triplet has values, this contains the text of the field. |
| 10 | Second Alternate Identifier |  | O |  |  |
| 11 | Second Alternate Text |  | O |  |  |
| 12 | Second Name of Alternate Coding System |  | O |  |  |
| 13 | Second Alternate Coding System Version ID |  | O |  |  |
| 14 | Coding System OID |  | O |  |  |
| 15 | Value Set OID |  | O |  |  |
| 16 | Value Set Version ID |  | O |  |  |
| 17 | Alternate Coding System OID |  | O |  |  |
| 18 | Alternate Value Set OID |  | O |  |  |
| 19 | Alternate Value Set Version ID |  | O |  |  |
| 20 | Second Alternate Coding System OID |  | O |  |  |
| 21 | Second Alternate Value Set OID |  | O |  |  |
| 22 | Second Alternate Value Set Version ID |  | O |  |  |

Usage Note

The CWE\_CRE data type is used where it is necessary to communicate a code, text, or coding system and the version of the coding system the code was drawn from and alternate codes drawn from another coding system. Many coded fields in this specification identify coding systems or value set attributes that must be used for the field. When populating the CWE\_CRE data types with these values, this guide does not give preference to the triplet in which the standard code should appear. The receiver is expected to examine the coding system names in components CWE\_CRE-3 (Name of Coding System) and, if valued, CWE\_CRE-6 (Alternate Name of Coding System) and, if valued, CWE\_CRE-20 (Second Alternate Name of Coding System) to determine if it recognizes the coding system or value set.

### CWE\_CRE1 – Coded with Exceptions – Code Required, but May Be Empty – Second Triplet Optional

**NOTE:** Components 10-22 are pre-adopted from V2.7.1 CWE.

| Table 3‑7. Coded with Exceptions − Code Required But May Be Empty – Second Triplet Optional (CWE\_CRE1) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Identifier | ST | RE |  |  |
| 2 | Text | ST | C(RE/X) |  | Condition Predicate: If CWE\_CRE1.1 (Identifier) is valued.  It is strongly recommended that text be sent to accompany any identifier. When a coded value is not known, CWE\_CRE1.9 (Original Text Element) is used to carry the text, not CWE\_CRE1.2 (Text) element. |
| 3 | Name of Coding System | ID | C(R/X) | HL70396 | Condition Predicate: If CWE\_CRE1.1 (Identifier) is valued. |
| 4 | Alternate Identifier |  | O |  |  |
| 5 | Alternate Text | ST | C(RE/X) |  | Condition Predicate: If CWE\_CRE1.4 (Alternate Identifier) is valued.  It is strongly recommended that alternate text be sent to accompany any alternate identifier. |
| 6 | Name of Alternate Coding System | ID | C(R/X) | HL70396 | Condition Predicate: If CWE\_CRE1.4 (Alternate Identifier) is valued. |
| 7 | Coding System Version ID | ST | C(RE/X) |  | Condition Predicate: If CWE\_CRE1.3 (Name Of Coding System) is valued. |
| 8 | Alternate Coding System Version ID | ST | C(RE/X) |  | Condition Predicate: If CWE\_CRE1.6 (Name Of Alternate Coding System) is valued. |
| 9 | Original Text | ST | C(R/RE) |  | Condition Predicate: If CWE\_CRE1.1 (Identifier) and CWE\_CRE1.4 (Alternate Identifier) are not valued.  Original Text is used to convey the text that was the basis for coding.  If neither the first or second triplet has values, this contains the text of the field. |
| 10 | Second Alternate Identifier |  | O |  |  |
| 11 | Second Alternate Text |  | O |  |  |
| 12 | Second Name of Alternate Coding System |  | O |  |  |
| 13 | Second Alternate Coding System Version ID |  | O |  |  |
| 14 | Coding System OID |  | O |  |  |
| 15 | Value Set OID |  | O |  |  |
| 16 | Value Set Version ID |  | O |  |  |
| 17 | Alternate Coding System OID |  | O |  |  |
| 18 | Alternate Value Set OID |  | O |  |  |
| 19 | Alternate Value Set Version ID |  | O |  |  |
| 20 | Second Alternate Coding System OID |  | O |  |  |
| 21 | Second Alternate Value Set OID |  | O |  |  |
| 22 | Second Alternate Value Set Version ID |  | O |  |  |

Usage Note

The CWE\_CRE1 data type is used where it is necessary to communicate a code, text, or coding system and the version of the coding system the code was drawn from and alternate codes drawn from another coding system. Many coded fields in this specification identify coding systems or value set attributes that must be used for the field. When populating the CWE\_CRE1 data types with these values, this guide does not give preference to the triplet in which the standard code should appear. The receiver is expected to examine the coding system names in components CWE\_CRE1-3 (Name of Coding System) and, if valued, CWE\_CRE1-6 (Alternate Name of Coding System) and, if valued, CWE\_CRE1-20 (Second Alternate Name of Coding System) to determine if it recognizes the coding system or value set.

## CX – Extended Composite ID with Check Digit

### CX\_GU – Extended Composite ID with Check Digit (Globally Unique)

| Table 3‑8. Extended Composite ID with Check Digit (CX\_GU) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | ID Number | ST | R |  |  |
| 2 | Check Digit |  | O |  |  |
| 3 | Check Digit Scheme |  | O |  |  |
| 4 | Assigning Authority | HD\_GU | R |  | The Assigning Authority component is used to identify the system, application, organization, etc. that assigned the value in CX\_GU-1 (ID Number). |
| 5 | Identifier Type Code | ID | R | HL70203 (V2.7.1) |  |
| 6 | Assigning Facility |  | O |  |  |
| 7 | Effective Date |  | O |  |  |
| 8 | Expiration Date |  | O |  |  |
| 9 | Assigning Jurisdiction |  | O |  |  |
| 10 | Assigning Agency or Department |  | O |  |  |

Usage Note

The CX\_GU data type is used to carry identifiers. The GU profile requires that assigning authorities accompany all identifiers and that all identifiers carry an identifier type. This method allows the exchange of universally unique identifiers for the associated object across organizational and enterprise boundaries, enabling broad interoperability.

Although the Identifier Type Code component is required in this implementation guide, it is not a part of the actual identifier. Rather, it is metadata about the identifier. The ID Number and Assigning Authority component, together, constitute the actual identifier. The Assigning Authority represents the identifier’s name space, e.g., Healthy Hospital Medical Record Numbers, or Healthy Hospital Order Numbers. Consequently, the Identifier Type Code is technically not necessary. However, due to various naming practices, organizational mergers, and other challenges, it is not always clear through the Assigning Authority OID what identifier type is being indicated by the identifier name space (note that it is highly recommended that this detail be associated with the OID in the registry metadata about the OID). Therefore, to maintain forward compatibility with V3, while recognizing the current practical challenges with understanding the identifier type/namespace at hand, this guide opted to keep the Identifier Type Code component as required.

### CX\_NG – Extended Composite ID with Check Digit (Non-Globally Unique)

| Table 3‑9. Extended Composite ID with Check Digit (CX\_NG) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments | |
| 1 | ID Number | ST | R |  |  | |
| 2 | Check Digit | ST | O |  |  | |
| 3 | Check Digit Scheme |  | O |  |  | |
| 4 | Assigning Authority | HD\_NG | RE |  |  | |
| 5 | Identifier Type Code | ID | R | HL70203 (V2.7.1) |  | |
| 6 | Assigning Facility |  | O |  |  | |
| 7 | Effective Date |  | O |  |  | |
| 8 | Expiration Date |  | O |  |  | |
| 9 | Assigning Jurisdiction |  | O |  |  | |
| 10 | Assigning Agency or Department |  | O |  |  | |

Usage Note

The CX\_NG data type is used to carry identifiers. This guide requires that assigning authorities accompany all identifiers if known, and that all identifiers carry an identifier type. This method allows the exchange of unique identifiers for the associated object across organizational and enterprise boundaries, enabling broad interoperability.

Although the Identifier Type Code component is required in this implementation guide, it is not a part of the actual identifier. Rather, it is metadata about the identifier. The ID Number and Assigning Authority component, together, constitute the actual identifier. The Assigning Authority represents the identifier’s name space, e.g., Healthy Hospital Medical Record Numbers, or Healthy Hospital Order Numbers. Consequently, the Identifier Type Code is technically not necessary. However, due to various naming practices, organizational mergers, and other challenges, it is not always clear through the Assigning Authority OID what identifier type is being indicated by the identifier name space (note that it is highly recommended that this detail be associated with the OID in the registry metadata about the OID). Therefore, to maintain forward compatibility with V3, while recognizing the current practical challenges with understanding the identifier type/namespace at hand, this guide opted to keep the Identifier Type Code component as required.

## DR\_1 – Date/Time Range 1

| Table 3‑10. Date/Time Range 1 (DR) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Range Start Date/Time | TS\_5 | R |  |  |
| 2 | Range End Date/Time | TS\_5 | RE |  |  |

## EI – Entity Identifier

### EI\_GU – Entity Identifier (Globally Unique)

| Table 3‑11. Entity Identifier (EI\_GU) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Entity Identifier | ST | R |  |  |
| 2 | Namespace ID | IS | RE |  | . |
| 3 | Universal ID | ST | R |  |  |
| 4 | Universal ID Type | ID | R |  | Fixed to ‘ISO’. |

Usage Note

The EI\_GU data type is used to carry identifiers. This GU profile requires that all entity identifiers be accompanied by assigning authorities. This allows the exchange of unique identifiers for the associated object across organizational and enterprise boundaries, enabling broad interoperability.

In the EI data type, the Namespace ID, Universal ID and Universal ID type correspond to the HD data type identified elsewhere. These types, together, are commonly considered the assigning authority for the identifier.

Conformance Statements: LOI\_GU\_Component

**LOI-1**: EI\_GU.3 (Universal ID) **SHALL** be valued with an ISO-compliant OID.

**LOI-2**: EI\_GU.4 (Universal ID Type) **SHALL** contain the value ‘ISO’.

### EI\_NG – Entity Identifier (Non-Globally Unique)

| Table 3‑12. Entity Identifier (EI\_NG) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Entity Identifier | ST | R |  |  |
| 2 | Namespace ID | IS | C(R/O) |  | Condition Predicate: If EI\_NG.3 (Universal ID) is not valued. |
| 3 | Universal ID | ST | C(R/O) |  | Condition Predicate: If EI\_NG.2 (Namespace ID) is not valued. |
| 4 | Universal ID Type | ID | C(R/X) | HL70301 (V2.7.1) | Condition Predicate: If EI\_NG.3 (Universal ID) is valued. |

Usage Note

The EI\_NG data type accommodates identifiers that are not globally unique and therefore may not have the assigning authority (components 3-4) populated. Local arrangements determine how uniqueness is established.

## EIP – Entity Identifier Pair

### EIP\_GU – Entity Identifier Pair (Globally Unique)

| Table 3‑13. Entity Identifier Pair (EIP\_GU) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Placer Assigned Identifier | EI\_GU | RE |  |  |
| 2 | Filler Assigned Identifier | EI\_GU | C(R/RE) |  | Condition Predicate: If EIP\_GU.1 (Placer Assigned Identifier) is not valued. |

### EIP\_NG – Entity Identifier Pair (Non-Globally Unique)

| Table 3‑14. Entity Identifier Pair (EIP\_NG) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Placer Assigned Identifier | EI\_NG | RE |  |  |
| 2 | Filler Assigned Identifier | EI\_NG | C(R/RE) |  | Condition Predicate: if EIP\_NG.1 (Placer Assigned Identifier) is not valued. |

## HD – Hierarchic Designator

### HD\_GU – Hierarchic Designator (Globally Unique)

| Table 3‑15. Hierarchic Designator (HD\_GU) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Namespace ID | IS | RE |  | This value reflects a local code that represents the combination of HD\_GU.2 (Universal ID) and HD\_GU.3 (Universal ID Type). |
| 2 | Universal ID | ST | R |  |  |
| 3 | Universal ID Type | ID | R |  | Fixed to ‘ISO’. |

Usage Note

The actual value of and use of HD\_GU.1 (Namespace ID) and HD\_GU.2 (Universal ID) must be negotiated between trading partners for each of the fields where this data type is used.

The HD\_GU data type is used directly to identify objects such as applications or facilities. It is used also as a component of other data types, where it is typically an assigning authority for an identifier. Where this capability is used in this specification, the usage is described separately. Note that the HD\_GU data type has been constrained to carry an ISO Compliant OID identifying an application, a facility, or an assigning authority.

Conformance Statements: LOI\_GU\_Component

**LOI-3**: HD\_GU.2 (Universal ID) **SHALL** be valued with an ISO-compliant OID.

**LOI-4**: HD\_GU.3 (Universal ID Type) **SHALL** contain the value ‘ISO’.

### HD\_NG – Hierarchic Designator (Non-Globally Unique)

| Table 3‑16. Hierarchic Designator (HD\_NG) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Namespace ID | IS | C(R/O) |  | Condition Predicate: If HD\_NG.2 (Universal ID) is not valued. |
| 2 | Universal ID | ST | C(R/O) |  | Condition Predicate: If HD\_NG.1 (Namespace ID) is not valued. |
| 3 | Universal ID Type | ID | C(R/X) | HL70301 (V2.7.1) | Condition Predicate: If HD\_NG.2 (Universal ID) is valued. |

Usage Note

The actual value of and use of components must be negotiated between trading partners for each of the fields where this data type is used.

The HD\_NG data type is used directly to identify objects such as applications or facilities. It is used also as a component of other data types, where it is typically an assigning authority for an identifier. Where this capability is used in this specification, the usage is described separately.

## JCC – Job Code/Class

| Table 3‑17. Job Code/Class (JCC) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Job Code |  | O |  |  |
| 2 | Job Class |  | O |  |  |
| 3 | Job Description Text | TX | R |  |  |

## MSG – Message Type

| Table 3‑18. Message Type (MSG) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Message Code | ID | R | HL70076 (constrained) |  |
| 2 | Trigger Event | ID | R | HL70003 (constrained) |  |
| 3 | Message Structure | ID | R | HL70354 (constrained) |  |

## PT – Processing Type

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Table 3‑19. Processing Type (PT) | | | | | | |
| SEQ | | Component Name | DT | Usage | Value Set | Comments |
| 1 | Processing ID | | [ID](file:///D:\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\AppData\Local\Microsoft\kreislera\My%20Documents\HL7\Documents\hl725\std25\ch02A.html#ID) | R | HL70103 |  |
| 2 | Processing Mode | |  | O |  |  |

## SAD – Street Address

| Table 3‑20. Street Address (SAD) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Street or Mailing Address | ST | R |  |  |
| 2 | Street Name |  | O |  |  |
| 3 | Dwelling Number |  | O |  |  |

## SN – Structured Numeric

| Table 3‑21. Structured Numeric (SN) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Comparator | [ST](file:///D:\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\AppData\Local\Microsoft\kreislera\My%20Documents\HL7\Documents\hl725\std25\ch02A.html#ST) | RE |  |  |
| 2 | Num1 | [NM](file:///D:\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\AppData\Local\Microsoft\kreislera\My%20Documents\HL7\Documents\hl725\std25\ch02A.html#NM) | R |  |  |
| 3 | Separator/Suffix | [ST](file:///D:\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\AppData\Local\Microsoft\kreislera\My%20Documents\HL7\Documents\hl725\std25\ch02A.html#ST) | C(RE/O) |  | Condition Predicate: If SN.2 (Num1) and SN.4 (Num2) are valued. |
| 4 | Num2 | [NM](file:///D:\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\AppData\Local\Microsoft\kreislera\My%20Documents\HL7\Documents\hl725\std25\ch02A.html#NM) | RE |  |  |

Usage Note

The SN data type carries a structured numeric result value. Structured numeric values include intervals (^0^-^1), ratios (^1^/^2 or ^1^:^2), inequalities (<^10), or categorical results (^2^+)

## TS – Time Stamp

It is strongly recommended that the time zone offset always be included in the DTM particularly if the granularity includes hours, minutes, seconds, etc. Specific fields in this implementation guide may require Date/Time to a specific level of granularity, which may require the time zone offset. The granularity of the DTM as well as whether the time zone offset is required as defined in the Time Stamp patterns TS\_0 through TS\_5, below.

### TS\_0 – Time Stamp 0

| Table 3‑22. Time Stamp 0 (TS\_0) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | | Usage | Value Set | Comments |
| 1 | Time | DTM | | R |  |  |
| 2 | Degree of Precision |  | | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| The DTM component of this Time Stamp has the following constraints: | | | | | | |
|  | YYYY | | DTM | R |  |  |
|  | MM | |  | O |  |  |
|  | DD | |  | O |  |  |
|  | HH | |  | O |  |  |
|  | MM | |  | O |  |  |
|  | [SS[.S[S[S[S]]]]] | |  | O |  |  |
|  | +/- ZZZZ | | DTM | Varies |  | LAB\_TO\_Component Usage: ‘RE’  All other profiles Usage: ‘O’ |

### TS\_1 – Time Stamp 1

| Table 3‑23. Stamp 1 (TS\_1) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Time | [DTM](file:///D:\Jean's%20Documents\AppData\Local\Microsoft\kreislera\My%20Documents\HL7\Documents\hl725\std25\ch02A.html#DTM) | R |  |  |
| 2 | Degree of Precision |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| The DTM component of this Time Stamp has the following constraints: | | | | | |
|  | YYYY | DTM | R |  |  |
|  | MM | DTM | R |  |  |
|  | DD | DTM | R |  |  |
|  | HH | DTM | R |  |  |
|  | MM | DTM | R |  |  |
|  | SS | DTM | R |  |  |
|  | [.S[S[S[S]]]] |  | O |  |  |
|  | +/- ZZZZ | DTM | Varies |  | LAB\_TO\_Component Usage: ‘R’  All other profiles Usage: ‘O’ |

### TS\_2 – Time Stamp 2

| Table 3‑24. Time Stamp 2 (TS\_2) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Time | [DTM](file:///D:\Jean's%20Documents\AppData\Local\Microsoft\kreislera\My%20Documents\HL7\Documents\hl725\std25\ch02A.html#DTM) | R |  |  |
| 2 | Degree of Precision |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| The DTM component of this Time Stamp has the following constraints: | | | | | |
|  | YYYY | DTM | R |  |  |
|  | MM | DTM | RE |  |  |
|  | DD | DTM | RE |  |  |
|  | HH |  | O |  |  |
|  | MM |  | O |  |  |
|  | [SS[.S[S[S[S]]]]] |  | O |  |  |
|  | +/- ZZZZ | DTM | Varies |  | LAB\_TO\_Component Usage: ‘RE’  All other profiles Usage: ‘O’ |

### TS\_3 – Time Stamp 3

| Table 3‑25. Time Stamp 3 (TS\_3) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Time | [DTM](file:///D:\Jean's%20Documents\AppData\Local\Microsoft\kreislera\My%20Documents\HL7\Documents\hl725\std25\ch02A.html#DTM) | R |  |  |
| 2 | Degree of Precision |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| The DTM component of this Time Stamp has the following constraints: | | | | | |
|  | YYYY | DTM | R |  |  |
|  | MM | DTM | RE |  |  |
|  | DD | DTM | RE |  |  |
|  | HH | DTM | RE |  |  |
|  | MM | DTM | RE |  |  |
|  | [SS[.S[S[S[S]]]]] |  | O |  |  |
|  | +/- ZZZZ | DTM | C(RE/O) |  | LAB\_TO\_Component Usage: ‘RE’  All other profiles Usage: ‘O’ |

### TS\_4 – Time Stamp 4

| Table 3‑26. Time Stamp 4 (TS\_4) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Time | DTM | R |  |  |
| 2 | Degree of Precision |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| The DTM component of this Time Stamp has the following constraints: | | | | | |
|  | YYYY | DTM | R |  |  |
|  | MM | DTM | C(R/X) |  | Condition Predicate: If TS\_4.1 (YYYY) is not valued ‘0000’. |
|  | DD | DTM | C(R/X) |  | Condition Predicate: If TS\_4.1 (YYYY) is not valued ‘0000’. |
|  | HH | DTM | C(RE/X) |  | Condition Predicate: If TS\_4.1 (YYYY) is not valued ‘0000’. |
|  | MM | DTM | C(RE/X) |  | Condition Predicate: If TS\_4.1 (YYYY) is not valued ‘0000’. |
|  | [SS[.S[S[S[S]]]]] |  | C(O/X) |  | Condition Predicate: If TS\_4.1 (YYYY) is not valued ‘0000’. |
|  | +/- ZZZZ | DTM | Varies |  | LAB\_TO\_Component Usage: ‘RE’  All other profiles Usage: ‘O’ |

Usage Note

When the date is not known, then value YYYY with ‘0000’ and leave everything else empty.

### TS\_5 – Time Stamp 5

| Table 3‑27. Time Stamp 5 (TS\_5) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Time | DTM | R |  |  |
| 2 | Degree of Precision |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| The DTM component of this Time Stamp has the following constraints: | | | | | |
|  | YYYY | DTM | R |  |  |
|  | MM | DTM | R |  |  |
|  | DD | DTM | R |  |  |
|  | HH | DTM | RE |  |  |
|  | MM | DTM | RE |  |  |
|  | [SS[.S[S[S[S]]]]] |  | O |  |  |
|  | +/- ZZZZ | DTM | Varies |  | LAB\_TO\_Component Usage: ‘RE’  All other profiles Usage: ‘O’ |

## VID – Version Identifier

| Table 3‑28. Version Identifier (VID) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Version ID | ID | R | HL70104 (constrained) |  |
| 2 | Internationalization Code |  | O |  |  |
| 3 | International Version ID |  | O |  |  |

## XAD – Extended Address

**NOTE:** If all XAD components are blank while the field using XAD is required, Senders and Receivers need to resolve what components should be valued and how, or agree to another process.

| Table 3‑29. Extended Address (XAD) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Street Address | SAD | RE |  |  |
| 2 | Other Designation | ST | RE |  |  |
| 3 | City | ST | RE |  |  |
| 4 | State or Province | ST | RE | USPS Alpha State Codes |  |
| 5 | Zip or Postal Code | ST | RE |  | . |
| 6 | Country Code | ID | RE | HL70399 | Use 3-character (alphabetic) form of ISO 3166 for HL7 Table 0399 as defined in HL7 Chapter 2, Section 2.15.9.17. |
| 7 | Address Type | ID | RE | HL70190 |  |
| 8 | Other Geographic Designation |  | O |  |  |
| 9 | County/Parish Code | IS | O-RE | FIPS\_6-4 |  |
| 10 | Census Tract |  | O |  |  |
| 11 | Address Representation Code |  | O |  |  |
| 12 | Address Validity Range |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 13 | Effective Date |  | O |  |  |
| 14 | Expiration Date |  | O |  |  |

## XCN – Extended Composite ID Number and Name for Persons

### XCN\_GU – Extended Composite ID Number and Name for Persons (Globally Unique)

| Table 3‑30. Extended Composite ID Number and Name for Persons (XCN\_GU) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | ID Number | ST | RE |  | The ID Number component combined with XCN\_GU.9 (Assigning Authority) must uniquely identify the associated person.  **Note:** despite the component being named “ID Number” this component is an ST string data type, not numeric, so the component is not limited to just numbers. |
| 2 | Family Name | FN | C(R/RE) |  | Condition Predicate: If XCN\_GU.1 (ID Number) is not valued. |
| 3 | Given Name | ST | RE |  | I.e., first name. |
| 4 | Second and Further Given Names or Initials Thereof |  | O |  |  |
| 5 | Suffix (e.g., JR or III) |  | O |  |  |
| 6 | Prefix (e.g., DR) |  | O |  |  |
| 7 | Degree (e.g., MD) |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 8 | Source Table |  | C(O/O) |  | **NOTE:** This component is (C) in the v2.5.1 standard with no condition predicate defined; none is defined in this IG. |
| 9 | Assigning Authority | HD\_GU | C(R/X) |  | Condition Predicate: If XCN\_GU.1 (ID Number) is valued. The Assigning Authority component is used to identify the system, application, organization, etc. that assigned the ID Number in component 1. |
| 10 | Name Type Code | ID | RE | HL70200 |  |
| 11 | Identifier Check Digit |  | O |  |  |
| 12 | Check Digit Scheme |  | C(O/X) |  | Condition Predicate: If XCN\_GU.11 is valued. |
| 13 | Identifier Type Code | ID | C(R/X) | HL70203 (V2.7.1) | Condition Predicate: If XCN\_GU.1 (ID Number) is valued. |
| 14 | Assigning Facility |  | O |  |  |
| 15 | Name Representation Code |  | O |  |  |
| 16 | Name Context |  | O |  |  |
| 17 | Name Validity Range |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 18 | Name Assembly Order |  | O |  |  |
| 19 | Effective Date |  | O |  |  |
| 20 | Expiration Date |  | O |  |  |
| 21 | Professional Suffix |  | O |  |  |
| 22 | Assigning Jurisdiction |  | O |  |  |
| 23 | Assigning Agency or Department |  | O |  |  |

### XCN\_NG – Extended Composite ID Number and Name for Persons (Non-Globally Unique)

| Table 3‑31. Extended Composite ID Number and Name for Persons (XCN\_NG) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | ID Number | ST | RE |  | **Note:** despite the component being named “ID Number” this component is an ST string data type, not numeric, so the component is not limited to just numbers. |
| 2 | Family Name | FN | RE |  |  |
| 3 | Given Name | ST | RE |  | I.e., first name. |
| 4 | Second and Further Given Names or Initials Thereof |  | O |  |  |
| 5 | Suffix (e.g., JR or III) |  | O |  |  |
| 6 | Prefix (e.g., DR) |  | O |  |  |
| 7 | Degree (e.g., MD) |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 8 | Source Table |  | C(O/O) |  | **NOTE:** This component is (C) in the v2.5.1 standard with no condition predicate defined; none is defined in this IG. |
| 9 | Assigning Authority | HD\_NG | C(R/X) |  | Condition Predicate: If XCN\_NG.1 (ID Number) is valued.  The Assigning Authority component is used to identify the system, application, organization, etc. that assigned the value in XCN\_NG-1 (ID Number). |
| 10 | Name Type Code | ID | RE | HL70200 |  |
| 11 | Identifier Check Digit |  | O |  |  |
| 12 | Check Digit Scheme |  | C(O/X) |  | Condition Predicate: If XCN\_NG.11(Identifier Check Digit) is valued. |
| 13 | Identifier Type Code | ID | C(R/X) | HL70203 (V2.7.1) | Condition Predicate: If XCN\_NG.1 (ID Number) is valued. |
| 14 | Assigning Facility |  | O |  |  |
| 15 | Name Representation Code |  | O |  |  |
| 16 | Name Context |  | O |  |  |
| 17 | Name Validity Range |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 18 | Name Assembly Order |  | O |  |  |
| 19 | Effective Date |  | O |  |  |
| 20 | Expiration Date |  | O |  |  |
| 21 | Professional Suffix |  | O |  |  |
| 22 | Assigning Jurisdiction |  | O |  |  |
| 23 | Assigning Agency or Department |  | O |  |  |

## XON – Extended Composite Name and Identification Number for Organizations

### XON\_GU – Extended Composite Name and Identification Number for Organizations (Globally Unique)

| Table 3‑32. Extended Composite Name and Identification Number for Organizations (XON\_GU) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Organization Name | ST | RE |  |  |
| 2 | Organization Name Type Code |  | O |  |  |
| 3 | ID Number |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 4 | Check Digit |  | O |  |  |
| 5 | Check Digit Scheme |  | C(O/X) |  | Condition Predicate: If XON\_GU.4 (Check Digit) is valued. |
| 6 | Assigning Authority | HD\_GU | C(R/X) |  | Condition Predicate: If XON\_GU.10 (Organization Identifier) is valued.  The Assigning Authority component is used to identify the system, application, organization, etc. that assigned the value in XON\_GU-10 (Organization Identifier). |
| 7 | Identifier Type Code | ID | C(R/X) | HL70203 (V2.7.1) | Condition Predicate: If XON\_GU.10 (Organization Identifier) is valued. |
| 8 | Assigning Facility |  | O |  |  |
| 9 | Name Representation Code |  | O |  |  |
| 10 | Organization Identifier | ST | C(R/RE) |  | Condition Predicate: If XON\_GU.1 (Organization Name) is not valued. |

Usage Note

Both XON.1 and XON.10 may be populated, but at least one of them must be valued.

### XON\_NG – Extended Composite Name and Identification Number for Organizations (Non-Globally Unique)

| Table 3‑33. Extended Composite Name and Identification Number for Organizations (XON\_NG) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Organization Name | ST | RE |  |  |
| 2 | Organization Name Type Code |  | O |  |  |
| 3 | ID Number |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 4 | Check Digit |  | O |  |  |
| 5 | Check Digit Scheme |  | C(O/X) |  | Condition Predicate: If XON\_NG.4 is valued. |
| 6 | Assigning Authority | HD\_NG | C(R/X) |  | Condition Predicate: If XON\_NG.10 (Organization Identifier) is valued.  The Assigning Authority component is used to identify the system, application, organization, etc. that assigned the value in XON\_NG-10 (Organization Identifier). |
| 7 | Identifier Type Code | ID | C(R/X) | HL70203 (V2.7.1) | Condition Predicate: If XON\_NG.10 (Organization Identifier) is valued. |
| 8 | Assigning Facility |  | O |  |  |
| 9 | Name Representation Code |  | O |  |  |
| 10 | Organization Identifier | ST | C(R/RE) |  | Condition Predicate: If XON\_NG.1 (Organization Name) is not valued. |

Usage Note

Both XON.1 and XON.10 may be populated, but at least one of them must be valued.

### XON\_IN1 – Extended Composite Name and Identification Number for Organizations (Name Only for Insurance)

| Table 3‑34. Extended Composite Name and Identification Number for Organizations (Name Only for Insurance) (XON\_IN1) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Organization Name | ST | R |  |  |
| 2 | Organization Name Type Code |  | O |  |  |
| 3 | ID Number |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 4 | Check Digit |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 5 | Check Digit Scheme |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 6 | Assigning Authority |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 7 | Identifier Type Code |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 8 | Assigning Facility |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 9 | Name Representation Code |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 10 | Organization Identifier |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |

Usage Note

Data Type XON\_IN1 is a specialization of the XON data type for the IN1 segment, specifically IN1-4 (Insurance Company Name). To avoid the duplication of information that can be messaged in the IN1-3 (Insurance Company ID) in the subcomponent of the data type (CX) that match subcomponents of the IN1-4 data type (XON), the XON data type for IN1-4 has been reduced to the XON.1 (Organization Name) and XON.2 (Organization Name Type Code) components which provide the unique information not provided in any other field’s data component.

## XPN – Extended Person Name

### XPN – Extended Person Name - Base

| Table 3‑35. Extended Person Name (XPN) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Family Name | FN | RE |  |  |
| 2 | Given Name | ST | RE |  | I.e., first name. |
| 3 | Second and Further Given Names or Initials Thereof | ST | C(RE/X) |  | Condition Predicate: If XPN-1 (Family Name) or XPN-2 (Given Name) is valued. |
| 4 | Suffix (e.g., JR or III) | ST | C(RE/X) |  | Condition Predicate: If XPN-1 (Family Name) or XPN-2 (Given Name) is valued. |
| 5 | Prefix (e.g., DR) |  | O |  |  |
| 6 | Degree (e.g., MD) |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 7 | Name Type Code | ID | RE | HL70200 |  |
| 8 | Name Representation Code |  | O |  |  |
| 9 | Name Context |  | O |  |  |
| 10 | Name Validity Range |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 11 | Name Assembly Order |  | O |  |  |
| 12 | Effective Date |  | O |  |  |
| 13 | Expiration Date |  | O |  |  |
| 14 | Professional Suffix |  | O |  |  |

### XPN\_1 – Extended Person Name 1

| Table 3‑36. Extended Person Name 1 (XPN\_1) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Family Name | FN | R |  |  |
| 2 | Given Name | ST | C(R/X) |  | Condition Predicate: If XPN\_1.1 (Family Name) is not valued ' "" '.  I.e., first name. |
| 3 | Second and Further Given Names or Initials Thereof | ST | RE |  |  |
| 4 | Suffix (e.g., JR or III) | ST | RE |  |  |
| 5 | Prefix (e.g., DR) |  | O |  |  |
| 6 | Degree (e.g., MD) |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 7 | Name Type Code | ID | C(R/X) | HL70200 | Condition Predicate: If XPN\_1.1 (Family Name) is not valued ' "" '. |
| 8 | Name Representation Code |  | O |  |  |
| 9 | Name Context |  | O |  |  |
| 10 | Name Validity Range |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 11 | Name Assembly Order |  | O |  |  |
| 12 | Effective Date |  | O |  |  |
| 13 | Expiration Date |  | O |  |  |
| 14 | Professional Suffix |  | O |  |  |

Usage Note

Note that XPN\_1 was developed for situations where the name cannot be unknown, therefore the value of XPN\_1-7 (Name Type Code) disallows the use of the ‘U’ (Unknown) code value.

Conformance Statement: LOI Common Component

**LOI-5:** XPN\_1-7 (Name Type Code) **SHALL NOT** be valued ‘U’.

## XTN – Extended Telecommunication Number

| Table 3‑37. Extended Telecommunication Number (XTN) | | | | | |
| --- | --- | --- | --- | --- | --- |
| SEQ | Component Name | DT | Usage | Value Set | Comments |
| 1 | Telephone Number |  | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 2 | Telecommunication Use Code |  | O |  |  |
| 3 | Telecommunication Equipment Type | ID | R | HL70202 |  |
| 4 | Email Address | ST | C(R/X) |  | Condition Predicate: If XTN-3 (Telecommunication Equipment Type) is valued ‘X.400’ or ‘Internet’. |
| 5 | Country Code |  | O |  |  |
| 6 | Area/City Code | NM | C(R/X) |  | Condition Predicate: If XTN-3 (Telecommunication Equipment Type) is valued ‘PH’, ‘CP’, ‘SAT’, ‘FX’, or ‘TDD’. |
| 7 | Local Number | NM | C(R/X) |  | Condition Predicate: If XTN-3 (Telecommunication Equipment Type) is valued ‘PH’, ‘CP’, ‘SAT’, ‘FX’, or ‘TDD’. |
| 8 | Extension | NM | C(RE/X) |  | Condition Predicate: If XTN-3 (Telecommunication Equipment Type) is valued ‘PH’, ‘CP’, ‘SAT’, ‘FX’, or ‘TDD’. |
| 9 | Any Text |  | O |  |  |
| 10 | Extension Prefix |  | O |  |  |
| 11 | Speed Dial Code |  | O |  |  |
| 12 | Unformatted Telephone number |  | C(O/X) |  | Condition Predicate: If XTN-3 (Telecommunication Equipment Type) is valued ‘PH’, ‘CP’, ‘SAT’, ‘FX’, or ‘TDD’. |

Usage Note

Components five through nine reiterate the basic function of the first component in a delimited form that allows the expression of both local and international telephone numbers. As of V2.3, the recommended form for the telephone number is to use the delimited form rather than the unstructured form supported by the first component (which is left in for backward compatibility only).

# Messages

The following sections detail the structure of each message, including segment name, usage, cardinality and description, as well as the definition of each segment used in the message structure.

Note that the first column (Segment) is listing the cardinality and optionality according to the base standard; the second column (Name) provides the segment or group name from the base standard, while the remaining columns (Usage, Cardinality, Description) define the constraints for this implementation guide. It is therefore possible that the base standard defines a segment as “O” (optional) with a cardinality of up to 1, while this implementation guide defines the segment in the Usage column as “R” (required) thus a cardinality of [1..1].

The OML^O21^OML\_O21 message is constrained for transmitting laboratory orders from the Sender to the Receiver as defined in each Use Case.

## OML^O21^OML\_O21: Laboratory Order Message – New and Append Order

This message structure supports the use as defined in Section 2.5.4 Scenario 1 – Electronic Ordering of New or Scheduled Laboratory Test(s) and Section 2.5.5 Scenario 2 – Electronic Ordering of Add-On Laboratory Test(s)

| Table 4‑1. OML^O21^OML\_O21 New and Append Order | | | | |
| --- | --- | --- | --- | --- |
| Segment | Name | Usage | Cardinality | Description |
| MSH | Message Header | R | [1..1] | The message header (MSH) segment contains information describing how to parse and process the message. This includes identification of message delimiters, sender, receiver, message type, timestamp, etc. |
| [{SFT}] | Software Segment | O |  |  |
| [{NTE}] | Notes and Comments for Header | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [ | PATIENT Begin | R | [1..1] |  |
| PID | Patient Identification | R | [1..1] | The patient identification (PID) segment is used to provide basic demographics regarding the subject of the testing. The subject shall be a person. |
| [PD1] | Additional Demographics | O |  |  |
| [{NTE}] | Notes and Comments for PID | O |  |  |
| [{NK1}] | Next of Kin/Associated Parties | Varies | [0..5] | Sender usage: ‘RE’; Receiver usage: ‘O’ |
| [ | VISIT Begin | R | [1..1] |  |
| PV1 | Patient Visit | R | [1..1] | HL7 requires that PV1 (Patient Visit) segment be present if the VISIT group is present. |
| [PV2] | Patient Visit – Additional Information | O |  |  |
| ] | VISIT End |  |  |  |
| [{ | INSURANCE Begin | Varies | Varies | Billing Profile usage: C(R/O)  Condition Predicate: if PV1-20 (Financial Class) is valued ‘T’ (third party).  Billing Profile cardinality: [1..3]  All other profiles Usage is ‘O’ |
| IN1 | Insurance | R | [1..1] |  |
| [IN2] | Insurance – Additional Information | O |  |  |
| [IN3] | Insurance – Additional Information – Cert. | O |  |  |
| }] | INSURANCE End |  |  |  |
| GT1 | Guarantor | RE | [0..1] |  |
| [{AL1}] | Allergy Information | O |  |  |
| ] | PATIENT End |  |  |  |
| { | ORDER Begin | R | [1..\*] |  |
| ORC | Order Common | R | [1..1] | The common order (ORC) segment identifies basic information about the order for testing of the specimen. This segment includes identifiers of the order, who placed the order, when it was placed, what action to take regarding the order, etc. |
| [{ | TIMING\_QTY Begin | RE | [0..1] |  |
| TQ1 | Timing/Quantity | R | [1..1] |  |
| [{TQ2}] | Timing/Quantity Order Sequence | O |  |  |
| }] | TIMING\_QTY End |  |  |  |
|  | OBSERVATION\_REQUEST Begin | R | [1..1] |  |
| OBR | Observations Request | R | [1..1] | The observation request (OBR) segment is used to capture information about one test being performed on the specimen. Most importantly, the OBR identifies the type of testing to be performed on the specimen, and ties that information to the order for the testing. |
| [TCD] | Test Code Details | O |  |  |
| [{NTE}] | Notes and Comments for Detail | RE | [0..\*] |  |
| [{PRT}] | Participation (for Obs Request) | C(R/O) | Varies | Condition Predicate: If OBR-28 (Result Copies To) is valued.  **Note:** There should be one PRT for each repeat of OBR-28 (Result Copies To). Sender and receiver must also support PRT where PRT-4 is 'RCT'.  LOI\_RC\_Component cardinality is [0..\*]  All other profiles cardinality: [0..5] |
| [CTD] | Contact Data | O |  |  |
| [{DG1}] | Diagnosis | C(R/RE) | [0..\*] | Condition Predicate: If PV1-20 (Financial Class) is valued ‘T’ (third party). |
| [{ | OBSERVATION Begin | RE | [0..\*] |  |
| OBX | Observation/Result | R | [1..1] |  |
| [TCD] | Test Code Details | O |  |  |
| [{NTE}] | Notes and Comments for Details | O |  |  |
| }] | OBSERVATION End |  |  |  |
| [{ | SPECIMEN Begin | C(R/O) | [0..\*] | Condition Predicate: If OBR-7 (Observation Date/Time) in the same order observation group is valued. |
| SPM | Specimen Information | R | [1..1] | The specimen information (SPM) segment describes the characteristics of a single sample. The SPM segment carries information regarding the type of specimen, where and how it was collected, who collected it, and some basic characteristics of the specimen. |
| [{OBX}] | Observation related to Specimen | O |  |  |
| [{ | CONTAINER Begin | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| SAC | Specimen Container | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [{OBX}] | Observation related to Container | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| }] | CONTAINER End | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| }] | SPECIMEN End |  |  |  |
| [{ | PRIOR\_RESULT Begin | Varies | [0..\*] | LOI\_PR\_Component Usage: ‘RE’  All other profiles Usage: ‘O’ |
|  | SGH |  |  |  |
| [ | ***Patient prior Begin*** | O |  |  |
| PID | Patient Identification | R | [1..1] |  |
| [PD1] | Additional Demographics | O |  |  |
| ] | ***Patient prior End*** |  |  |  |
| [ | ***Visit Begin*** | O |  |  |
| PV1 | Patient Visit | R | [1..1] |  |
| [PV2] | Patient Visit – Additional Information | O |  |  |
| ] | ***Patient Visit End*** |  |  |  |
| [{AL1}] | Allergy Information | O |  |  |
| { | ***Order Prior Begin*** |  |  |  |
| [ORC] | Order Common | O |  |  |
| OBR | Observations Request | R | [1..1] |  |
| [{NTE}] | Notes and Comments for Details | O |  |  |
| [{ | ***Timing Prior Begin*** | RE |  |  |
| TQ1 | Timing/Quantity | R | [1..1] |  |
| [{TQ2}] | Timing/Quantity Order Sequence | O |  |  |
| }] | ***Timing Prior End*** |  |  |  |
| { | ***Observation Prior Begin*** | R | [1..\*] |  |
| OBX | Observation/Result | R | [1..1] |  |
| [{NTE}] | Notes and Comments for Details | O |  |  |
| } | ***Observation Prior End*** |  |  |  |
| } | ***Order Prior End*** |  |  |  |
|  | SGT |  |  |  |
| }] | PRIOR\_RESULT End |  |  |  |
| } | OBSERVATION\_ REQUEST End |  |  |  |
| [{FTI}] | Financial Transaction | O |  |  |
| {[CTI]} | Clinical Trial Identification | O |  |  |
| [BLG] | Billing Segment | O |  |  |
| } | ORDER End |  |  |  |

Usage Notes

The specimen group is required if known at the time of the order placement, e.g., when the provider collects the specimen, and is used to carry specimen information that is no longer contained in the OBR segment. Each specimen group documents a single sample.

When placing an add-on order, the specimen information that the order is intended to be added onto should be included whenever possible, e.g., when the provider adds an order to the specimen that they collected.

## OML^O21^OML\_O21: Laboratory Order Message – Cancel Order

This message structure supports Section 2.5.6 Scenario 3 – Requesting the Cancellation of a Previously Placed Laboratory Order and Section 2.5.7 Scenario 4 – Laboratory Cancellation of a Previously Placed Laboratory Order

The control code in ORC indicates if the Ordering Provider or the Laboratory initiated the cancellation.

| Table 4‑2. OML^O21^OML\_O21 Cancel Order – Ordering Provider Initiated | | | | |
| --- | --- | --- | --- | --- |
| Segment | Name | Usage | Cardinality | Description |
| MSH | Message Header | R | [1..1] | The message header (MSH) segment contains information describing how to parse and process the message. This includes identification of message delimiters, sender, receiver, message type, timestamp, etc. |
| [{SFT}] | Software Segment | O |  |  |
| [{NTE}] | Notes and Comments for Header | O |  |  |
| [ | PATIENT Begin | R | [1..1] |  |
| PID | Patient Identification | R | [1..1] | The patient identification (PID) segment is used to provide basic demographics regarding the subject of the testing. The subject shall be a person. |
| [PD1] | Additional Demographics | O |  |  |
| [{NTE}] | Notes and Comments for PID | O |  |  |
| [{NK1}] | Next of Kin/Associated Parties | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
|  | VISIT Begin | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| PV1 | Patient Visit | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [PV2] | Patient Visit – Additional Information | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
|  | VISIT End |  |  |  |
| [{ | INSURANCE Begin | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| IN1 | Insurance | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [IN2] | Insurance – Additional Information | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [IN3] | Insurance – Additional Information – Cert. | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| }] | INSURANCE End |  |  |  |
| GT1 | Guarantor | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [{AL1}] | Allergy Information | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| ] | PATIENT End |  |  |  |
| { | ORDER Begin | R | [1..\*] |  |
| ORC | Order Common | R | [1..1] | The common order (ORC) segment identifies basic information about the order for testing of the specimen. This segment includes identifiers of the order, who placed the order, when it was placed, what action to take regarding the order, etc. |
| [{ | TIMING\_QTY Begin | O |  |  |
| TQ1 | Timing/Quantity | R | [1..1] |  |
| [{TQ2}] | Timing/Quantity Order Sequence | O |  |  |
| }] | TIMING\_QTY End |  |  |  |
|  | OBSERVATION\_REQUEST Begin | R | [1..1] |  |
| OBR | Observations Request | R | [1..1] | The observation request (OBR) segment is used to capture information about one test being performed on the specimen. Most importantly, the OBR identifies the type of testing to be performed on the specimen, and ties that information to the order for the testing. |
| [TCD] | Test Code Details | O |  |  |
| [{NTE}] | Notes and Comments for Detail | RE | [0..\*] |  |
| [CTD] | Contact Data | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [{DG1}] | Diagnosis | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [{ | OBSERVATION Begin | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| OBX | Observation/Result | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [TCD] | Test Code Details | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [{NTE}] | Notes and Comments for Details | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| }] | OBSERVATION End |  |  |  |
| [{ | SPECIMEN Begin | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| SPM | Specimen Information | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [{OBX}] | Observation related to Specimen | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [{ | CONTAINER Begin | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| SAC | Specimen Container | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| [{OBX}] | Observation related to Container | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| }] | CONTAINER End |  |  |  |
| }] | SPECIMEN End |  |  |  |
| [{ | PRIOR\_RESULT Begin | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| … | Prior result segments excluded | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| }] | PRIOR\_RESULT End |  |  |  |
| } | OBSERVATION\_ REQUEST End |  |  |  |
| [{FTI}] | Financial Transaction | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| {[CTI]} | Clinical Trial Identification | O |  |  |
| [BLG] | Billing Segment | X |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| } | ORDER End |  |  |  |

Usage Notes

Timing/Quantity information is not necessary upon canceling an order as the current scope only includes individual instances of future orders.

## ACK^O21^ACK\_O21: Laboratory Order Message – System Level Acknowledgement

Guaranteed delivery is required. For any non-batch transmission method, this guide requires that MSH-15 (Accept Acknowledgment Type) be valued “AL” and responded to by any intermediary system such as an HIE between the Laboratory Order Sender the intended Laboratory Order Receiver. To ensure that end-to-end acknowledgement of delivery is available where appropriate, both the sender and receiver must support all values from Table HL70155 in MSH-16 (Application Acknowledgment Type). However, full application acknowledgement is not required at this time.

| Table 4‑3. ACK^O21^ACK\_O21 Abstract Message Syntax | | | | |
| --- | --- | --- | --- | --- |
| Segment | Name | Usage | Cardinality | Description |
| MSH | Message Header | R | [1..1] | The message header (MSH) segment contains information describing how to parse and process the message. This includes identification of message delimiters, sender, receiver, message type, timestamp, etc. |
| [{SFT}] | Software Segment | O |  |  |
| MSA | Message Acknowledgment | R | [1..1] | The Message Acknowledgment Segment (MSA) contains the information sent as acknowledgment to the order message received by a LIS or EHR-S. |
| [{ERR }] | Error | C(R/O) | [0..\*] | Condition predicate: If MSA-1 (Message Acknowledgement) is not valued ‘AA’ or ‘CA’. |

## ORL^O22^ORL\_O22: Laboratory Order Message – Application Level Acknowledgement

| Table 4‑4. ORL^O22^ORL\_O22 Abstract Message Syntax | | | | |
| --- | --- | --- | --- | --- |
| Segment | Name | Usage | Cardinality | Description |
| MSH | Message Header | R | [1..1] | The message header (MSH) segment contains information describing how to parse and process the message. This includes identification of message delimiters, sender, receiver, message type, timestamp, etc. |
| MSA | Message Acknowledgment | R | [1..1] | The Message Acknowledgment Segment (MSA) contains the information sent as acknowledgment to the order message received by a LIS or EHR-S. |
| [{ ERR }] | Error | C(R/O) | [0..\*] | Condition Predicate: If ORC-1 (Order Control) is valued ‘UC’ or ‘UA’ |
| [{ SFT }] | Software | O |  |  |
| [{ NTE }] | Notes and Comments (for Header) | O |  |  |
| [ | ***RESPONSE Begin*** | R | [1..1] |  |
| [ | ***PATIENT Begin*** | R | [1..1] |  |
| PID | Patient Identification | R | [1..1] |  |
| [{ | ***ORDER Begin*** | R | [1..\*] |  |
| ORC | Common Order | R | [1..1] |  |
| [{ | ***TIMING Begin*** | O |  |  |
| TQ1 | Timing/Quantity | O |  |  |
| [{ TQ2 }] | Timing/Quantity Order Sequence | O |  |  |
| }] | ***TIMING End*** |  |  |  |
| [ | ***OBSERVATION\_REQUEST begin*** | R | [1..1] |  |
| OBR | Observation Request | R | [1..1] |  |
| [{ | ***SPECIMEN Begin*** | O |  |  |
| SPM | Specimen | O |  |  |
| [{ SAC }] | Specimen Container Details | O |  |  |
| }] | ***SPECIMEN End*** |  |  |  |
| ] | ***OBSERVATION\_REQUEST End*** |  |  |  |
| }] | ***ORDER End*** |  |  |  |
| ] | ***PATIENT End*** |  |  |  |
| ] | ***RESPONSE End*** |  |  |  |

## Segment and Field Descriptions

This messaging guide provides notes for required (non-optional) fields for each of the non-optional segments. For each segment the segment table defines the applicable constraints on usage for its fields for this implementation guide, see Section 1.3.2 Message Element Attributes for a description of the columns in the Segment Attribute Tables. All the relevant conformance statements and general usage notes are located at the end of each table.

Note that any optional segments that are brought forward from the base will have to be used within the constraints set forth in this guide, e.g., constraint statements will be required to use the GU or NG profiles, and agreement about which CWE data type to use needs to be reached.

### MSH – Message Header Segment

| Table 4‑5. Message Header Segment (MSH) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Field Separator | ST | R | [1..1] |  |  |
| 2 | Encoding Characters | ST | R | [1..1] |  | Constrained to the literal values ‘^~\&’ or ‘^~\&#’, always appearing in the same order. |
| 3 | Sending Application | Varies | RE | [0..1] | HL70361 | GU Data Type: HD\_GU  NG Data Type: HD\_NG |
| 4 | Sending Facility | Varies | R | [1..1] | HL70362 | GU Data Type: HD\_GU  NG Data Type: HD\_NG  If acknowledgments are in use, this facility will receive any related acknowledgment message. |
| 5 | Receiving Application | HD | RE | [0..1] |  |  |
| 6 | Receiving Facility | Varies | RE | [0..1] | HL70362 | GU Data Type: HD\_GU  NG Data Type: HD\_NG  If acknowledgments are in use, this facility originates any related acknowledgment message. |
| 7 | Date/Time Of Message | TS\_1 | R | [1..1] |  | If the time zone offset is included in MSH-7 (Date/Time Of Message) it becomes the default time zone for the message instance and applies to all other date/time fields in that same message instance where a time zone offset is not valued, except as otherwise indicated through the use of the LAB\_TO\_Component profile as defined in Section 2.8.1.7 in MSH-21 (Message Profile Identifier). |
| 8 | Security |  | O |  |  |  |
| 9 | Message Type | MSG | R | [1..1] |  |  |
| 10 | Message Control ID | ST | R | [1..1] |  | String that identifies the message instance from the sending application. Example formats for message control IDs include GUID, timestamp plus sequence number, OID plus sequence number or sequence number. The important point is that care must be taken to ensure that the message control id is unique within the system originating the message. |
| 11 | Processing ID | PT | R | [1..1] |  |  |
| 12 | Version ID | VID | R | [1..1] |  | HL7 version number used to interpret format and content of the message. Constrained to the literal value ‘2.5.1’.  Note that receivers must examine MSH-21 (Message Profile Identifier) to understand which message profile the message instance conforms to. |
| 13 | Sequence Number |  | O |  |  |  |
| 14 | Continuation Pointer |  | O |  |  |  |
| 15 | Accept Acknowledgment Type | ID | R | [1..1] | HL70155 |  |
| 16 | Application Acknowledgment Type | ID | R | [1..1] | HL70155 |  |
| 17 | Country Code |  | O |  |  |  |
| 18 | Character Set |  | O |  |  |  |
| 19 | Principal Language Of Message |  | O |  |  |  |
| 20 | Alternate Character Set Handling Scheme |  | O |  |  |  |
| 21 | Message Profile Identifier | EI\_GU | R | [1..\*] |  | The sender asserts that the message conforms to a given profile and/or valid combination of components. |

Usage Notes

MSH-21 (Message Profile Identifier) shall identify exclusively one lab orders interface profile (i.e., MSH-21 shall not be populated with conflicting LOI profile or LOI components).

Additional compatible profiles or components can be present in MSH-21; for example, if an LOI profile or component is further constrained.

The table below indicates valid MSH-21 combinations for declaring conformance to a particular LOI profile or LOI components.

| Table 4‑6. MSH 21 Orders Profile Combinations | | | |
| --- | --- | --- | --- |
| LOI Profile | Pre-Coordinated OID | Component OIDs | Component Name |
| LOI\_GU\_PRU\_Profile | 2.16.840.1.113883.9.FF | 2.16.840.1.113883.9.AA  2.16.840.1.113883.9.BB  2.16.840.1.113883.9.YY | LOI\_Common\_Component  LOI\_GU\_Component  LAB\_PRU\_Component |
| LOI\_GU\_PRN\_Profile | 2.16.840.1.113883.9.GG | 2.16.840.1.113883.9.AA  2.16.840.1.113883.9.BB  2.16.840.1.113883.9.WW | LOI\_Common\_Component  LOI\_GU\_Component  LAB\_PRN\_Component |
| LOI\_NG\_PRU\_Profile | 2.16.840.1.113883.9.HH | 2.16.840.1.113883.9.AA  2.16.840.1.113883.9.CC  2.16.840.1.113883.9.YY | LOI\_Common\_Component  LOI\_NG\_Component  LAB\_PRU\_Component |
| LOI\_NG\_PRN\_Profile | 2.16.840.1.113883.9.II | 2.16.840.1.113883.9.AA  2.16.840.1.113883.9.CC  2.16.840.1.113883.9.WW | LOI\_Common\_Component  LOI\_NG\_Component  LAB\_PRN\_Component |

For each of the combinations illustrated, the following additional profile component identifiers can be specified:

* LAB\_NB\_Component – ID: 2.16.840.1.113883.9.24
* LAB\_PH\_Component – ID: 2.16.840.1.113883.9.OO
* LAB\_TO\_Component – ID: 2.16.840.1.113883.9.22
* LAB\_XO\_Component – ID: 2.16.840.1.113883.9.23
* LOI\_PR\_Component – ID: 2.16.840.1.113883.9.QQ
* LOI\_RC\_Component – ID: 2.16.840.1.113883.9.RR

**Examples**

1. LOI\_NG\_PRN\_Profile Using Component OIDs

|  |
| --- |
| MSH…|||||LOI\_Common\_Component^^2.16.840.1.113883.9.AA^ISO~LOI\_NG\_Component^^2.16.840.1.113883.9.CC^ISO~LAB\_PRN\_Component^^2.16.840.1.113883.9.WW^ISO |

2. LOI\_NG\_PRN\_Profile Pre-Coordinated Profile OID

|  |
| --- |
| MSH…|||||LOI\_NG\_PRN\_Profile^^2.16.840.1.113883.9.II^ISO |

3. LOI\_NG\_PRN\_Profile using Pre-Coordinated Profile OID and the LAB\_NB\_Component

|  |
| --- |
| MSH…|||||LOI\_NG\_PRN\_Profile^^2.16.840.1.113883.9.II^ISO~LAB\_NB\_Component^^2.16.840.1.113883.9.24^ISO |

Conformance Statements: LOI\_Common\_Component

**LOI-6**: MSH-1 (Field Separator) **SHALL** contain the constant value ‘|’.

**LOI-7**: MSH-2 (Encoding Characters) **SHALL** contain the constant value ‘^~\&’ or the constant value ‘^~\&#’.

**LOI-8**: MSH-9 (Message Type) **SHALL** contain the constant value ‘OML^O21^OML\_O21’.

**LOI-9**: MSH-12.1 (Version ID) **SHALL** contain the constant value ‘2.5.1’.

**LOI-10**: The sender and receiver **SHALL** support ‘AL’ for MSH-15 (Accept Acknowledgement Type) upon sending the order (ORC-1 is valued ‘NW’), cancellation request (ORC-1 is valued ‘CA’), or cancellation notification (ORC-1 is valued ‘OC’) and **MAY** support other values from Table 0155 Accept/Application Acknowledgement Conditions.

**LOI-11**: The sender and receiver **SHALL** support only ‘AL’ for MSH-15 (Accept Acknowledgement Type) upon accepting or declining the order (ORC-1 is valued ‘OK’ or ‘UA’),

**LOI-12**: The sender and receiver **SHALL** support ‘AL’ for MSH-15 (Accept Acknowledgement Type) upon accepting or declining the cancellation request (ORC-1 is valued ‘CR’ or ‘UC’), or confirming receipt of the cancellation notification (ORC-1 is valued ‘NR’) and **MAY** support other values from Table 0155 Accept/Application Acknowledgement Conditions.

**LOI-13**: The sender and receiver **SHALL** support ‘AL’ for MSH-16 (Application Acknowledgement Type) upon sending the order (ORC-1 is valued ‘NW’), cancellation request (ORC-1 is valued ‘CA’, or cancellation notification (ORC-1 is valued ‘OC’) and **MAY** support other values from Table 0155 Accept/Application Acknowledgement Conditions.

**LOI-14**: The sender and receiver **SHALL** support only ‘NE’ for MSH-16 (Application Acknowledgement Type) upon accepting or declining the order (ORC-1 is valued ‘OK’ or ‘UA’).

**LOI-15**: The sender and receiver **SHALL** support ‘NE’ for MSH-16 (Application Acknowledgement Type) upon accepting or declining a cancellation request (ORC-1 is valued ‘CR’ or ‘UC’) and **MAY** support other values from Table 0155 Accept/Application Acknowledgement Conditions.

**LOI-16**: The sender and receiver **SHALL** support only ‘NE’ for MSH-16 (Application Acknowledgement Type) upon confirming receipt of the cancellation notification (ORC-1 is valued ‘NR’).

To summarize the valid combinations expressed in LOI-11 through LOI-16, see the table below:

| Table 4‑7. Valid Order and Acknowledgement Code Combinations | | |
| --- | --- | --- |
| ORC-1 Order Control Code | MSH-15 Accept Acknowledgement Type | MSH-16 Application Acknowledgement Type |
| NW | Required: AL  Optional: SU, ER, NE | Required: AL  Optional: SU, ER, NE |
| OK | Required: AL  Optional: SU, ER, NE | Required: NE  Optional: None |
| UA | Required: AL  Optional: SU, ER, NE | Required: NE  Optional: None |
| CA | Required: AL  Optional: SU, ER, NE | Required: NE  Optional: AL, SU, ER |
| CR | Required: AL  Optional: SU, ER, NE | Required: NE  Optional: AL, SU, ER |
| UC | Required: AL  Optional: SU, ER, NE | Required: NE  Optional: AL, SU, ER |
| OC | Required: AL  Optional: SU, ER, NE | Required: NE  Optional: AL, SU, ER |
| NR | Required: AL  Optional: SU, ER, NE | Required: NE  Optional: None |

Conformance Statements: LOI\_GU\_PRN\_Profile

**LOI-17**: An occurrence of MSH-21 (Message Profile Identifier) **SHALL** be valued with ‘2.16.840.1.113883.9.GG’ (LOI\_GU\_PRN\_Profile) or three occurrences **SHALL** be valued with ‘2.16.840.1.113883.9.AA’ (LOI\_Common\_Component), ‘2.16.840.1.113883.9.BB’ (LOI\_GU\_Component) and ‘2.16.840.1.113883.9.WW’ (LAB\_PRN\_Component) in any order.

**Note:** Additional occurrences of MSH-21 (Message Profile Identifier) may be valued with any combination of:

LAB\_NB\_COMPONENT – ID: 2.16.840.1.113883.9.24

LAB\_PH\_COMPONENT – ID: 2.16.840.1.113883.9.OO

LAB\_TO\_COMPONENT – ID: 2.16.840.1.113883.9.22

LAB\_XO\_COMPONENT – ID: 2.16.840.1.113883.9.23

LOI\_PR\_COMPONENT – ID: 2.16.840.1.113883.9.QQ

LOI\_RC\_COMPONENT – ID: 2.16.840.1.113883.9.RR

Conformance Statements: LOI\_NG\_PRU\_Profile

**LOI-18**: An occurrence ofMSH-21(Message Profile Identifier) **SHALL** be valued with ‘2.16.840.1.113883.9.HH’ (LOI\_NG\_PRU\_Profile) or three occurrences **SHALL** be valued with ‘2.16.840.1.113883.9.AA’ (LOI\_Common\_Component), ‘2.16.840.1.113883.9.CC’ (LOI\_NG\_Component) and ‘2.16.840.1.113883.9.YY’ (LAB\_PRU\_Component) in any order.

**Note:** Additional occurrences of MSH-21 (Message Profile Identifier) may be valued with any combination of:

LAB\_NB\_COMPONENT – ID: 2.16.840.1.113883.9.24

LAB\_PH\_COMPONENT – ID: 2.16.840.1.113883.9.OO

LAB\_TO\_COMPONENT – ID: 2.16.840.1.113883.9.22

LAB\_XO\_COMPONENT – ID: 2.16.840.1.113883.9.23

LOI\_PR\_COMPONENT – ID: 2.16.840.1.113883.9.QQ

LOI\_RC\_COMPONENT – ID: 2.16.840.1.113883.9.RR

Conformance Statements: LOI\_NG\_PRN\_Profile

**LOI-19:** An occurrence ofMSH-21(Message Profile Identifier) **SHALL** be valued with ‘2.16.840.1.113883.9.II’ (LOI\_NG\_PRN\_Profile) or three occurrences **SHALL** be valued with ‘2.16.840.1.113883.9.AA’ (LOI\_Common\_Component), ‘2.16.840.1.113883.9.CC’ (LOI\_NG\_Component) and ‘2.16.840.1.113883.9.WW’ (LAB\_PRN\_Component) in any order.

**Note:** Additional occurrences of MSH-21 (Message Profile Identifier) may be valued with any combination of:

LAB\_NB\_COMPONENT – ID: 2.16.840.1.113883.9.24

LAB\_PH\_COMPONENT – ID: 2.16.840.1.113883.9.OO

LAB\_TO\_COMPONENT – ID: 2.16.840.1.113883.9.22

LAB\_XO\_COMPONENT – ID: 2.16.840.1.113883.9.23

LOI\_PR\_COMPONENT – ID: 2.16.840.1.113883.9.QQ

LOI\_RC\_COMPONENT – ID: 2.16.840.1.113883.9.RR

Conformance Statements: LOI\_GU\_PRU\_Profile

**LOI-20**: An occurrence of MSH-21 (Message Profile Identifier) **SHALL** be valued with ‘2.16.840.1.113883.9.FF’ (LOI\_GU\_PRU\_Profile) or three occurrences **SHALL** be valued with ‘2.16.840.1.113883.9.AA’ (LOI\_Common\_Component), ‘2.16.840.1.113883.9.BB’ (LOI\_GU\_Component) and ‘2.16.840.1.113883.9.YY’ (LAB\_PRU\_Component) in any order.

**Note:** Additional occurrences of MSH-21 (Message Profile Identifier) may be valued with any combination of:

LAB\_NB\_COMPONENT – ID: 2.16.840.1.113883.9.24

LAB\_PH\_COMPONENT – ID: 2.16.840.1.113883.9.OO

LAB\_TO\_COMPONENT – ID: 2.16.840.1.113883.9.22

LAB\_XO\_COMPONENT – ID: 2.16.840.1.113883.9.23

LOI\_PR\_COMPONENT – ID: 2.16.840.1.113883.9.QQ

LOI\_RC\_COMPONENT – ID: 2.16.840.1.113883.9.RR

The table below indicates valid MSH-21 combinations for declaring conformance to a particular LOI acknowledgement profile.

| Table 4‑8. MSH 21 Acknowledgment Profile Combinations | | | |
| --- | --- | --- | --- |
| LOI Profile | Pre-Coordinated OID | Component OIDs | Component Name |
| LOI\_GU\_Response\_Profile | 2.16.840.1.113883.9.MM | 2.16.840.1.113883.9.JJ  2.16.840.1.113883.9.KK | LOI\_Acknowledgement\_Component  GU\_Acknowledgement\_Component |
| LOI\_NG\_Response\_Profile | 2.16.840.1.113883.9.NN | 2.16.840.1.113883.9.JJ  2.16.840.1.113883.9.LL | LOI\_Acknowledgement\_Component  NG\_Acknowledgement\_Component |

Conformance Statements: LOI\_Acknowledgement\_Component

**LOI-21:** MSH-1 (Field Separator) **SHALL** contain the constant value ‘|’.

**LOI-22**: MSH-2 (Encoding Characters) **SHALL** contain the constant value ‘^~\&’ or the constant value ‘^~\&#’.

**LOI-23**: MSH-9 (Message Type) **SHALL** contain the constant value ‘ACK^O21^ACK’.

**LOI-24**: MSH-12.1 (Version ID) **SHALL** contain the constant value ‘2.5.1’.

**LOI-25**: MSH-15 (Accept Acknowledgement Type) **SHALL** contain the constant value ‘NE’.

**LOI-26**: MSH-16 (Application Acknowledgement Type) **SHALL** contain the constant value ‘NE’.

Conformance Statements: GU\_Acknowledgement\_Component

**LOI-27**: MSH-21 (Message Profile Identifier) **SHALL** be valued with ‘2.16.840.1.113883.9.KK’ (GU\_Acknowledgment\_Component) when acknowledging OML GU Profiles where MSH-21 contains ‘2.16.840.1.113883.9.FF’ (LOI\_GU\_PRU\_Profile), or ‘2.16.840.1.113883.9.GG’ (LOI\_GU\_PRN\_Profile), or ‘2.16.840.1.113883.9.BB’ (LOI\_GU\_Component).

Conformance Statements: NG\_Acknowledgement\_Component

**LOI-28**: MSH-21 (Message Profile Identifier) **SHALL** be valued with ‘2.16.840.1.113883.9.LL’ (NG\_Acknowledgment\_Profile) when acknowledging OML NG Profiles where MSH-21 contains ‘2.16.840.1.113883.9.HH’ (LOI\_NG\_PRU\_Profile), or ‘2.16.840.1.113883.9.II’ (LOI\_NG\_PRN\_Profile), or ‘2.16.840.1.113883.9.CC’ (LOI\_NG\_Component).

### MSA – Acknowledgement Segment

| Table 4‑9. Acknowledgment Segment (MSA) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Acknowledgment Code | ID | R | [1..1] | HL70008 |  |
| 2 | Message Control ID | ST | R | [1..1] |  |  |
| 3 | Text Message |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 4 | Expected Sequence Number |  | O |  |  |  |
| 5 | Delayed Acknowledgment Type |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 6 | Error Condition |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |

### ERR – Error Segment

| Table 4‑10. Error Segment (ERR) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Error Code and Location |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 2 | Error Location |  | O |  |  |  |
| 3 | HL7 Error Code | CWE | R | [1..1] | HL70357 |  |
| 4 | Severity | ID | R | [1..1] | HL70516 |  |
| 5 | Application Error Code |  | O |  |  |  |
| 6 | Application Error Parameter |  | O |  |  |  |
| 7 | Diagnostic Information | TX | RE | [0..1] |  |  |
| 8 | User Message |  | O |  |  |  |
| 9 | Inform Person Indicator |  | O |  |  |  |
| 10 | Override Type |  | O |  |  |  |
| 11 | Override Reason Code |  | O |  |  |  |
| 12 | Help Desk Contact Point |  | O |  |  |  |

### PID – Patient Identification Segment

| Table 4‑11. Patient Identification Segment (PID) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Set ID – PID | SI | R | [1..1] |  | Constrained to the literal value ‘1’. |
| 2 | Patient ID |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 3 | Patient Identifier List | Varies | R | [1..\*] |  | GU Data Type: CX\_GU  NG Data Type: CX\_NG |
| 4 | Alternate Patient ID – PID |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 5 | Patient Name | XPN | R | [1..1] |  |  |
| 6 | Mother’s Maiden Name | XPN | Varies | [0..1] |  | PH Component Usage: ‘RE’  All other profiles Usage: ‘O’ |
| 7 | Date/Time of Birth | Varies | R | [1..1] |  | Newborn Component Data Type: TS\_3  All other profiles Data Type: TS\_2  **Note:** YYYY must be calculated from patient age if DoB is not available. |
| 8 | Administrative Sex | IS | R | [1..1] | HL70001 | Patient’s gender. |
| 9 | Patient Alias |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 10 | Race | CWE\_CR1 | RE | [0..\*] | HL70005 | Note that state and/or national regulations may dictate other behaviors.  The PID-10 (Race) value is provided for demographic/billing purposes, not clinical use. |
| 11 | Patient Address | XAD | C(R/RE) | [0..\*] |  | Condition Predicate: If PV1-20 (Patient Financial Class) is ‘T’ (third party) or ‘P’ (Patient). |
| 12 | County Code |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 13 | Phone Number – Home | XTN | Varies | [0..\*] |  | PH Component Usage: ‘RE’  All other profiles Usage: ‘O’ |
| 14 | Phone Number – Business | XTN | Varies | [0..\*] |  | PH Component Usage: ‘RE’  All other profiles Usage: ‘O’ |
| 15 | Primary Language |  | O |  |  |  |
| 16 | Marital Status |  | O |  |  |  |
| 17 | Religion |  | O |  |  |  |
| 18 | Patient Account Number |  | O |  |  |  |
| 19 | SSN Number – Patient |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 20 | Driver’s License Number – Patient |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 21 | Mother’s Identifier |  | O |  |  |  |
| 22 | Ethnic Group | CWE\_CR1 | RE | [0..1] | HL70189 | Note that state and/or national regulations may dictate other behaviors.  The PID-22 (Ethnic Group) value is provided for demographic/billing purposes, not clinical use. |
| 23 | Birth Place |  | O |  |  |  |
| 24 | Multiple Birth Indicator |  | O |  |  |  |
| 25 | Birth Order |  | O |  |  |  |
| 26 | Citizenship |  | O |  |  |  |
| 27 | Veterans Military Status |  | O |  |  |  |
| 28 | Nationality |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 29 | Patient Death Date and Time | TS\_3 | C(RE/O) | [0..1] |  | Condition Predicate: If PID-30 (Patient Death Indicator) is valued ‘Y’. |
| 30 | Patient Death Indicator | ID | RE | [0..1] | HL70136 |  |
| 31 | Identity Unknown Indicator |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 32 | Identity Reliability Code |  | O |  |  |  |
| 33 | Last Update Date/Time |  | O |  |  |  |
| 34 | Last Update Facility |  | O |  |  |  |
| 35 | Species Code |  | O |  |  | Limited use for veterinary use, e.g., for rabies infecting humans |
| 36 | Breed Code |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 37 | Strain |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 38 | Production Class Code |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 39 | Tribal Citizenship |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |

Conformance Statements: LOI\_Common\_Component

**LOI-29:** PID-1 (Set ID - PID) **SHALL** be valued with the constant value ‘1’.

**LOI-30:** If PV1-20 (Patient Financial Class) is ‘T’ (Third Party) or ‘P’ (Patient) then PID-11 (Patient Address) **SHALL** include an address with type ‘H’ Home

**LOI-31:** If PV1-20 (Patient Financial Class) is valued ‘T’ or ‘P’, PID-5.7 (Name Type Code) **SHALL** be valued ‘L’

### NK1 – Next of Kin / Associated Parties Segment

| Table 4‑12. Next of Kin / Associated Parties Segment (NK1) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Set ID - NK1 | SI | R | [1..1] |  |  |
| 2 | Name | XPN\_1 | C(R/X) | [0..1] |  | Condition Predicate: If NK1-13 (Organization Name – NK1) is not valued. |
| 3 | Relationship | CWE\_CR1 | R | [1..1] | HL70063 | Use of HL7 Table 0063 is unconstrained in this IG, expectation is that pilot implementation will inform Normative edition. |
| 4 | Address | XAD | RE | [0..2] |  |  |
| 5 | Phone Number | XTN | RE | [0..4] |  |  |
| 6 | Business Phone Number |  | O |  |  |  |
| 7 | Contact Role | CWE\_CR1 | RE | [0..1] | HL70131 |  |
| 8 | Start Date |  | O |  |  |  |
| 9 | End Date |  | O |  |  |  |
| 10 | Next of Kin / Associated Parties Job Title |  | O |  |  |  |
| 11 | Next of Kin / Associated Parties Job Code/Class | JCC | C(R/RE) | [0..1] |  | Condition Predicate: If NK1-7 (Contact Role) is ‘E’ (employer). |
| 12 | Next of Kin / Associated Parties Employee Number |  | O |  |  |  |
| 13 | Organization Name - NK1 | Varies | C(R/X) | [0..1] |  | Condition Predicate: If NK1-2 (Name) is not valued.  GU Data Type: XON\_GU  NG Data Type: XON\_NG |
| 14 | Marital Status |  | O |  |  |  |
| 15 | Administrative Sex |  | O |  |  |  |
| 16 | Date/Time of Birth |  | O |  |  |  |
| 17 | Living Dependency |  | O |  |  |  |
| 18 | Ambulatory Status |  | O |  |  |  |
| 19 | Citizenship |  | O |  |  |  |
| 20 | Primary Language |  | O |  |  |  |
| 21 | Living Arrangement |  | O |  |  |  |
| 22 | Publicity Code |  | O |  |  |  |
| 23 | Protection Indicator |  | O |  |  |  |
| 24 | Student Indicator |  | O |  |  |  |
| 25 | Religion |  | O |  |  |  |
| 26 | Mother's Maiden Name |  | O |  |  |  |
| 27 | Nationality |  | O |  |  |  |
| 28 | Ethnic Group |  | O |  |  |  |
| 29 | Contact Reason |  | O |  |  |  |
| 30 | Contact Person's Name | XPN\_1 | Varies | [0..1] |  | PH Component Usage: ‘C(RE/X)’  Condition Predicate: If NK1-13 (Organization Name - NK1) is valued.  All other profiles Usage: ‘O’ |
| 31 | Contact Person's Telephone Number |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 32 | Contact Person's Address | XAD | Varies | [0..1] |  | PH Component Usage: ‘C(RE/X)’  Condition Predicate: If NK1-13 (Organization Name - NK1) is valued.  All other profiles Usage: ‘O’ |
| 33 | Next of Kin/Associated Party's Identifiers |  | O |  |  |  |
| 34 | Job Status |  | O |  |  |  |
| 35 | Race |  | O |  |  |  |
| 36 | Handicap |  | O |  |  |  |
| 37 | Contact Person Social Security Number |  | O |  |  |  |
| 38 | Next of Kin Birth Place |  | O |  |  |  |
| 39 | VIP Indicator |  | O |  |  |  |
| 40 | Next of Kin Telecommunication Information |  | O |  |  |  |
| 41 | Contact Person's Telecommunication Information |  | O |  |  |  |

Usage Note

The use of CWE in NK1-XX (aaaaaa) is pre-adopted from HL7 V.2.7.1.

### PV1 – Patient Visit Segment

| Table 4‑13. Patient Visit Segment (PV1) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Set ID - PV1 | SI | R | [1..1] |  |  |
| 2 | Patient Class | IS | R | [1..1] | HL70004 |  |
| 3 | Assigned Patient Location |  | O |  |  |  |
| 4 | Admission Type |  | O |  |  |  |
| 5 | Preadmit Number |  | O |  |  |  |
| 6 | Prior Patient Location |  | O |  |  |  |
| 7 | Attending Doctor |  | O |  |  |  |
| 8 | Referring Doctor |  | O |  |  |  |
| 9 | Consulting Doctor |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 10 | Hospital Service |  | O |  |  |  |
| 11 | Temporary Location |  | O |  |  |  |
| 12 | Preadmit Test Indicator |  | O |  |  |  |
| 13 | Re-admission Indicator |  | O |  |  |  |
| 14 | Admit Source |  | O |  |  |  |
| 15 | Ambulatory Status |  | O |  |  |  |
| 16 | VIP Indicator |  | O |  |  |  |
| 17 | Admitting Doctor |  | O |  |  |  |
| 18 | Patient Type |  | O |  |  |  |
| 19 | Visit Number |  | O |  |  |  |
| 20 | Financial Class | FC | R | [1..1] | HL70064 |  |
| 21 | Charge Price Indicator |  | O |  |  |  |
| 22 | Courtesy Code | CWE | O-C(RE/O) | [0..1] | HL70045 | Condition Predicate: If PV1.20 (Financial Class) is not valued ‘T’ (Third Party). |
| 23 | Credit Rating |  | O |  |  |  |
| 24 | Contract Code |  | O |  |  |  |
| 25 | Contract Effective Date |  | O |  |  |  |
| 26 | Contract Amount |  | O |  |  |  |
| 27 | Contract Period |  | O |  |  |  |
| 28 | Interest Code |  | O |  |  |  |
| 29 | Transfer to Bad Debt Code |  | O |  |  |  |
| 30 | Transfer to Bad Debt Date |  | O |  |  |  |
| 31 | Bad Debt Agency Code |  | O |  |  |  |
| 32 | Bad Debt Transfer Amount |  | O |  |  |  |
| 33 | Bad Debt Recovery Amount |  | O |  |  |  |
| 34 | Delete Account Indicator |  | O |  |  |  |
| 35 | Delete Account Date |  | O |  |  |  |
| 36 | Discharge Disposition |  | O |  |  |  |
| 37 | Discharged to Location |  | O |  |  |  |
| 38 | Diet Type |  | O |  |  |  |
| 39 | Servicing Facility |  | O |  |  |  |
| 40 | Bed Status |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 41 | Account Status |  | O |  |  |  |
| 42 | Pending Location |  | O |  |  |  |
| 43 | Prior Temporary Location |  | O |  |  |  |
| 44 | Admit Date/Time |  | O |  |  |  |
| 45 | Discharge Date/Time |  | O |  |  |  |
| 46 | Current Patient Balance |  | O |  |  |  |
| 47 | Total Charges |  | O |  |  |  |
| 48 | Total Adjustments |  | O |  |  |  |
| 49 | Total Payments |  | O |  |  |  |
| 50 | Alternate Visit ID |  | O |  |  |  |
| 51 | Visit Indicator |  | O |  |  |  |
| 52 | Other Healthcare Provider |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |

Usage Note

The use of CWE in PV1-22 (Courtesy Code) is pre-adopted from HL7 V.2.7.1.

Conformance Statements: LOI\_Common\_Component

**LOI-32: PV1-1** (Set ID – PV1) **SHALL** be valued with the constant value ‘1’.

### IN1 – Insurance Segment

| Table 4‑14. Insurance Segment (IN1) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Set ID - IN1 | SI | R | [1..1] |  |  |
| 2 | Insurance Plan ID | CWE\_CR1 | R | [1..1] | HL70072  HL70353 | If no user components of HL70072 or locally defined table, use the default value of ‘NA’ (not applicable) from Table HL70353 CWE Status Codes or draw another appropriate value from Table HL70353. |
| 3 | Insurance Company ID | Varies | R | [1..1] |  | GU Data Type: CX\_GU  NG Data Type: CX\_NG |
| 4 | Insurance Company Name | XON\_IN1 | R | [1..1] |  |  |
| 5 | Insurance Company Address | XAD | R | [1..1] |  |  |
| 6 | Insurance Co Contact Person |  | O |  |  |  |
| 7 | Insurance Co Phone Number |  | O |  |  |  |
| 8 | Group Number | ST | RE | [0..1] |  |  |
| 9 | Group Name |  | O |  |  |  |
| 10 | Insured’s Group Emp ID |  | O |  |  |  |
| 11 | Insured’s Group Emp Name | Varies | C(R/O) | [0..1] |  | Condition Predicate: If IN1-31 (Type of Agreement Code) is valued ‘W’ (Workman's Comp).  GU Data Type: XON\_GU  NG Data Type: XON\_NG |
| 12 | Plan Effective Date |  | O |  |  |  |
| 13 | Plan Expiration Date | DT | RE | [0..1] |  |  |
| 14 | Authorization Information |  | O |  |  |  |
| 15 | Plan Type |  | O |  |  |  |
| 16 | Name Of Insured | XPN\_1 | R | [1..1] |  |  |
| 17 | Insured’s Relationship To Patient | CWE\_CR1 | R | [1..1] | HL70063 | Use of HL7 Table 0063 is unconstrained in this IG, expectation is that pilot implementation will inform Normative edition. |
| 18 | Insured’s Date Of Birth | TS\_2 | RE | [0..1] |  |  |
| 19 | Insured’s Address | XAD | RE | [0..1] |  |  |
| 20 | Assignment Of Benefits |  | O |  |  |  |
| 21 | Coordination Of Benefits |  | O |  |  |  |
| 22 | Coord Of Ben. Priority |  | O |  |  |  |
| 23 | Notice Of Admission Flag |  | O |  |  |  |
| 24 | Notice Of Admission Date |  | O |  |  |  |
| 25 | Report Of Eligibility Flag |  | O |  |  |  |
| 26 | Report Of Eligibility Date |  | O |  |  |  |
| 27 | Release Information Code |  | O |  |  |  |
| 28 | Pre-Admit Cert (PAC) |  | O |  |  |  |
| 29 | Verification Date/Time |  | O |  |  |  |
| 30 | Verification By |  | O |  |  |  |
| 31 | Type Of Agreement Code | IS | RE | [0..1] | HL70098 |  |
| 32 | Billing Status |  | O |  |  |  |
| 33 | Lifetime Reserve Days |  | O |  |  |  |
| 34 | Delay Before L.R. Day |  | O |  |  |  |
| 35 | Company Plan Code |  | O |  |  |  |
| 36 | Policy Number | ST | R | [1..1] |  |  |
| 37 | Policy Deductible |  | O |  |  |  |
| 38 | Policy Limit - Amount |  | O |  |  |  |
| 39 | Policy Limit - Days |  | O |  |  |  |
| 40 | Room Rate - Semi-Private |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 41 | Room Rate - Private |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 42 | Insured’s Employment Status |  | O |  |  |  |
| 43 | Insured’s Administrative Sex |  | O |  |  |  |
| 44 | Insured’s Employer’s Address |  | O |  |  |  |
| 45 | Verification Status |  | O |  |  |  |
| 46 | Prior Insurance Plan ID |  | O |  |  |  |
| 47 | Coverage Type |  | O |  |  |  |
| 48 | Handicap |  | O |  |  |  |
| 49 | Insured’s ID Number |  | O |  |  |  |
| 50 | Signature Code |  | O |  |  |  |
| 51 | Signature Code Date |  | O |  |  |  |
| 52 | Insured’s Birth Place |  | O |  |  |  |
| 53 | VIP Indicator |  | O |  |  |  |
| 54 | External Health Plan Identifiers |  | O |  |  |  |

Usage Note

The use of CWE in IN1-XX (aaaaaa) is pre-adopted from HL7 V.2.7.1.

### GT1 – Guarantor Segment

| Table 4‑15. Guarantor Segment (GT1) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Set ID - GT1 | SI | R | [1..1] |  |  |
| 2 | Guarantor Number |  | O |  |  |  |
| 3 | Guarantor Name | XPN\_1 | R | [1..1] |  | Beginning with Version 2.3, if the guarantor is an organization, send a null value ("") in GT1-3 (Guarantor Name) and put the organization name in GT1-21 (Guarantor Organization Name). Either Guarantor Name or Guarantor Organization Name is required. |
| 4 | Guarantor Spouse Name |  | O |  |  |  |
| 5 | Guarantor Address | XAD | R | [1..1] |  |  |
| 6 | Guarantor Ph Num – Home |  | O |  |  |  |
| 7 | Guarantor Ph Num – Business |  | O |  |  |  |
| 8 | Guarantor Date/Time Of Birth |  | O |  |  |  |
| 9 | Guarantor Administrative Sex |  | O |  |  |  |
| 10 | Guarantor Type |  | O |  |  |  |
| 11 | Guarantor Relationship | CWE\_CR1 | R | [1..1] | HL70063 | Use of HL7 Table 0063 is unconstrained in this IG, expectation is that pilot implementation will inform Normative edition. |
| 12 | Guarantor SSN |  | O |  |  |  |
| 13 | Guarantor Date - Begin |  | O |  |  |  |
| 14 | Guarantor Date - End |  | O |  |  |  |
| 15 | Guarantor Priority |  | O |  |  |  |
| 16 | Guarantor Employer Name |  | O |  |  |  |
| 17 | Guarantor Employer Address |  | O |  |  |  |
| 18 | Guarantor Employer Phone Number |  | O |  |  |  |
| 19 | Guarantor Employee ID Number |  | O |  |  |  |
| 20 | Guarantor Employment Status |  | O |  |  |  |
| 21 | Guarantor Organization Name | Varies | R | [1..1] |  | Beginning with Version 2.3, if the guarantor is a person, send a null value ("") in GT1-21 (Guarantor Organization Name) and put the person name in GT1-3 (Guarantor Name). Either guarantor person name or guarantor organization name is required.  GU Data Type: XON\_GU  NG Data Type: XON\_NG |
| 22 | Guarantor Billing Hold Flag |  | O |  |  |  |
| 23 | Guarantor Credit Rating Code |  | O |  |  |  |
| 24 | Guarantor Death Date And Time |  | O |  |  |  |
| 25 | Guarantor Death Flag |  | O |  |  |  |
| 26 | Guarantor Charge Adjustment Code |  | O |  |  |  |
| 27 | Guarantor Household Annual Income |  | O |  |  |  |
| 28 | Guarantor Household Size |  | O |  |  |  |
| 29 | Guarantor Employer ID Number |  | O |  |  |  |
| 30 | Guarantor Marital Status Code |  | O |  |  |  |
| 31 | Guarantor Hire Effective Date |  | O |  |  |  |
| 32 | Employment Stop Date |  | O |  |  |  |
| 33 | Living Dependency |  | O |  |  |  |
| 34 | Ambulatory Status |  | O |  |  |  |
| 35 | Citizenship |  | O |  |  |  |
| 36 | Primary Language |  | O |  |  |  |
| 37 | Living Arrangement |  | O |  |  |  |
| 38 | Publicity Code |  | O |  |  |  |
| 39 | Protection Indicator |  | O |  |  |  |
| 40 | Student Indicator |  | O |  |  |  |
| 41 | Religion |  | O |  |  |  |
| 42 | Mother’s Maiden Name |  | O |  |  |  |
| 43 | Nationality |  | O |  |  |  |
| 44 | Ethnic Group |  | O |  |  |  |
| 45 | Contact Person’s Name |  | O |  |  |  |
| 46 | Contact Person’s Telephone Number |  | O |  |  |  |
| 47 | Contact Reason |  | O |  |  |  |
| 48 | Contact Relationship |  | O |  |  |  |
| 49 | Job Title |  | O |  |  |  |
| 50 | Job Code/Class |  | O |  |  |  |
| 51 | Guarantor Employer’s Organization Name |  | O |  |  |  |
| 52 | Handicap |  | O |  |  |  |
| 53 | Job Status |  | O |  |  |  |
| 54 | Guarantor Financial Class |  | O |  |  |  |
| 55 | Guarantor Race |  | O |  |  |  |
| 56 | Guarantor Birth Place |  | O |  |  |  |
| 57 | VIP Indicator |  | O |  |  |  |

Conformance Statements: LOI\_Common\_Component

**LOI-33:** GT1-1 (Set ID – GT1) **SHALL** be valued with the constant value ‘1’.

**LOI-34**: If GT1-3 (Guarantor Name) is ‘ “” ‘ then GT1-21 (Guarantor Organizational Name) **SHALL** be valued.

**LOI-35:** If GT1-21 (Guarantor Organization Name) is valued ‘ “” ‘ then GT1-3 (Guarantor Name) **SHALL** be valued.

**Note:** The ‘ “” ‘ means that the literal string of two double-quotes are conveyed in the message, the field is not empty.

### ORC – Common Order Segment

| Table 4‑16. Common Order Segment (ORC) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Order Control | ID | R | [1..1] | HL70119 (constrained) |  |
| 2 | Placer Order Number | Varies | R | [1..1] |  | GU Data Type: EI\_GU  NG Data Type: EI\_NG |
| 3 | Filler Order Number | Varies | RE | [0..1] |  | Filler order number is usually not known for a new order, but may be known for cancel orders.  GU Data Type: EI\_GU  NG Data Type: EI\_NG |
| 4 | Placer Group Number | Varies | RE | [0..1] |  | GU Data Type: EI\_GU  NG Data Type: EI\_NG |
| 5 | Order Status |  | O |  |  |  |
| 6 | Response Flag |  | O |  |  |  |
| 7 | Quantity/Timing |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 8 | Parent |  | O |  |  |  |
| 9 | Date/Time of Transaction | TS\_4 | R | [1..1] |  |  |
| 10 | Entered By |  | O |  |  |  |
| 11 | Verified By |  | O |  |  |  |
| 12 | Ordering Provider | Varies | R | [1..1] | NPI | GU Data Type: XCN\_GU  NG Data Type: XCN\_NG |
| 13 | Enterer's Location |  | O |  |  |  |
| 14 | Call Back Phone Number | XTN | RE | [0..2] |  |  |
| 15 | Order Effective Date/Time | TS\_5 | C(R/O) | [0..1] |  | Condition Predicate: If ORC-1 is ‘OP’. |
| 16 | Order Control Code Reason | CWE | C(R/O) | [0..1] |  | Condition Predicate: If ORC-1 is ‘OP’. |
| 17 | Entering Organization |  | O |  |  |  |
| 18 | Entering Device |  | O |  |  |  |
| 19 | Action By |  | O |  |  |  |
| 20 | Advanced Beneficiary Notice Code | CWE\_CR1 | RE | [1..1] | HL70339 |  |
| 21 | Ordering Facility Name | Varies | Varies | [1..1] | NPI | PH Component Usage: ‘R’  All other profiles Usage: ‘O’  GU Data Type: XON\_GU  NG Data Type: XON\_NG |
| 22 | Ordering Facility Address | XAD | Varies | [1..1] |  | PH Component Usage: ‘R’  All other profiles Usage: ‘O’ |
| 23 | Ordering Facility Phone Number | XTN | Varies | [1..\*] |  | PH Component Usage: ‘R’  All other profiles Usage: ‘O’ |
| 24 | Ordering Provider Address | XAD | RE | [0..1] |  |  |
| 25 | Order Status Modifier |  | O |  |  |  |
| 26 | Advanced Beneficiary Notice Override Reason | CWE\_CRE1 | C(R/O) | [0..1] | HL70552 | Condition Predicate: If ORC-20 (ABN) is valued ‘4’. |
| 27 | Filler's Expected Availability Date/Time |  | O |  |  |  |
| 28 | Confidentiality Code |  | O |  |  |  |
| 29 | Order Type |  | O |  |  |  |
| 30 | Enterer Authorization Mode | CNE | C(R/O) | [0..1] |  | Condition Predicate: If ORC-1 is ‘OP’. |
| 31 | Parent Universal Service Identifier |  | O |  |  |  |

Usage Note

**ORC-1 (Order Control)** – This field shall be valued to ‘OP’ when the order represents a confirmation of an oral request for a test. ‘OP’ shall be used when the confirmation involves a new order. Note the condition predicates associated with ORC-15 (Order Effective Date/Time), ORC-16 (Order Control Code Reason), and ORC-30 (Enterer Authorization Mode). ORC-15 (Order Effective Date/Time) should reflect the date/time that the oral request was made, not when the electronic order was provided.

**ORC-4 (Placer Group Number)** – This field allows a Laboratory Order Sender to group sets of orders together and subsequently identify them. In some environments this might be considered a single document sometimes referred to as a test requisition or test request form. In other instances it may group orders placed for the same instance of care or diagnosis. All the orders with the same Placer Group Number are considered siblings of each other. Regardless of how the *identifier* that groups the siblings of a care instance is labeled, ORC-4 (Placer Group Number) is where one would convey that identifier.

Conformance Statements: LOI\_Common\_Component

**LOI-36:** If ORC.1 (Order Control) is valued ‘OP’ then ORC-16 (Order Control Code Reason **) SHALL** contain the value “^oral request confirmation” and ORC.30 (Enterer Authorization Mode) **SHALL** contain ‘VO^Voice^HL70482’.

**LOI-37:** The value of ORC-2 (Placer Order Number) **SHALL** be identical to the value of OBR-2 (Placer Order Number) within the same Order Group.

**LOI-38:** If valued, ORC-3 (Filler Order Number) **SHALL** be identical to the value of OBR-3 (Filler Order Number) within the same Order Group.

**LOI-39:** The value of ORC-12 (Ordering Provider) **SHALL** be identical to the value of OBR-16 (Ordering Provider) within the same Order Group.

Conformance Statements: LOI\_PRN\_Component

**LOI-40:** The value of ORC-31 (Parent Universal Service Identifier) **SHALL** be identical to the value of OBR-50 (Parent Universal Service Identifier).

Conformance Statements: LOI\_PRU\_Component

**LOI-41:** The value of ORC-2 (Placer Order Number) **SHALL** **NOT** be valued identical to another instance of ORC-2 (Placer Order Number) within the same message excluding the Prior Result group(s).

**LOI-42:** If valued, ORC-3 (Filler Order Number) **SHALL** **NOT** be valued identical to another instance of ORC-3 (Filler Order Number) within the same Order Group.

### TQ1 – Timing/Quantity Segment

| Table 4‑17. Timing/Quantity Segment for Order Group (TQ1) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Set ID - TQ1 | SI | R | [1..1] |  |  |
| 2 | Quantity |  | O |  |  |  |
| 3 | Repeat Pattern |  | O |  |  |  |
| 4 | Explicit Time |  | O |  |  |  |
| 5 | Relative Time and Units |  | O |  |  |  |
| 6 | Service Duration |  | O |  |  |  |
| 7 | Start date/time | TS\_5 | RE | [0..1] |  | The start date should be the expected date the order should begin or the anticipated date when the order will be fulfilled by the patient arriving at the Patient Service Center (PSC). If this is a future order this should have a date, otherwise it may be empty. A future order is an order with a start date/time where that start date/time indicates the earliest time the specimen can be collected. Leaving this field empty would indicate the earliest available date or when the patient arrives to have specimen drawn. |
| 8 | End date/time | TS\_5 | RE | [0..1] |  |  |
| 9 | Priority | CWE\_CR1 | R | [1..1] | HL70485 (V2.7.1) |  |
| 10 | Condition text |  | O |  |  |  |
| 11 | Text instruction |  | O |  |  |  |
| 12 | Conjunction |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 13 | Occurrence duration |  | O |  |  |  |
| 14 | Total occurrence's |  | O |  |  |  |

Usage Note

Since the TQ group can only appear once in each Observation Group, none of the values in TQ1-12 make sense, thus should not be sent.

Conformance Statements: LOI\_Common\_Component

**LOI-43:** The value of TQ1-1 (Set ID – TQ1) **SHALL** be valued ‘1’.

### OBR – Observation Request Segment

| Table 4‑18. Observation Request Segment (OBR) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Set ID ‑ OBR | SI | R | [1..1] |  | For the first occurrence of the OBR segment, the Sequence number shall be one (1), for the second occurrence, the Sequence number shall be two (2), etc. |
| 2 | Placer Order Number | Varies | R | [1..1] |  | GU Data Type: EI\_GU  NG Data Type: EI\_NG |
| 3 | Filler Order Number | Varies | RE | [0..1] |  | GU Data Type: EI\_GU  NG Data Type: EI\_NG |
| 4 | Universal Service Identifier | CWE\_CR1 | R | [1..1] | LOINC | LOINCshall be used as the standard vocabulary to identify the ordered test in OBR-4 (Universal Service Identifier) when an applicable LOINC code is available and provided by the laboratory. When no valid orderable LOINC code exists, the local code may be the only code sent. |
| 5 | Priority – OBR |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 6 | Requested Date/Time |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 7 | Observation Date/Time | TS\_5 | RE | [0..1] |  | This reflects the specimen collection date/time when the test involves a specimen.  Since a test may also involve drawing specimens at different times, e.g., tolerance tests, this date/time only covers the draw of the first specimen. All other specimen collection date/times, including the first one, are communicated in the SPM segment. |
| 8 | Observation End Date/Time | TS\_5 | RE | [0..1] |  |  |
| 9 | Collection Volume |  | O |  |  |  |
| 10 | Collector Identifier |  | O |  |  |  |
| 11 | Specimen Action Code | ID | R | [1..1] | HL70065  (V2.7.1, constrained) |  |
| 12 | Danger Code |  | O |  |  |  |
| 13 | Relevant Clinical Information |  | O |  |  |  |
| 14 | Specimen Received Date/Time |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 15 | Specimen Source |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 16 | Ordering Provider | Varies | R | [1..1] | NPI | GU Data Type: XCN\_GU  NG Data Type: XCN\_NG |
| 17 | Order Call-back Phone Number | XTN | RE | [0..2] |  |  |
| 18 | Placer Field 1 |  | O |  |  |  |
| 19 | Placer Field 2 |  | O |  |  |  |
| 20 | Filler Field 1 |  | O |  |  |  |
| 21 | Filler Field 2 |  | O |  |  |  |
| 22 | Results Rpt/Status Chng - Date/Time |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 23 | Charge to Practice |  | O |  |  |  |
| 24 | Diagnostic Service Sect ID |  | O |  |  |  |
| 25 | Result Status |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 26 | Parent Result |  | O |  |  |  |
| 27 | Quantity/Timing |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 28 | Result Copies To | Varies | RE | Varies |  | GU Profile: XCN\_GU  NG Profile: XCN\_NG  LOI\_RC\_Component cardinality: ‘[0..\*]’  All other profile components: ‘[0..5]’. |
| 29 | Parent |  | O |  |  |  |
| 30 | Transportation Mode |  | O |  |  |  |
| 31 | Reason for Study |  | O |  |  |  |
| 32 | Principal Result Interpreter |  | O |  |  |  |
| 33 | Assistant Result Interpreter |  | O |  |  |  |
| 34 | Technician |  | O |  |  |  |
| 35 | Transcriptionist |  | O |  |  |  |
| 36 | Scheduled Date/Time |  | O |  |  |  |
| 37 | Number of Sample Containers |  | O |  |  |  |
| 38 | Transport Logistics of Collected Sample |  | O |  |  |  |
| 39 | Collector's Comment |  | O |  |  |  |
| 40 | Transport Arrangement Responsibility |  | O |  |  |  |
| 41 | Transport Arranged |  | O |  |  |  |
| 42 | Escort Required |  | O |  |  |  |
| 43 | Planned Patient Transport Comment |  | O |  |  |  |
| 44 | Procedure Code |  | O |  |  |  |
| 45 | Procedure Code Modifier |  | O |  |  |  |
| 46 | Placer Supplemental Service Information |  | O |  |  |  |
| 47 | Filler Supplemental Service Information |  | O |  |  |  |
| 48 | Medically Necessary Duplicate Procedure Reason |  | O |  |  |  |
| 49 | Result Handling | CWE\_CRE1 | Varies | [0..1] | HL70507  (V2.7.1) | Sender usage: ‘RE’  Receiver usage: ‘O’ |
| 50 | Parent Universal Service Identifier |  | O |  |  |  |

Conformance Statements: LOI\_Common\_Component

**LOI-44:** If present, OBR-8 (Observation End Date/Time) **SHALL** be equal to or later than OBR-7 (Observation Date/Time).

**LOI-45:** The value of OBR-1 (Set ID – OBR) **SHALL** be valued sequentially starting with the value ‘1’ within a given segment group.

**LOI-46:** If valued, OBR-11 (Specimen Action Code) **SHALL** be a value of ‘A’, ‘G’, ‘L’, or ‘O’.

Conformance Statements: LOI\_PRU\_Component

**LOI-47:** The value of OBR-2 (Placer Order Number) **SHALL** **NOT** be valued identical to another instance of OBR-2 (Placer Order Number) in the message.

**LOI-48:** The value of OBR-3 (Filler Order Number) **SHALL** **NOT** be valued identical to another instance of OBR-3 (Filler Order Number) in the message.

#### Result Handling and Result Copies To

In this implementation guide OBR-28 (Result Copies To) is populated with the identities of any providers to whom the ordering provider would like to send copies of the test result (copy-to providers). To accommodate most common scenarios, the LOI\_RC\_Component profile is defined to determine whether the message may contain any number of recipients (MSH-21 contains this profile), or whether up to 5 recipients may be sent.

While a method of identifying result copies has been provided in this specification, labs are not obligated to comply with result copy requests when the lab is unable to validate the end point.

When OBR-28 is populated, additional information describing the address or other contact information of the copy-to provider(s) shall also be provided in the PRT segment. The number and sequence of the copy-to providers listed in the PRT segments shall match the number and sequence of the copy-to providers listed in the OBR-28 field of the preceding OBR segment.

### NTE – Notes and Comments Segment

| Table 4‑19. Notes and Comments Segment (NTE) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Set ID – NTE | SI | R | [1..1] |  | For the first repeat of the NTE segment, the sequence number shall be one (1), for the second repeat, the sequence number shall be two (2), etc. |
| 2 | Source of Comment |  | O |  |  |  |
| 3 | Comment | FT | R | [1..\*] |  | Comment contained in the segment. |
| 4 | Comment Type |  | O |  |  |  |

### PRT – Participation Information Segment – From 2.7.1

In this guide, PRT shall only be used in support of Result Copies to as described in Section 4.5.11.1 Result Handling and Result Copies To; any other use is beyond the scope of this guide.

| Table 4‑20. Participation Information Segment (PRT) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Participation Instance ID | EI | R | [1..1] |  |  |
| 2 | Action Code | ID | R | [1..1] | HL70287 (constrained) |  |
| 3 | Action Reason |  | O |  |  |  |
| 4 | Participation | CWE\_CR1 | R | [1..1] | HL70912 (V2.7.1, constrained) |  |
| 5 | Participation Person | Varies | R | [1..1] |  | GU Usage: XCN\_GU  NG Usage: XCN\_NG |
| 6 | Participation Person Provider Type |  | O |  |  |  |
| 7 | Participant Organization Unit Type |  | O |  |  |  |
| 8 | Participation Organization |  | O |  |  |  |
| 9 | Participant Location |  | O |  |  |  |
| 10 | Participation Device |  | O |  |  |  |
| 11 | Participation Begin Date/Time (arrival time) |  | O |  |  |  |
| 12 | Participation End Date/Time (departure time) |  | O |  |  |  |
| 13 | Participation Qualitative Duration |  | O |  |  |  |
| 14 | Participation Address | XAD | C(R/RE) | [0..1] |  | Condition Predicate: If PRT-15 is not valued. |
| 15 | Participant Telecommunication Address | XTN | RE | [0..5] |  |  |

Usage Note

If the proceeding OBR segment has three providers listed in OBR-28 field, then at least 3 PRT segments shall follow the OBR segment.

Conformance Statements: LOI\_Common\_Component

**LOI-49:** For each value in OBR-28 (Result Copies To) a corresponding PRT (Participant Information) **SHALL** be present with PRT-4.1 (Participation Identifier) valued ‘RCT’.

**LOI-50:** For each PRT (Participant Information) where PRT-4.1 (Participation Identifier) is valued ‘RCT’ there must be a corresponding value in OBR-28 (Result Copies To) where OBR-28 is equal to PRT-5 (Participation Person).

### DG1 – Diagnosis Segment

| Table 4‑21. Diagnosis Segment (DG1) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Set ID - DG1 | SI | R | [1..1] |  |  |
| 2 | Diagnosis Coding Method |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 3 | Diagnosis Code - DG1 | CWE\_CR1 | R | [1..1] | ICD-9CM  ICD-10CM |  |
| 4 | Diagnosis Description |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 5 | Diagnosis Date/Time |  | O |  |  |  |
| 6 | Diagnosis Type | IS | R | [1..1] | HL70052 |  |
| 7 | Major Diagnostic Category |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 8 | Diagnostic Related Group |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 9 | DRG Approval Indicator |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 10 | DRG Grouper Review Code |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 11 | Outlier Type |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 12 | Outlier Days |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 13 | Outlier Cost |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 14 | Grouper Version And Type |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 15 | Diagnosis Priority | ID | RE | [0..1] | HL70359 |  |
| 16 | Diagnosing Clinician |  | O |  |  |  |
| 17 | Diagnosis Classification |  | O |  |  |  |
| 18 | Confidential Indicator |  | O |  |  |  |
| 19 | Attestation Date/Time |  | O |  |  |  |
| 20 | Diagnosis Identifier | EI | C(R/O) | [1..1] |  | Condition Predicate: If MSH-9.2 contains ‘P12’. |
| 21 | Diagnosis Action Code | ID | C(R/O) | [1..1] | HL70206 | Condition Predicate: If MSH-9.2 contains ‘P12’. |

Usage Notes

Note that the condition predicates on DG1-20 (Diagnosis Identifier) and DG1-21 (Diagnosis Action Code) will always yield ‘Optional’ as none of the Laboratory Order messages will contain ‘P12’ in MSH-9. These conditions are only stated as they are as that reflects the base standard.

Conformance Statements: LOI\_Common\_Component

**LOI-51:** Only one instance of DG1-15 (Diagnosis Priority) in the message **SHALL** contain the value ‘1’.

**Example Message for DG1-3**

|  |
| --- |
| 250.00^Diabetes mellitus type II or unspecified type, not stated as uncontrolled^I9C |

### OBX – Observation/Result Segment

**Note:** Components 26 through 29 are pre-adopted from Version 2.8.1

| Table 4‑22. Observation Result Segment (OBX) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Set ID – OBX | SI | R | [1..1] |  | For the first repeat of the OBX segment, the sequence number shall be one (1), for the second repeat, the sequence number shall be two (2), etc. |
| 2 | Value Type | ID | C(R/X) | [0..1] | HL70125 (constrained) | Condition Predicate: If OBX-5 (Observation Value) is valued.  This field identifies the data type used for OBX-5. |
| 3 | Observation Identifier | CWE\_CR | R | [1..1] | Logical Observation Identification Name and Codes (LOINC) and/or Local Codes | If used in the Prior Result group, LOINC shall be used as the standard coding system for this field if an appropriate LOINC code exists. Appropriate status is defined in the LOINC Manual Section 11.2 Classification of LOINC Term Status. If a local coding system is in use, a local code should also be sent to help with identification of coding issues. When no valid LOINC exists the local code may be the only code sent.  When populating this field with values, this guide does not give preference to the triplet in which the standard (LOINC) code should appear. |
| 4 | Observation Sub-ID | ST | C(R/O) | [0..1] |  | Condition Predicate: If there are multiple OBX segments associated with the same OBR segment that have the same OBX-3 values for (OBX-3.1 and OBX-3.3) or (OBX-3.4 and OBX-3.6). |
| 5 | Observation Value | Varies | RE | [0..1] |  | **Note:** If value is coded, ST should not be valued in OBX-2.  Allowable data types for this field are described in HL7 table 0125 (from OBX-2). |
| 6 | Units | CWE\_CRE | C(R/O) | [0..1] |  | Condition Predicate: If OBX-2 (Value Type) is ‘SN’ or ‘NM’  Use of UCUM is recommended as the units when the data type in OBX-2 is ‘SN’ or ‘NM’ |
| 7 | References Range |  | O |  |  |  |
| 8 | Abnormal Flags |  | O |  |  |  |
| 9 | Probability |  | O |  |  |  |
| 10 | Nature of Abnormal Test |  | O |  |  |  |
| 11 | Observation Result Status |  | O |  |  |  |
| 12 | Effective Date of Reference Range |  | O |  |  |  |
| 13 | User-Defined Access Checks |  | O |  |  |  |
| 14 | Date/Time of the Observation | TS\_5 | C(R/O) | [0..1] |  | Condition Predicate: If OBX-5 is valued. |
| 15 | Producer’s Reference |  | O |  |  |  |
| 16 | Responsible Observer |  | O |  |  |  |
| 17 | Observation Method |  | O |  |  |  |
| 18 | Equipment Instance Identifier |  | O |  |  |  |
| 19 | Date/Time of the Analysis |  | O |  |  |  |
| 20 | Reserved for harmonization with Version 2.6. |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 21 | Reserved for harmonization with Version 2.6. |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 22 | Reserved for harmonization with Version 2.6. |  | X |  |  | Excluded for this Implementation Guide, see Section 1.3.1. |
| 23 | Performing Organization Name |  | O |  |  |  |
| 24 | Performing Organization Address |  | O |  |  |  |
| 25 | Performing Organization Medical Director |  | O |  |  |  |
| 26 | Patient Results Release Category |  | O |  |  |  |
| 27 | Root Cause |  | O |  |  |  |
| 28 | Local Process Control |  | O |  |  |  |
| 29 | Observation Type | ID | R |  | HL7nnnn  (V2.8.1) |  |

Usage Note

For an OBX that reflects an actual result for the test requested, rather than including additional information such as ask at order entry responses, OBX-14 (Date/Time of the Observations should be identical to OBR-7 (Observation Date/Time).

Conformance Statements: LOI\_Common\_Component

**LOI-52:** The value of OBX-5 (Observation Value) **SHALL NOT** be truncated.

**LOI-53:** The value of OBX-1 (Set ID – OBX) **SHALL** be valued sequentially starting the value ‘1’ within a given segment group.

**LOI-54:** If there are multiple OBX segments associated with the same OBR segment that have the same OBX-3 (Observation Identifier) values for (OBX-3.1 (Identifier) **and** OBX-3.3 (Name of Coding System) or (OBX-3.4 (Alternate Identifier) **and** OBX-3.6 (Name of Alternate Coding System)), a combination of (OBX-3.1 **and** OBX3.3) or (OBX-3.4 **and** OBX-3.6) and OBX-4 (Observation Sub-ID) **SHALL** create a unique identification under a singl**e** OBR**.**

### SPM – Specimen Segment

| Table 4‑23. Specimen Segment (SPM) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SEQ | Element Name | DT | Usage | Cardinality | Value Set | Description/Comments |
| 1 | Set ID – SPM | SI | R | [1..1] |  |  |
| 2 | Specimen ID | Varies | RE |  |  | GU Usage: EIP\_GU  NG Usage: EIP\_NG |
| 3 | Specimen Parent IDs |  | O |  |  |  |
| 4 | Specimen Type | CWE\_CRE | R | [1..1] | SNOMED CT and/or HL70487 | Either HL70487 or SNOMED CT Specimen hierarchy codes may be used. It should be noted that in the future SNOMED CT Specimen hierarchy may become the only recommended value set so trading partners should consider moving in that direction. |
| 5 | Specimen Type Modifier | CWE\_CRE1 | Varies | [0..\*] | HL70541 | PH Component Usage: ‘RE’  All other profiles Usage: ‘O’ |
| 6 | Specimen Additives | CWE\_CRE1 | Varies | [0..\*] | HL70371 | PH Component Usage: ‘RE’  All other profiles Usage: ‘O’ |
| 7 | Specimen Collection Method | CWE\_CRE1 | Varies | [0..1] | HL70488 | PH Component Usage: ‘RE’  All other profiles Usage: ‘O’ |
| 8 | Specimen Source Site | CWE\_CRE | Varies | [0..1] | SNOMED CT Anatomical Hierarchy | PH Component Usage: ‘RE’  All other profiles Usage: ‘O’ |
| 9 | Specimen Source Site Modifier | CWE\_CRE1 | Varies | [0..\*] | HL70542 | PH Component Usage: ‘C(RE/X)’  Condition Predicate: If SPM-8.3 (Name of Coding System ) or SPM-8.6 (Alternate Coding System ID) is valued ‘SCT’  All other profiles Usage: ‘O’ |
| 10 | Specimen Collection Site | CWE\_CRE1 | Varies | [0..1] | HL70543 | PH Component Usage: ‘RE’  All other profiles Usage: ‘O’ |
| 11 | Specimen Role |  | O |  |  |  |
| 12 | Specimen Collection Amount |  | O |  |  |  |
| 13 | Grouped Specimen Count |  | O |  |  |  |
| 14 | Specimen Description |  | O |  |  |  |
| 15 | Specimen Handling Code |  | O |  |  |  |
| 16 | Specimen Risk Code |  | O |  |  |  |
| 17 | Specimen Collection Date/Time | DR\_1 | R | [1..1] |  | SPM-17.1 and SPM-17.2 must use TS\_5 for the data type definition. |
| 18 | Specimen Received Date/Time |  | O |  |  |  |
| 19 | Specimen Expiration Date/Time |  | O |  |  |  |
| 20 | Specimen Availability |  | O |  |  |  |
| 21 | Specimen Reject Reason |  | O |  |  |  |
| 22 | Specimen Quality |  | O |  |  |  |
| 23 | Specimen Appropriateness |  | O |  |  |  |
| 24 | Specimen Condition |  | O |  |  |  |
| 25 | Specimen Current Quantity |  | O |  |  |  |
| 26 | Number of Specimen Containers |  | O |  |  |  |
| 27 | Container Type |  | O |  |  |  |
| 28 | Container Condition |  | O |  |  |  |
| 29 | Specimen Child Role |  | O |  |  |  |

Conformance Statements: LOI\_Common\_Component

**LOI-56:** The value of SPM-1 (Set ID – SPM) **SHALL** be valued sequentially starting the value ‘1’ within a given segment group.

**LOI-57**: SPM-4.3 (Name of Coding System) **SHALL NOT** be valued with HL70353.

**LOI-58**: SPM-4.6 (Name of Alternate Coding System) **SHALL NOT** be valued with HL70353.

**LOI-59**: SPM-17.1 (Range Start Date/Time) **SHALL** be equal to or after OBR-7 (Observation Date/Time).

**LOI-60:** If SPM-17.2 (Range End Date/Time) is present, it **SHALL** be equal to or after SPM-17.1 (Range Start Date/Time) in the same segment.

**LOI-61**: If one or more SPM segments are present for the same OBR and if OBR-8 (Observation End Date/Time) is present, the latest SPM-17.2 (Range End Date/Time) **SHALL** be equal to or before OBR-8 (Observation End Date/Time).

# Code Systems and Value Sets

Successful message implementation requires that transmitted messages (message instances) contain valid values for coded fields. It is important to note that code sets are relatively dynamic and subject to change between publications of these implementation guides.

Every code value passed in a message instance is drawn from a code system that either may have a globally unique identifier, such as an OID, an HL7 identifier (Table 0396), or a locally defined identifier. In general, the coded values allowed in a field (a) may be drawn from more than one code system, and (b) may be a subset of the codes from a given coding system. Combining (a) and (b) makes it possible for the allowed coded value to be a combination of multiple subsets drawn from multiple coding systems. In most cases, only subsets of the codes defined in a code system are allowed for use in a particular message.

The subsets of the codes that are allowed for a particular field are identified by a construct known as a "value set." A value set is a collection of coded values drawn from code systems. Value sets serve to identify the specific set of coded values for the message from the universe of coded values across all coding systems.

The segment tables in previous sections identify the value set or coding system used for each supported field containing a coded value. Some of these pre-coordinated value sets must be updated, or new ones created, as new needs are identified.

A unique identifier in an ISO compliant OID format identifies each individual value set, but this identifier is not transmitted in the message. The identifier or code for the coding system from which the value is derived is sent in the message. However, the value set identifier is useful and important when vocabulary items are modified or replaced.

## LOINC

Every code value passed in OBX-3 (Observation Identifier) and OBR-4 (Universal Service Identifier) is drawn from a code system that may have either a globally unique identifier, such as the Logical Observation Identifiers Names and Codes (LOINC) vocabulary value set, or a locally defined identifier (local test code).

The laboratory’s local test code and coding system shall be sent to identify the order and the test name should be sent. In addition, LOINCshall be used as the standard vocabulary to identify the ordered test in the Universal Service Identifier (OBR-4) when an applicable LOINC code is available and identified by the laboratory. If an appropriate orderable LOINC code is provided by the laboratory (e.g. in its electronic Directory of Service/Test Compendium [eDOS]), it SHOULD be sent along with a LOINC test description as defined in the published LOINC specification. When no valid orderable LOINC code exists, the local code may be the only code sent.

**Notes:**

1. The LOINC Common Laboratory Orders Value Set is available and can be used as a ‘starter set’ for mapping commonly used laboratory orders. It does not attempt to include all possible laboratory order codes. For additional information on LOINC Common Laboratory Orders Value Set, refer to [www.loinc.org/usage/orders](http://www.loinc.org/usage/orders).
2. The sender shall always populate the first triplet before populating other triplets; the receiver shall examine all triplets to find relevant values. A triplet consists of three components: the code, the text description of the code and the code system name. When populating the 3rd component to indicate the laboratory’s local test order code, the name of the coding system SHOULD be formatted “99zzz”, where zzz is replaced by an alphanumeric character sequence that identifies the lab. The use of “L” is also allowed. If a LOINC code is sent as an identifier, the name of the coding system shall be “LN”.
3. Universal Service Identifier is a required field in the OBR segment. However, the values transmitted by the order placer in this field for an **order** message may not be the same values placed in this field of a generated **result** message created by an order filler.

**Examples:**

1. An order for a basic metabolic panel test consisting of both the laboratory’s local order code and the corresponding LOINC order code

|  |
| --- |
| |BMP^Basic Metabolic Panel^99LAB^24321-2^Bas Metab 2000 Pnl SerP^LN^20120731^2.40| |

1. An order for a cancer antigen blood test using only the laboratory’s local order code

|  |
| --- |
| |CA125^CA-125^99LAB^^^^20120731| |

For further information on LOINC and access to tools, please visit <http://loinc.org/>

## SNOMED CT

SNOMED CT is a recommended vocabulary as specified throughout this guide, e.g., for specimen source terms in SPM-4 (Specimen type) when a SNOMED CT code is available. It may also be used for coded responses to Ask at Order Entry Questions in OBX-5 (Observation Value).

Note that in some instances a code must be drawn from a declared hierarchy in SNOMED CT, e.g., SPM-4 (Specimen type) terms should be drawn from the “specimen hierarchy”; see the field comments wherever SNOMED CT is identified as the value set.

Support for SNOMED CT shall include the code and the description text as described by IHTSDO.

Further information on SNOMED CT can be found at the National Library of Medicine (<http://www.nlm.nih.gov/research/umls/Snomed/snomed_main.html>).

## UCUM

The use of UCUM is recommended…NEED TEXT

More information on UCUM can be found at http://loinc.org/usage/units

## Unconstrained Code Systems

This section provides a list of unconstrained code systems and value sets used in this IG; refer to the base standard for all values. It also provides information about the source of the vocabulary. The name found in the Value Set column corresponds with the value set identified in the Value Set column of the data type and segment attribute tables in this guide.

| Table 5‑1. Unconstrained Code System Summary | | | |
| --- | --- | --- | --- |
| Name | Value Set | Source | Comments |
| Administrative Sex | HL70001 | HL7 Version 2.5.1 |  |
| Patient Class | HL70004 | HL7 Version 2.5.1 |  |
| Race Category | HL70005 | HL7 Version 2.5.1 |  |
| Acknowledgment Code | HL70008 | HL7 Version 2.5.1 |  |
| Diagnosis Type | HL70052 | HL7 Version 2.5.1 |  |
| Relationship | HL70063 | HL7 Version 2.5.1 | Use of HL7 Table 0063 is unconstrained in this IG, expectation is that pilot implementation will inform Normative edition. |
| Processing ID | HL70103 | HL7 Version 2.5.1 |  |
| Contact Role | HL70131 | HL7 Version 2.5.1 |  |
| Yes/No Indicator | HL70136 | HL7 Version 2.5.1 |  |
| Accept/Application Acknowledgment Condition | HL70155 | HL7 Version 2.5.1 |  |
| Ethnic Group | HL70189 | HL7 Version 2.5.1 |  |
| Address Type | HL70190 | HL7 Version 2.5.1 |  |
| Telecommunication equipment type | HL70202 | HL7 Version 2.5.1 |  |
| Segment Action Code | HL70206 | HL7 Version 2.5.1 |  |
| Advanced Beneficiary Notice Code | HL70339 | HL7 Version 2.5.1 | Represents the minimum required set of values supported by this IG; the set can be expanded. |
| CWE Status Codes | HL70353 | HL7 Version 2.5.1 | This table is not constrained for this implementation guide. It is however constrained on where the table can be used. Table HL70353 can be used for coded values except for elements OBX-5 and SPM-4. |
| Message Error Condition Codes | HL70357 | HL7 Version 2.5.1 |  |
| Diagnosis Priority | HL70359 | HL7 Version 2.5.1 |  |
| Application | HL70361 | HL7 Version 2.5.1 | User defined; there are no suggested values. |
| Facility | HL70362 | HL7 Version 2.5.1 | User defined; there are no suggested values. |
| Additive/Preservative | HL70371 | HL7 Version 2.5.1 |  |
| Country Value Set | HL70399 | HL7 Version 2.5.1 | This identifies the codes for the representation of names of countries, territories and areas of geographical interest. Use 3-character (alphabetic) form of ISO 3166 for HL7 Table 0399 as defined in HL7 Chapter 2, Section 2.15.9.17. The complete set of 3166-1 codes is available at <http://www.iso.org/iso/iso-3166-1_decoding_tabl> |
| Specimen Collection Method | HL70488 | HL7 Version 2.5.1 |  |
| Error severity | HL70516 | HL7 Version 2.5.1 |  |
| Specimen Source Type Modifier | HL70542 | HL7 Version 2.5.1 |  |
| Specimen Collection Site | HL70543 | HL7 Version 2.5.1 |  |
| County | FIPS 6-4 |  | Codes representing county of origin, address county, reporting county. |
| Logical Observation Identifiers Names and Codes | LOINC | LOINC | <http://www.loinc.org> |
| National Provider Identifier | NPI | NPI | https://nppes.cms.hhs.gov/NPPES/StaticForward.do?forward=static.npistart |
| SNOMED CT |  | SNOMED CT | <http://www.nlm.nih.gov/research/umls/Snomed/snomed_main.html> |
| Specimen Type | SNOMED CT and/or HL70487 | SNOMED CT  HL7 Version 2.7.1 | Either HL70487 or SNOMED CT Specimen hierarchy may be used. It should be noted that in the future, SNOMED CT Specimen hierarchy may become the only recommended value set so trading partners should consider moving in that direction. |
| State Value Set | USPS | USPS | Identifies addresses within the United States are recorded using the USPS two-letter alphabetic codes for the State, District of Columbia, or an outlying area of the United States or associated area. See <http://pe.usps.com/text/pub28/28apb.htm> |

## Constrained HL7 Tables – Value Sets

|  |
| --- |
| **Note for ballot reviewers:** Additional review is being performed on these tables regarding how to document usage requirements and provide additional use notes; if a table is used as defined in the underlying standard then it can be found in Section 5.3 Unconstrained Code Systems. |

This section provides a list of the modified code systems and value sets based on HL7 defined tables used in this IG. Modifications are either constraints or additions to HL7 tables by pre-adopting future versions of the tables. The name found in the Value Set column corresponds with the value set identified in the Value Set column of the data type and segment attribute tables found above.

| Table 5‑2. Constrained Code System Summary | | | |
| --- | --- | --- | --- |
| Name | Value Set | Source | Comments |
| Event Type | HL70003 | HL7 Version 2.5.1 |  |
| Specimen Action Code | HL70065 | HL7 Version 2.7.1 |  |
| Message Type | HL70076 | HL7 Version 2.5.1 |  |
| Version ID | HL70104 | HL7 Version 2.5.1 |  |
| Order Control Codes | HL70119 | HL7 Version 2.8.1 |  |
| Value Type | HL70125 | HL7 Version 2.5.1 | Use requires agreement between trading partners. |
| Name type | HL70200 | HL7 Version 2.5.1 |  |
| Action Code | HL70287 | HL7 Version 2.5.1 |  |
| Universal ID type | HL70301 | HL7 Version 2.7.1 |  |
| Message structure | HL70354 | HL7 Version 2.5.1 |  |
| Participation | HL70912 | HL7 Version 2.7.1 |  |

### HL7 Table 0003 – Event Type Code (2.5.1)

| Table 5‑3. HL7 Table 0003 Event Type Code (V2.5.1) | | |
| --- | --- | --- |
| Value | Description | Comment |
| O21 |  |  |

### HL7 Table 0065 – Specimen Action Code (V2.7.1)

| Table 5‑4. HL7 Table 0065 Specimen Action Code (V2.7.1) | | | |
| --- | --- | --- | --- |
| Value | Description | Usage | Comment |
| A | Add ordered tests to the existing specimen | R |  |
| G | Generated order; reflex order | R |  |
| L | Lab to obtain specimen from patient | R |  |
| O | Specimen obtained by service other than Lab | R |  |
| P | Pending specimen; order sent prior to delivery | R |  |
| R | Revised order | R |  |
| S | Schedule the tests specified below | R |  |
| D | Specimen obtained by provider | R |  |

### HL7 Table 0076 – Message Type (V2.5.1)

| Table 5‑5. HL7 Table 0076 Message Type (v2.5.1) | | |
| --- | --- | --- |
| Value | Description | Comment |
| OML | Unsolicited transmission of an observation message |  |
| ACK | General acknowledgment message |  |

### HL7 Table 0104 – Version ID (V2.5.1)

| Table 5‑6. HL7 Table 0104 – Version ID (V2.5.1) | | |
| --- | --- | --- |
| Value | Description | Comment |
| 2.5.1 | Indicates conformance to HL7 Version 2.5.1 messaging standard |  |

### HL7 Table 0119 – Order Control Codes (V2.8.1)

| Table 5‑7. HL7 Table 0119 - Order Control Codes (V2.8.1) | | | |
| --- | --- | --- | --- |
| Value | Description | Usage | Comment |
| CA | Cancel order/service request |  |  |
| CR | Canceled as requested |  |  |
| NR | Notification Received |  |  |
| NW | New order/service |  |  |
| OC | Order/service canceled |  |  |
| OK | Order/service accepted & OK |  |  |
| UA | Unable to accept order/service |  |  |
| UC | Unable to cancel |  |  |
| UX | Unable to change |  |  |
| XO | Change order/service request |  |  |
| XR | Changed as requested |  |  |

### HL7 Table 0125 – Value Type (V2.5.1)

| Table 5‑8. HL7 Table 0125 – Value Type (V2.5.1) | | | | |
| --- | --- | --- | --- | --- |
| Value | Description | Usage | Data Type | Comment |
| CE | Coded Entry | R |  | When sending text data in OBX-5, use either the ST, TX or FT data types. |
| CWE | Coded with Exceptions | R |  | Data type to be used where it is important to communicate the coding system and coding system version with the coded result being reported. Pre-adopted from Version 2.6.  This Implementation Guide has constrained versions of the CWE data type; see Section 3 Data Types.  The CWE\_CR format shall be used for OBX-5.  When sending text data in OBX-5, use the ST, TX or FT data types. |
| CX | Extended Composite ID With Check Digit | O | Varies | Use the appropriate CX flavor (CX-GU or CX-NG or base standard) depending on the format of the observation value and as agreed to between the sender/receiver. |
| DT | Date | R |  |  |
| ED | Encapsulated Data | O |  | When using the Source Application ID component it should use the HD data type formatting considerations outlined in the base standard, not the constrained HD definitions in this IG. |
| FT | Formatted Text (Display) | R |  | Field using the FT data type to carry a text result value. This is intended for display. The text may contain formatting escape sequences as described in the data types section. Numeric results and numeric results with units of measure should not be reported as text. These should be reported as NM or SN numeric results, with the units of measure in OBX-6. |
| NM | Numeric | R |  | Field using the NM data type to carry a numeric result value. The only non-numeric characters allowed in this field are a leading plus (+) or minus (-) sign. The structured numeric (SN) data type should be used for conveying inequalities, ranges, ratios, etc. The units for the numeric value should be reported in OBX-6. Use of UCUM is recommended as one of the delivered units (could be in addition to the local units). |
| RP | Reference Pointer | O |  | When using the Application ID component it should use the HD data type formatting considerations outlined in the base standard, not the constrained HD definitions in this IG. |
| SN | Structured Numeric | R |  | Field using the SN data type to carry a structured numeric result value. Structured numeric include intervals (^0^-^1), ratios (^1^/^2 or ^1^:^2), inequalities (<^10), or categorical results (2^+). The units for the structured numeric value should be reported in OBX-6. Use of UCUM is recommended as one of the delivered units (could be in addition to the local units). |
| ST | String Data | R |  | Field using the ST data type to carry a short text result value. Numeric results and numeric results with units of measure should not be reported as text. These shall be reported as NM or SN numeric results, with the units of measure in OBX-6. |
| TM | Time | R |  | The timezone offset shall adhere to the use of the TimeZone Offset profile. |
| TS | Time Stamp (Date & Time) | R | TS\_0 | The timezone offset shall adhere to the use of the TimeZone Offset profile and associated discussion if the granularity involves hh or ‘more’. |
| TX | Text Data (Display) | R |  | Field using the TX data type to carry a text result value this is intended for display. Numeric results and numeric results with units of measure should not be reported as text. These should be reported as NM or SN numeric results, with the units of measure in OBX-6. |

### HL7 Table 0200 – Name Type

| Table 5‑9. HL7 Table 0200 – Name Type | | |
| --- | --- | --- |
| Value | Description | Comment |
| L | Legal Name |  |
| S | Coded Pseudo-Name to ensure anonymity |  |
| U | Unspecified |  |

### HL7 Table 0287 – Action Code

| Table 5‑10. HL7 Table 0287 – Action Code | | |
| --- | --- | --- |
| Value | Description | Comment |
| AD | Add |  |

### HL7 Table 0301 – Universal ID Type (V2.7.1)

| Table 5‑11. HL7 Table 0301 - Universal ID Type (V2.7.1) | | | |
| --- | --- | --- | --- |
| Value | Description | Usage | Comments |
| CLIA | Clinical Laboratory Improvement Amendments. Allows for the ability to designate organization identifier as a "CLIA" assigned number (for labs) | RE |  |
| DNS | An Internet dotted name. Either in ASCII or as integers | C(X/O) | Condition Predicate: If Component GU is used on the field using this value set. |
| GUID | Same as UUID. | C(X/O) | Condition Predicate: If Component GU is used on the field using this value set. |
| HCD | The CEN Healthcare Coding Scheme Designator. (Identifiers used in DICOM follow this assignment scheme.) | C(X/O) | Condition Predicate: If Component GU is used on the field using this value set. |
| HL7 | Reserved for future HL7 registration schemes | C(X/O) | Condition Predicate: If Component GU is used on the field using this value set. |
| ISO | An International Standards Organization Object Identifier | R | Used as the Universal ID Type in the CNN, EI and HD data types. |
| L,M,N | These are reserved for locally defined coding schemes. | C(X/O) | Condition Predicate: If Component GU is used on the field using this value set. |
| Random | Usually a base64 encoded string of random bits. The uniqueness depends on the length of the bits. Mail systems often generate ASCII string unique names from a combination of random bits and system names. Obviously, such identifiers will not be constrained to the base64 character set. | C(X/O) | Condition Predicate: If Component GU is used on the field using this value set. |
| URI | Uniform Resource Identifier | R | Used as the Universal ID Type in the RP data type. |
| UUID | The DCE Universal Unique Identifier | C(X/O) | Condition Predicate: If Component GU is used on the field using this value set. |
| x400 | An X.400 MSH format identifier | C(X/O) | Condition Predicate: If Component GU is used on the field using this value set. |
| x500 | An X.500 directory name | C(X/O) | Condition Predicate: If Component GU is used on the field using this value set. |

### HL7 Table 0354 – Message Structure (V2.5.1)

| Table 5‑12. HL7 Table 0354 (V2.5.1) | | | |
| --- | --- | --- | --- |
| Value | Description | Usage | Comments |
| OML\_O21 | Unsolicited transmission of an observation message | R | Required for Profiles:  LOI\_GU\_PRU\_Profile  LOI\_GU\_PRN\_Profile  LOI\_NG\_PRU\_Profile  LOI\_NG\_PRN\_Profile |
| ACK | General Acknowledgment Message for unsolicited transmission of an observation message | R | Required for Profiles:  LOI\_Acknowledgement\_Component  GU\_Acknowledgement\_Component  NG\_Acknowledgement\_Component |

### HL7 Table 0912 – Participation (V2.7.1)

| Table 5‑13. HL7 Table 0912 – Participation (V2.7.1) | | |
| --- | --- | --- |
| Value | Description | Comments |
| RCT | Results Copy To |  |

## User-Defined HL7 Tables and Extended Value Sets

|  |
| --- |
| **Note for ballot reviewers:** Additional review is being performed on these tables regarding how to document usage requirements and provide additional use notes; if a table is used as defined in the underlying standard then it can be found in Section 5.3 Unconstrained Code Systems. |

This section provides a list of the user defined HL7 tables as well as other code systems and value sets used in this IG; extensions are also noted here. It also provides information about the source of the vocabulary and an identifier for the vocabulary. The name found in the Value Set column corresponds with the value set identified in the Value Set column of the data type and segment attribute tables found above.

**Note:** In some cases the tables below represent extensions to the user defined HL7 table in the underlying standard and only the extensions to the base are provided, not the entire vocabulary.

| Table 5‑14. User Defined or Extended Code System Summary | | | |
| --- | --- | --- | --- |
| Name | Value Set | Source | Comments |
| Courtesy Code | HL70045 | HL7 Version 2.5.1 |  |
| Financial Class | HL70064 | HL7 Version 2.5.1 |  |
| Guarantor Type | HL70068 | HL7 Version 2.5.1 |  |
| Insurance Plan ID | HL70072 | HL7 Version 2.5.1 |  |
| Agreement Code | HL70098 | HL7 Version 2.5.1 | All of the values defined in the base plus one custom value (W). |
| Identifier Type | HL70203 | HL7 Version 2.7.1 | All of the values defined in the base plus two custom values (HPID and OEID). |
| Coding Systems | HL70396 | HL7 Version 2.5.1 | HL7 Table 0396 defines the standard coding systems recognized by HL7. The table defines a mechanism by which locally defined codes can be transmitted. Any code/coding system not defined in HL7 Table 0396 is considered a “local” coding system from the HL7 perspective. Coding systems that are identified in this implementation guide will be identified according to the recommended HL7 nomenclature from table 0396 as “99-zzz” where “zzz” represents a string identifying the specific non-standard coding system. HL7 now maintains HL7 table 0396 “real time”. This means that values may be added to the table at any time so that implementers can have an up-to-date source of truth for the codes to be used to identify coding systems in any 2.x message. See http://www.hl7.org/special/committees/vocab/table\_0396/index.cfm |
| Priority | HL70485 | HL7 Version 2.7.1 | All of the values defined in the base plus one custom value (F). |
| Observation Result Handling | HL70507 | HL7 Version 2.7.1 |  |
| Advanced Beneficiary Notice Override Reason | HL70552 | HL7 Version 2.?.? | No Suggested Values |
| Specimen Type Modifier | SNOMED CT | SNOMED CT | A constrained SNOMED CT value set for this field is under development. |

### HL7 Table 0045 – Courtesy Code

| Table 5‑15. HL7 Table 0045 Courtesy Code | |
| --- | --- |
| Value | Description |
| S00 | Patient will receive 100% discount |
| S01 | Patient will receive 95% discount |
| S02 | Patient will receive 90% discount |
| S03 | Patient will receive 85% discount |
| S04 | Patient will receive 80% discount |
| S05 | Patient will receive 75% discount |
| S06 | Patient will receive 70% discount |
| S07 | Patient will receive 65% discount |
| S08 | Patient will receive 60% discount |
| S09 | Patient will receive 55% discount |
| S10 | Patient will receive 50% discount |
| S11 | Patient will receive 45% discount |
| S12 | Patient will receive 40% discount |
| S13 | Patient will receive 35% discount |
| S14 | Patient will receive 30% discount |
| S15 | Patient will receive 25% discount |
| S16 | Patient will receive 20% discount |
| S17 | Patient will receive 15% discount |
| S18 | Patient will receive 10% discount |
| S19 | Patient will receive 5% discount |

### HL7 Table 0064 – Financial Class Code

| Table 5‑16. HL7 Table 0064 – Financial Class Code | |
| --- | --- |
| Value | Description |
| T | Third-party Billing |
| C | Client Billing |
| P | Patient Billing |
| N | Not Applicable |

### HL7 Table 0068 – Guarantor Type Code

| Table 5‑17. HL7 Table 0068 – Guarantor Type Code | | | |
| --- | --- | --- | --- |
| Value | Description | Usage | Comment |
| C | Client Guarantor |  | Organization? |
| P | Patient Guarantor |  | Person? |

### HL7 Table 0072 – Insurance Plan ID

| Table 5‑18. HL7 Table 0072 – Insurance Plan ID | | |
| --- | --- | --- |
| Value | Description | Comment |
|  | No Suggested Values |  |

### HL7 Table 0098 – Agreement Code

All of the values in this code set are supported with the addition of the values in the table below.

| Table 5‑19. HL7 Table 0098 – Agreement Code | | | |
| --- | --- | --- | --- |
| Value | Description | Usage | Comment |
| W | Workman’s Compensation |  |  |

### HL7 Table 0203 – Identifier Type Code (2.7.1)

All of the values in this code set are supported with the addition of the values in the table below.

| Table 5‑20. HL7 Table 0203 – Identifier Type Code (2.7.1) | | | |
| --- | --- | --- | --- |
| Value | Description | Usage | Comment |
| HPID | Health Plan Identifier |  |  |
| OEID | Other Entity Identifier |  |  |

### HL7 Table 0396 – Coding Systems Code

All of the values in this code set are supported with the addition of the values in the table below.

| Table 5‑21. HL7 Table 0396 – Coding Systems Code | | | |
| --- | --- | --- | --- |
| Value | Description | Usage | Comment |
| I10C | ICD-10CM |  |  |

### HL7 Table 0485 – Priority Code (V2.7.1)

| Table 5‑22. HL7 Table 0485 – Priority Code (V2.7.1) | | | |
| --- | --- | --- | --- |
| Value | Description | Usage | Comment |
| A | Fill after S orders |  |  |
| C | callback |  |  |
| P | preop |  |  |
| PRN | as needed |  |  |
| R | Default |  |  |
| S | With highest priority | R |  |
| T | A request implying that it is critical to come as close as possible to the requested time (e.g. for a trough anti-microbial level) |  |  |
| TD <integer> | Timing critical within <integer> days |  |  |
| TH <integer> | Timing critical within <integer> hours |  |  |
| TL <integer> | Timing critical within <integer> months |  |  |
| TM <integer> | Timing critical within <integer> minutes |  |  |
| TS <integer> | Timing critical within <integer> seconds |  |  |
| TW <integer> | Timing critical within <integer> weeks |  |  |
| F | Future Order | R | Added for specific use in this guide. |

### HL7 Table 0507 – Observation Result Handling (V2.7.1)

| Table 5‑23. HL7 Table 0507 - Observation Result Handling (V2.7.1) | | |
| --- | --- | --- |
| Value | Description | Comments |
| N | Notify provider when ready | When ‘N’ is used a separate notification is requested in addition to sending the proper LRI IG message. |
| A | Alert provider when abnormal |  |

### HL7 Table 0552 - Advanced beneficiary notice override reason

| Table 5‑24. HL7 Table 0552 - Advanced beneficiary notice override reason | | |
| --- | --- | --- |
| Value | Description | Comments |
|  |  | No suggested values |

1. Laboratory Order Message Development Resources

**Examples should not be used as the basis for implementing the messages in the implementation guide.** Examples are handcrafted and as such are subject to human error.

The National Institute of Standards and Technology (NIST) has established a website ([healthcare.nist.gov](file:///C:\Users\shwadhwani\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\1UU9T75I\healthcare.nist.gov)) to support the HIT developer community. The site has a number of tools and related materials to assist implementers with the development and testing of software in preparation for ONC Certification.

To support the Laboratory Messaging community, a repository has been established to function as a dynamic library of V2.x.x example messages, technical corrections, and other materials with the intent of providing continuous growth of resources without being time bound to future publications of this guide.

The repository is available at <http://hl7v2-lab-testing.nist.gov/mu-lab/>.

1. Additional Implementation Guidance – Other

### Clinical Laboratory Improvement Amendments Considerations

In the United States, clinical laboratory testing of human specimens is regulated by the Clinical Laboratory Improvements Amendments of 1988 (CLIA). Several sections of the regulations implementing CLIA impact how electronic laboratory data is formatted for the US Realm and these are outlined in this section. Impacted areas include mandatory test request requirements. Specifics on the CLIA Regulation are found at <http://wwwn.cdc.gov/clia/regs/toc.aspx>.

### Mandatory Ordering Requirements

Section 493.1241 of the CLIA Regulations requires the laboratory to have a written or electronic request for patient testing from an authorized person, and defines items that must appear as part of a clinical laboratory test request (<http://wwwn.cdc.gov/clia/regs/subpart_k.aspx493.1241>). The laboratory may accept oral requests for laboratory tests if it solicits a written or electronic authorization within 30 days of the oral request and maintains the authorization or documentation of its efforts to obtain the authorization.

Interpretative guidelines on the elements required in a test requisition may be found at <http://www.cms.hhs.gov/CLIA/downloads/apcsubk2.pdf>. Specific fields impacted include the following:

| Table B‑ Mandatory Test Request Requirements | | |
| --- | --- | --- |
| Segment | Field | CLIA Requirement |
| PID-3  PID-5 | Patient Identifier List  Patient Name | The patient's name or unique patient identifier. |
| PID-7  PID-8 | Date/Time of Birth  Administrative Sex | The sex and age or date of birth of the patient. |
| OBR-16  ORC-12 | Ordering Provider  Ordering Provider | The name and address or other suitable identifiers of the authorized person requesting the test. |
| OBR-16  ORC-12 | Ordering Provider  Ordering Provider | The individual responsible for using the test results. |
| ORC-21  ORC-22  ORC-23 | Ordering Facility Name  Ordering Facility Address  Ordering Facility Phone Number | The name and address of the laboratory submitting the specimen |
| ORC-14 | Call Back Phone Number | Contact person to enable the reporting of imminently life threatening laboratory results or panic or alert values. |
| OBR-4 | Universal Service Identifier | The test(s) to be performed. |
| OBX-5 (AoE, Prior Results) | Observation Value | For Pap smears, the patient’s last menstrual period, and indication of whether the patient had a previous abnormal report, treatment or biopsy. |
| SPM-4 | Specimen Type | The source (type) of the specimen, when appropriate.  See Section 4.5.16 SPM – Specimen Segment for vocabulary use. |
| SPM-17 | Specimen Collection Date/Time | The date and, if appropriate, time of specimen collection. |
| OBR-13  OBX-5 (AoE, Prior Results)  OBX-3 | Relevant Clinical Information  Observation Value  Observation Identifier | Any additional information relevant and necessary for a specific test to ensure accurate and timely testing and reporting of results, including interpretation, if applicable. |

### Regulatory Compliance

There may be local, state or federal regulations where the electronic message from an ordering provider is presumed to be the legal request for the tests performed. Hence, the receiver may be required to save the format or content of the message for the same time period as required for any other legal document.

### Authorized Parties

Local laws, generally at the State level, govern who is authorized to order laboratory testing. CLIA restricts the availability of those authorized to order laboratory testing to just those approved at the local level and sets no national standards. Testing laboratories may not accept laboratory orders from unauthorized parties under CLIA.

Testing laboratories either have a trusted relationship with the ordering party or presume that the ordering party is authorized to order laboratory testing.

1. Component and Profile OIDs

| Table C-1. Order Profile Components | | |
| --- | --- | --- |
| Section | Name | OID |
| 2.8.1.1 | LOI\_Common\_Component | 2.16.840.1.113883.9.AA |
| 2.8.1.2 | LOI\_GU\_Component (Globally Unique) | 2.16.840.1.113883.9.BB |
| 2.8.1.3 | LOI\_NG\_Component (Non-Globally Unique) | 2.16.840.1.113883.9.CC |
| 2.8.1.4 | LAB\_PRU\_Component (Unique Placer Order Number) | 2.16.840.1.113883.9.YY |
| 2.8.1.5 | LAB\_PRN\_Component (Non-Unique Placer Order Number) | 2.16.840.1.113883.9.WW |
| 2.8.1.6 | LAB\_NB\_Component (Newborn) | 2.16.840.1.113883.9.24 |
| 2.8.1.7 | LAB\_TO\_Component (Time Offset) | 2.16.840.1.113883.XX |
| 2.8.1.8 | LAB\_XO\_Component (Exclusions) | 2.16.840.1.113883.9.23 |
| 2.8.1.9 | LAB\_PH\_Component (Public Health) | 2.16.840.1.113883.9.OO |
| 2.8.1.10 | LOI\_PR\_Component (Prior Results) | 2.16.840.1.113883.9.QQ |
| 2.8.1.11 | LOI\_RC\_Component (Results Copies) | 2.16.840.1.113883.9.RR |

| Table C-2. Order Profiles (Pre-Coordinated Components) | | |
| --- | --- | --- |
| Section | Name | OID |
| 2.8.2.1 | LOI\_GU\_PRU\_Profile | 2.16.840.1.113883.9.FF |
| 2.8.2.2 | LOI\_GU\_PRN\_Profile | 2.16.840.1.113883.9.GG |
| 2.8.2.3 | LOI\_NG\_PRU\_Profile | 2.16.840.1.113883.9.HH |
| 2.8.2.4 | LOI\_NG\_PRN\_Profile | 2.16.840.1.113883.9.II |

| Table C-3. Response Components | | |
| --- | --- | --- |
| Section | Name | OID |
| 2.8.3.1 | LOI\_Acknowledgement\_Component | 2.16.840.1.113883.9.JJ |
| 2.8.3.2 | GU\_Acknowledgement\_Component | 2.16.840.1.113883.9.KK |
| 2.8.3.3 | NG\_Acknowledgement\_ Component | 2.16.840.1.113883.9.LL |

| Table C-4. Response Profiles (Pre-Coordinated Components) | | |
| --- | --- | --- |
| Section | Name | OID |
| 2.8.4.1 | LOI\_GU\_Response\_Profile | 2.16.840.1.113883.9.MM |
| 2.8.4.2 | LOI\_NG\_Response\_Profile | 2.16.840.1.113883.9.NN |

1. Glossary

| Table D-1. Glossary | |
| --- | --- |
| Term | Definition |
| Analyte | Component represented in the name of a measurable quantity. It is the most granular level at which measurements are made and always represented using a single Observation segment group |
| Cancellation | Act of cancelling the order. |
| Electronic Health Record | Clinical information for a specific patient that is stored electronically within an EHR-S. |
| Electronic Health Record System (EHR-S) | This IG uses this term in the same context as stated in the “HL7 EHR System Functional Model White Paper” Section 4 Definitions (HL7 2004 [www.hl7.org](http://www.hl7.org)):  “It is important to note that the DSTU does not attempt to establish another definition for EHR Systems, but chooses to utilize existing definitions that include the concept of EHR Systems as a system (at least one) or a system-of- systems that cooperatively meet the needs of the end user.” |
| Future Order | A future order is an order with a start date/time where that start date/time indicates the earliest time the specimen can be collected. |
| Laboratory | A facility or organization that performs laboratory testing on specimens for the purpose of providing information for the diagnosis, prevention, treatment of disease or impairment, or assessment of health for humans. |
| Laboratory Information System (LIS) | An information system that receives, processes, and stores information related to laboratory processes. LIS may interface with HIS and EHR applications. To meet the requirements of the LOI Use Case the LIS, at minimum, must have the following characteristics:   * Data model that includes discrete representations of patients, clinician end-users, laboratory test requisitions, laboratory tests (including panels), and laboratory test results (at the level of an individual analyte); * Capability to receive electronic messages that communicate a laboratory order from a provider; * Capability to send electronic messages that report the status and results of laboratory tests that have been ordered;   This definition is very minimal and omits many features and capabilities that are typically associated with laboratory information systems. This minimal characterization is intentional, as to include the broadest possible set of LIS systems in the use case. The minimal nature of the definition by no means excludes LIS with significantly greater capabilities. |
| Laboratory Message | An electronic communication between a Laboratory Order System and a Laboratory Information System related to laboratory testing. Laboratory messages may be used to request that one or more tests be performed, to change previous requests for testing, to report the cancellation of requested tests, or to report the results of requested tests. |
| Laboratory Order | Synonymous with a Requisition when referring to a single ORC/OBR pair. |
| Laboratory Order System | Software, either stand-alone or as part of an EHR system, used by a Provider *(Order Placer)* to manage a laboratory order, including generating the laboratory requisition, sending it to a laboratory, and monitoring/tracking of the status of the laboratory order.  Typically a laboratory order system is an integral part of an order management system that enables users to manage orders for many different types of services, procedures, supplies, etc. Since this guide only focuses on data exchange relative to laboratory orders it is purposely using a very limited definition. |
| Laboratory Requisition | A set of information that constitutes an official request for one or more laboratory tests to be performed on an individual patient. A laboratory requisition is specified in a clinical setting and communicated to a laboratory as a discrete paper or electronic artifact. Laboratory requisitions always include at least one test order. In terms of an HL7 order transaction it represents one or more orders (ORC/OBR pairs) transmitted as part of the same OML^O21^OML\_O21 new or append order message. |
| Newborn | A human infant from the time of birth through the 28th day of life per Mosby's Medical Dictionary, 8th edition. © 2009, Elsevier, and the World Health Organization standardization for perinatal definitions. |
| Orderable Test | A request to perform an individual test or panel. It always refers to a single ORC/OBR pair and may have one or more associated analytes (OBXs). |
| Panel | While there are differences in the meanings of the terms “panel” among various laboratories, for the purposes of this guide, it is defined as a grouping of procedures that measure multiple analytes from a single specimen (or multiple specimens in some cases) and can be requested through one laboratory order. This is also referred to as a battery. For example, a CBC or a urinalysis may be referred to as a panel. |
| Order Set | A set of laboratory orders that involve multiple tests and panels and that may require multiple specimens, but can be requested as a single unit for convenience. For example, a “diabetic order set profile” might include a CBC, a glycosylated hemoglobin test, and a urinalysis. The term “panel” is frequently used interchangeably with “order set”, thus an order set profile that contains a variety of laboratory test orders that may be on its own or be combined with other test orders (e.g., radiology image, consult, etc.) can be considered an order set. Order sets shall not be communicated to the laboratory. |
| Request for Cancellation (RFC) | Request by the Provider *(Order Placer)* not to perform the order. |
| Test | A medical procedure or named set of related procedures that involves analyzing one analyte using a single sample of blood, urine, or other specimen from a patient for the purpose of diagnosing a disease or medical condition, planning or evaluating treatment, or monitoring the course of a disease. |

1. <http://www.ietf.org/rfc/rfc2119.txt> [↑](#footnote-ref-2)
2. There are multiple interpretations of “RE” when a value is known. One is “the capability must always be supported and a value is sent if known”, the other is “the capability must always be supported and a value may or may not be sent even when known based on a condition external to the profile specification. The condition may be noted in the profile but cannot be processed automatically”. This is what can be interpreted from the “relevant” part of the definition. Regardless of the interpretation the “RE” usage code, a set of test circumstances can be developed to sufficiently test the “RE” element. See the “Conformity Assessment of Conformance Constructs” section for more details. [↑](#footnote-ref-3)
3. The IG referenced here is the HL7 Version 2.5.1 Implementation Guide: S&I Framework Lab Results Interface, Release 1 – US Realm, [HL7 Version 2.5.1: ORU^R01], Draft Standard For Trial Use, July 2012 available at [www.hl7.org](http://www.hl7.org) [↑](#footnote-ref-4)
4. CLSI. *Specimen Labels: Content and Location, Fonts, and Label Orientation; Approved Standard.* CLSI document AUTO12-A. Wayne, PA: Clinical and Laboratory Standards Institute; 2011; ISBN 1-56238-748-0; ISSN 0273-3099, Volume 31 Number 7. [↑](#footnote-ref-5)
5. Note that in this and subsequent tables describing the scenarios with specific requirements for MSH-15 and MSH-16 the format “MSH-15 is valued ‘(NN)’” or “MSH-15 is valued ‘NN’” is used. The use of the parentheses, e.g., ‘(NN)’, indicates that at least the value NN from Table 0155 is supported, while ‘NN’ with no parentheses indicates that only the value NN is allowed in this scenario. [↑](#footnote-ref-6)
6. The current version of the HL7 Implementation Guidance for Unique Object Identifiers (OIDs), Release 1 is available from HL7 ([www.hl7.org](http://www.hl7.org)). Members may obtain a copy without charge in the Members-only area of the site, others may purchase a copy for a nominal fee via the HL7 Store [↑](#footnote-ref-7)
7. The referenced documents are all available from HL7 ([www.hl7.org](http://www.hl7.org)) – Members may obtain a copy without charge in the Members-only area of the site, others may purchase a copy for a nominal fee via the HL7 Store. [↑](#footnote-ref-8)