

# Table of Contents

## CHAPTER 1 - INTRODUCTION

<b>1.1 PURPOSE</b>	<b>1-1</b>
<b>1.2 BACKGROUND</b>	<b>1-2</b>
<b>1.3 NEED FOR A STANDARD</b>	<b>1-3</b>
<b>1.4 GOALS OF THE STANDARD</b>	<b>1-4</b>
<b>1.5 HISTORY OF HL7 DEVELOPMENT</b>	<b>1-5</b>
<b>1.6 OVERVIEW</b>	<b>1-7</b>
1.6.1 HL7 encoding rules	1-7
1.6.2 Local variations	1-8
1.6.3 Evolutionary changes to the standards	1-8
1.6.4 Applicability to file transfers (batch processing)	1-9
1.6.5 Relationship to other protocols	1-9
<b>1.7 THE SCOPE OF HL7</b>	<b>1-11</b>
1.7.1 A <u>complete</u> solution	1-11
1.7.2 Protection of healthcare information	1-12
1.7.3 Department of Defense (DOD) requirements for systems security and robustness	1-13
1.7.4 Enforcement of organizational security and access control policies	1-13
1.7.5 Security classifications (markings) and users authentication and identification	1-13
1.7.6 Roles and relationships	1-13
1.7.7 Accountability, audit trails and assigned responsibility	1-13
1.7.8 Central, unified hardware, software controls for security and trusted continuous protection	1-13
1.7.9 Uniform data definition and data architecture	1-14
1.7.10 Controlled disclosure, notification of disclosed information as protected and tracking exceptions of protected health information	1-14
1.7.11 Tracking of corrections, amendments or refusals to correct or amend protected health information	1-14
1.7.12 Disclosure of disidentified health information	1-14
1.7.13 Ensuring and tracking data source authentication and non-alterability	1-14
1.7.14 Tracking input validation	1-14
1.7.15 The longitudinal health record	1-14
1.7.16 Integration of the health record	1-15
1.7.17 Data, clock synchrony	1-15
1.7.18 Intersystem database record locking and transaction processing	1-15
1.7.19 Operations, process and other “local” support	1-15
1.7.20 Interface engines	1-15
1.7.21 Rules engines	1-15
1.7.22 Infrastructure based applications	1-16
1.7.23 Support for secondary clinical records	1-16
<b>1.8 REFERENCE DOCUMENTS</b>	<b>1-16</b>

## Table of Contents

---

1.8.1 ANSI standards	1-16
1.8.2 ISO standards	1-17
1.8.3 Codes and terminology sources	1-17
1.8.4 Other applicable documents	1-19
<b>1.9 TECHNICAL EDITORS</b>	<b>1-20</b>
<b>1.10 SUGGESTIONS AND COMMENTS</b>	<b>1-20</b>
<b>CHAPTER 2 - CONTROL/QUERY</b>	<b>2-1</b>
<b>2.1 INTRODUCTION</b>	<b>2-1</b>
<b>2.2 CONCEPTUAL APPROACH</b>	<b>2-1</b>
2.2.1 Trigger events	2-1
2.2.2 Acknowledgments: original mode	2-2
2.2.3 Acknowledgments: enhanced mode	2-2
2.2.4 Queries	2-3
<b>2.3 COMMUNICATIONS ENVIRONMENT</b>	<b>2-4</b>
<b>2.4 HL7 MESSAGES</b>	<b>2-5</b>
<b>2.5 SEGMENTS</b>	<b>2-5</b>
<b>2.6 FIELDS</b>	<b>2-5</b>
2.6.1 Position (sequence within the segment)	2-6
2.6.2 Maximum length	2-6
2.6.3 Data type	2-6
2.6.4 Optionality	2-6
2.6.5 Repetition	2-7
2.6.6 Table	2-7
2.6.7 ID number	2-8
2.6.8 Name	2-8
<b>2.7 MESSAGE DELIMITERS</b>	<b>2-8</b>
<b>2.8 DATA TYPES</b>	<b>2-9</b>
2.8.1 AD - address	2-13
2.8.2 CD - channel definition	2-14
2.8.3 CE - coded element	2-14
2.8.4 CF - coded element with formatted values	2-15
2.8.5 CK - composite ID with check digit	2-15
2.8.6 CM - composite	2-17
2.8.7 CN - composite ID number and name	2-17
2.8.8 CP - composite price	2-18
2.8.9 CQ - composite quantity with units	2-20
2.8.10 CX - extended composite ID with check digit	2-20
2.8.11 DLN - driver's license number	2-22
2.8.12 DR - date/time range	2-22
2.8.13 DT - date	2-23
2.8.14 ED - encapsulated data	2-23

2.8.15 EI - entity identifier	2-25
2.8.16 FC - financial class	2-26
2.8.17 FT - formatted text data	2-26
2.8.18 HD - hierarchic designator	2-26
2.8.19 ID - coded value for HL7 defined tables	2-28
2.8.20 IS - coded value for user-defined tables	2-28
2.8.21 JCC - job code/class	2-28
2.8.22 MA - multiplexed array	2-28
2.8.23 MO - money	2-29
2.8.24 NA - numeric array	2-29
2.8.25 NM - numeric	2-29
2.8.26 PL - person location	2-29
2.8.27 PPN - performing person time stamp	2-30
2.8.28 PN - person name	2-32
2.8.29 PT - processing type	2-34
2.8.30 QIP - query input parameter list	2-35
2.8.31 QSC - query selection criteria	2-35
2.8.32 RCD - row column definition	2-36
2.8.33 RI - repeat interval	2-37
2.8.34 RP - reference pointer	2-37
2.8.35 SCV - scheduling class value pair	2-40
2.8.36 SI - sequence ID	2-41
2.8.37 SN - structured numeric	2-42
2.8.38 ST - string data	2-42
2.8.39 TM - time	2-43
2.8.40 TN - telephone number	2-43
2.8.41 TQ - timing quantity	2-43
2.8.42 TS - time stamp	2-44
2.8.43 TX - text data	2-44
2.8.44 VH - visiting hours	2-45
2.8.45 XAD - extended address	2-46
2.8.46 XCN - extended composite ID number and name for persons	2-47
2.8.47 XON - extended composite name and identification number for organizations	2-48
2.8.48 XPN - extended person name	2-49
2.8.49 XTN - extended telecommunication number	2-50
<b>2.9 USE OF ESCAPE SEQUENCES IN TEXT FIELDS</b>	<b>2-52</b>
2.9.1 Formatting codes	2-52
2.9.2 Escape sequences supporting multiple character sets for PN and XPN data types	2-52
2.9.3 Highlighting	2-53
2.9.4 Special character	2-53
2.9.5 Hexadecimal	2-54
2.9.6 Formatted text	2-54
2.9.7 Local	2-55
<b>2.10 MESSAGE CONSTRUCTION RULES</b>	<b>2-55</b>
2.10.1 Encoding rules notes	2-56
2.10.2 Version compatibility definition	2-57
<b>2.11 CHAPTER FORMATS FOR DEFINING HL7 MESSAGES</b>	<b>2-57</b>
2.11.1 HL7 abstract message syntax example	2-58

## Table of Contents

---

<b>2.12 APPLICATION (LEVEL 7) PROCESSING RULES</b>	<b>2-59</b>
2.12.1 Original and enhanced processing rules	2-59
2.12.2 Application (level 7) processing rules, deferred processing two phase reply (original acknowledgment mode only)	2-64
<b>2.13 ACKNOWLEDGEMENT MESSAGES</b>	<b>2-67</b>
2.13.1 ACK - general acknowledgment	2-67
2.13.2 MCF - delayed acknowledgment	2-67
<b>2.14 DISPLAY MESSAGES</b>	<b>2-67</b>
2.14.1 Display vs. record-oriented messages	2-67
2.14.2 UDM/ACK - unsolicited display update message (event Q05)	2-68
2.14.3 Continuation of unsolicited display update message	2-68
<b>2.15 QUERIES</b>	<b>2-69</b>
2.15.1 Display vs. record-oriented queries (original mode, embedded query language, virtual table, and stored procedure queries); and event replay requests	2-69
2.15.2 Message definition	2-69
2.15.3 Immediate vs. deferred response	2-70
2.15.4 Interactive continuation or cancellation of response messages: original mode (display and record-oriented) and enhanced mode (display, tabular, and event replay)	2-70
2.15.5 Logical display break points	2-71
<b>2.16 QUERY TRIGGER EVENTS AND MESSAGE DEFINITIONS</b>	<b>2-72</b>
<b>2.17 ORIGINAL MODE QUERIES</b>	<b>2-72</b>
2.17.1 QRY/DSR - original mode display query - immediate response (event Q01)	2-72
<b>2.18 ORIGINAL MODE DEFERRED ACCESS</b>	<b>2-73</b>
2.18.1 QRY/QCK - deferred query (event Q02)	2-73
2.18.2 DSR/ACK - deferred response to a query (event Q03)	2-74
<b>2.19 ENHANCED MODE QUERY MESSAGES</b>	<b>2-74</b>
2.19.1 EQQ - embedded query language query (event Q01)	2-74
2.19.2 VQQ - virtual table query (event Q01)	2-74
2.19.3 SPQ - stored procedure request (event Q01)	2-75
2.19.4 RQQ - event replay query (event Q01)	2-75
<b>2.20 ENHANCED QUERY MODE RESPONSE MESSAGES</b>	<b>2-75</b>
2.20.1 EDR - enhanced display response	2-75
2.20.2 TBR - tabular data response	2-75
2.20.3 ERP - event replay response	2-75
<b>2.21 QUERY MESSAGE IMPLEMENTATION CONSIDERATIONS</b>	<b>2-76</b>
2.21.1 Original mode implementation considerations	2-76
2.21.2 Enhanced mode implementation considerations: definition of tables and “virtual tables”	2-76
<b>2.22 QUERY ERROR RESPONSE</b>	<b>2-77</b>
<b>2.23 SPECIAL HL7 PROTOCOLS</b>	<b>2-77</b>
2.23.1 Sequence number protocol	2-77
2.23.2 Continuation messages and segments	2-79

2.23.3 HL7 batch protocol	2-81
2.23.4 Modes for updating via repeating segments	2-84
<b>2.24 MESSAGE CONTROL SEGMENTS</b>	<b>2-85</b>
2.24.1 MSH - message header segment	2-85
2.24.2 MSA - message acknowledgment segment	2-96
2.24.3 ERR - error segment	2-97
2.24.4 QRD - original-style query definition segment	2-97
2.24.5 QRF - original style query filter segment	2-101
2.24.6 URD - results/update definition segment	2-103
2.24.7 URS - unsolicited selection segment	2-104
2.24.8 DSC - Continuation pointer segment	2-105
2.24.9 DSP - display data segment	2-106
2.24.10 ADD - addendum segment	2-107
2.24.11 FHS - file header segment	2-107
2.24.12 FTS - file trailer segment	2-108
2.24.13 BHS - batch header segment	2-109
2.24.14 BTS - batch trailer segment	2-110
2.24.15 NTE - notes and comments segment	2-111
2.24.16 EQL - embedded query language segment	2-112
2.24.17 VTQ - virtual table query request segment	2-113
2.24.18 RDF - table row definition segment	2-115
2.24.19 RDT - table row data segment	2-116
2.24.20 SPR - stored procedure request definition segment	2-116
2.24.21 ERQ - event replay query segment	2-117
2.24.22 QAK- query acknowledgment segment	2-118
2.24.23 Miscellaneous HL7 tables used across all chapters	2-119
<b>2.25 SAMPLE CONTROL AND QUERY MESSAGES</b>	<b>2-119</b>
2.25.1 General acknowledgment	2-119
2.25.2 Error return	2-119
2.25.3 Sequence number: initial message	2-119
2.25.4 Query examples	2-120
2.25.5 Master file update examples: with original and enhanced acknowledgment protocol	2-124
<b>2.26 OUTSTANDING ISSUES</b>	<b>2-126</b>
 <b>CHAPTER 3 - PATIENT ADMINISTRATIONS</b>	 <b>3-1</b>
<b>3.1 PURPOSE</b>	<b>3-1</b>
<b>3.2 TRIGGER EVENTS AND MESSAGE DEFINITIONS</b>	<b>3-1</b>
3.2.1 ADT/ACK - admit/visit notification (event A01)	3-2
3.2.2 ADT/ACK - transfer a patient (event A02)	3-3
3.2.3 ADT/ACK - discharge/end visit (event A03)	3-4
3.2.4 ADT/ACK - register a patient (event A04)	3-5
3.2.5 ADT/ACK - pre-admit a patient (event A05)	3-6
3.2.6 ADT/ACK - change an outpatient to an inpatient (event A06)	3-6
3.2.7 ADT/ACK - change an inpatient to an outpatient (event A07)	3-7
3.2.8 ADT/ACK - update patient information (event A08)	3-8
3.2.9 ADT/ACK - patient departing - tracking (event A09)	3-9
3.2.10 ADT/ACK - patient arriving - tracking (event A10)	3-10

## Table of Contents

---

3.2.11 ADT/ACK - cancel admit / visit notification (event A11)	3-11
3.2.12 ADT/ACK - cancel transfer (event A12)	3-12
3.2.13 ADT/ACK - cancel discharge / end visit (event A13)	3-12
3.2.14 ADT/ACK - pending admit (event A14)	3-13
3.2.15 ADT/ACK - pending transfer (event A15)	3-14
3.2.16 ADT/ACK - pending discharge (event A16)	3-15
3.2.17 ADT/ACK - swap patients (event A17)	3-15
3.2.18 ADT/ACK - merge patient information (event A18)	3-16
3.2.19 QRY/ADR - patient query (event A19)	3-16
3.2.20 ADT/ACK - bed status update (event A20)	3-18
3.2.21 ADT/ACK - patient goes on a "leave of absence" (event A21)	3-18
3.2.22 ADT/ACK - patient returns from a "leave of absence" (event A22)	3-19
3.2.23 ADT/ACK - delete a patient record (event A23)	3-19
3.2.24 ADT/ACK - link patient information (event A24)	3-20
3.2.25 ADT/ACK - cancel pending discharge (event A25)	3-21
3.2.26 ADT/ACK - cancel pending transfer (event A26)	3-21
3.2.27 ADT/ACK - cancel pending admit (event A27)	3-22
3.2.28 ADT/ACK - add person information (event A28)	3-22
3.2.29 ADT/ACK - delete person information (event A29)	3-23
3.2.30 ADT/ACK - merge person information (event A30)	3-24
3.2.31 ADT/ACK - update person information (event A31)	3-24
3.2.32 ADT/ACK - cancel patient arriving - tracking (event A32)	3-25
3.2.33 ADT/ACK - cancel patient departing - tracking (event A33)	3-26
3.2.34 ACK/ADT - merge patient information - patient ID only (event A34)	3-26
3.2.35 ADT/ACK - merge patient information - account number only (event A35)	3-27
3.2.36 ADT/ACK - merge patient information - patient ID & account number (event A36)	3-27
3.2.37 ADT/ACK - unlink patient information (event A37)	3-28
3.2.38 ADT/ACK - cancel pre-admit (event A38)	3-28
3.2.39 ADT/ACK - merge person - external ID (event A39)	3-29
3.2.40 ADT/ACK - merge patient - internal ID (event A40)	3-30
3.2.41 ADT/ACK - merge account - patient account number (event A41)	3-30
3.2.42 ADT/ACK - merge visit - visit number (event A42)	3-31
3.2.43 ADT/ACK - move patient information - internal ID (event A43)	3-33
3.2.44 ADT/ACK - move account information - patient account number (event A44)	3-33
3.2.45 ADT/ACK - move visit information - visit number (event A45)	3-34
3.2.46 ADT/ACK - change external ID (event A46)	3-35
3.2.47 ADT/ACK - change internal ID (event A47)	3-37
3.2.48 ADT/ACK - change alternate patient ID (event A48)	3-37
3.2.49 ADT/ACK - change patient account number (event A49)	3-38
3.2.50 ADT/ACK - change visit number (event A50)	3-39
3.2.51 ADT/ACK - change alternate visit ID (event A51)	3-40
<b>3.3 MESSAGE SEGMENTS</b>	<b>3-41</b>
3.3.1 EVN - event type segment	3-41
3.3.2 PID - patient identification segment	3-42
3.3.3 PV1 - patient visit segment	3-48
3.3.4 PV2 - patient visit - additional information segment	3-58
3.3.5 NK1 - next of kin / associated parties segment	3-63
3.3.6 AL1 - patient allergy information segment	3-70
3.3.7 NPU - bed status update segment	3-71
3.3.8 MRG - merge patient information segment	3-71
3.3.9 PD1 - patient additional demographic segment	3-74

3.3.10 DB1 - Disability segment	3-77
<b>3.4 EXAMPLE TRANSACTIONS</b>	<b>3-78</b>
3.4.1 Admit/visit notification - event A01 (admitted patient)	3-78
3.4.2 Pre-admit notification - event A05 (nonadmitted patient)	3-79
3.4.3 Admit/visit notification - event A04 (nonadmitted patient)	3-80
3.4.4 Change outpatient to inpatient - event A06	3-81
3.4.5 Transfer patient - event A02 (first example)	3-81
3.4.6 Cancel transfer - event A12	3-82
3.4.7 Transfer patient - event A02 (second example)	3-82
3.4.8 Discharge patient - event A03	3-82
<b>3.5 IMPLEMENTATION CONSIDERATIONS</b>	<b>3-82</b>
3.5.1 Swapping a patient	3-82
3.5.2 Merging patient/person information	3-83
3.5.3 Patient record links	3-109
<b>3.6 OUTSTANDING ISSUES</b>	<b>3-109</b>
 <b>CHAPTER 4 - ORDER ENTRY</b>	 <b>4-1</b>
<b>4.1 OVERVIEW</b>	<b>4-1</b>
4.1.1 Preface (organization of this chapter)	4-2
4.1.2 Glossary	4-3
<b>4.2 ORDER MESSAGE DEFINITIONS</b>	<b>4-3</b>
4.2.1 ORM - general order message (event O01)	4-3
4.2.2 ORR - general order response message response to any ORM (event O02)	4-5
4.2.3 OSQ/OSR- query response for order status (event Q06)	4-6
<b>4.3 SEGMENTS COMMON TO ALL ORDERS</b>	<b>4-6</b>
4.3.1 ORC - common order segment	4-6
4.3.2 BLG - billing segment	4-23
<b>4.4 QUANTITY/TIMING (TQ) DEFINITION</b>	<b>4-24</b>
4.4.1 Quantity component (CQ)	4-24
4.4.2 Interval component (CM)	4-24
4.4.3 Duration component (ST)	4-26
4.4.4 Start date/time component (TS)	4-26
4.4.5 End date/time component (TS)	4-26
4.4.6 Priority component (ST)	4-27
4.4.7 Condition component (ST)	4-27
4.4.8 Text component (TX)	4-28
4.4.9 Conjunction component (ST)	4-28
4.4.10 Order sequencing component (CM)	4-28
4.4.11 Examples of quantity/timing usage	4-31
<b>4.5 OBSERVATION AND DIAGNOSTIC STUDY ORDERS</b>	<b>4-32</b>
4.5.1 OBR - observation request segment	4-32
4.5.2 Examples of use	4-46
<b>4.6 DIET ORDERS</b>	<b>4-47</b>

## Table of Contents

---

4.6.1 ODS - dietary orders, supplements, and preferences segment	4-49
4.6.2 ODT - diet tray instructions segment	4-51
4.6.3 Example diet messages	4-52
<b>4.7 SUPPLY ORDERS</b>	<b>4-53</b>
4.7.1 RQD - requisition detail segment	4-56
4.7.2 RQ1 - requisition detail-1 segment	4-58
4.7.3 Examples of the use of RQD and RQ1 segments	4-59
<b>4.8 PHARMACY/TREATMENT ORDERS</b>	<b>4-60</b>
4.8.1 ORM - pharmacy/treatment order message	4-60
4.8.2 RXO - pharmacy/treatment order segment	4-61
4.8.3 RXR - pharmacy/treatment route segment	4-67
4.8.4 RXC - pharmacy/treatment component order segment	4-69
4.8.5 IV solution groups	4-71
4.8.6 RDE/RRE - pharmacy/treatment encoded order message (event O01/O02)	4-71
4.8.7 RXE - pharmacy/treatment encoded order segment	4-72
4.8.8 Usage notes for pharmacy/treatment messages	4-79
4.8.9 RDS/RRD - pharmacy/treatment dispense message (events O01/O02)	4-79
4.8.10 RXD - pharmacy/treatment dispense segment	4-81
4.8.11 RGV/RRG - pharmacy/treatment give message (events O01/O02)	4-85
4.8.12 RXG - pharmacy/treatment give segment	4-87
4.8.13 RAS/RRA - pharmacy/treatment administration message (events O02/O02)	4-92
4.8.14 RXA - pharmacy/treatment administration segment	4-93
4.8.15 Pharmacy/treatment queries	4-97
4.8.16 Examples of use	4-97
4.8.17 ROR - pharmacy/treatment order response (event ROR)	4-106
4.8.18 RAR - pharmacy/treatment administration information (event RAR)	4-106
4.8.19 RDR - pharmacy/treatment dispense information (event RDR)	4-106
4.8.20 RER - pharmacy/treatment encoded order information (event RER)	4-107
4.8.21 RGR - pharmacy/treatment dose information (event RGR)	4-107
<b>4.9 PHARMACY/TREATMENT ORDERS AND RESULTS TRANSACTION FLOW DIAGRAM</b>	<b>4-109</b>
<b>4.10 VACCINE ADMINISTRATION DATA</b>	<b>4-111</b>
<b>4.11 QUERIES FOR IMMUNIZATION RECORDS (QRF SEGMENTS)</b>	<b>4-111</b>
<b>4.12 VACCINE TRIGGER EVENTS AND MESSAGE DEFINITIONS</b>	<b>4-112</b>
4.12.1 VXQ - query for vaccination record (event V01)	4-112
4.12.2 VXX - response to vaccination query returning multiple PID matches (event V02)	4-113
4.12.3 VXR - vaccination record response (event V03)	4-113
4.12.4 VXU - unsolicited vaccination record update (event V04)	4-114
<b>4.13 RXA SEGMENT USAGE IN VACCINE MESSAGES</b>	<b>4-115</b>
4.13.1 Vaccines administered	4-115
4.13.2 Vaccine manufacturer	4-117
<b>4.14 VACCINATION - EXAMPLE TRANSACTIONS</b>	<b>4-118</b>
4.14.1 VXQ - query for vaccination record	4-118
4.14.2 VXX - response to vaccination query with multiple PID matches	4-118
4.14.3 VXR - vaccination record response	4-119



4.14.4 VXU - unsolicited vaccination record update	4-119
4.14.5 Query acknowledgment with no records found	4-120
<b>4.15 OUTSTANDING ISSUES</b>	<b>4-120</b>
 <b>CHAPTER 5 - QUERY</b>	 <b>5-1</b>
 <b>CHAPTER 6 - FINANCIAL MANAGEMENT</b>	 <b>6-1</b>
<b>6.1 PURPOSE</b>	<b>6-1</b>
<b>6.2 PATIENT ACCOUNTING MESSAGE SET</b>	<b>6-1</b>
<b>6.3 TRIGGER EVENTS AND MESSAGE DEFINITIONS</b>	<b>6-1</b>
6.3.1 BAR/ACK - add patient account (event P01)	6-2
6.3.2 BAR/ACK - purge patient accounts (event P02)	6-3
6.3.3 DFT/ACK - post detail financial transactions (event P03)	6-3
6.3.4 QRY/DSP - generate bills and accounts receivable statements (event P04)	6-4
6.3.5 BAR/ACK - update account (event P05)	6-4
6.3.6 BAR/ACK - end account (event P06)	6-5
<b>6.4 MESSAGE SEGMENTS</b>	<b>6-6</b>
6.4.1 FT1 - financial transaction segment	6-6
6.4.2 DG1 - diagnosis segment	6-10
6.4.3 DRG - diagnosis related group segment	6-14
6.4.4 PR1 - procedures segment	6-16
6.4.5 GT1 - guarantor segment	6-20
6.4.6 IN1 - insurance segment	6-30
6.4.7 IN2 - insurance additional information segment	6-39
6.4.8 IN3 - insurance additional information, certification segment	6-51
6.4.9 ACC - accident segment	6-56
6.4.10 UB1 - UB82 data segment	6-57
6.4.11 UB2 - UB92 data segment	6-60
<b>6.5 EXAMPLE TRANSACTIONS</b>	<b>6-63</b>
6.5.1 Create a patient billing/accounts receivable record	6-63
6.5.2 Post a charge to a patient's account	6-63
6.5.3 Update patient accounts - update UB82 information	6-64
6.5.4 Update patient accounts - update diagnosis and DRG information	6-64
<b>6.6 IMPLEMENTATION CONSIDERATIONS</b>	<b>6-64</b>
<b>6.7 OUTSTANDING ISSUES</b>	<b>6-64</b>
 <b>CHAPTER 7 -OBSERVATION REPORTING</b>	 <b>7-1</b>
<b>7.1 INTRODUCTION AND OVERVIEW</b>	<b>7-1</b>
7.1.1 Glossary	7-3
7.1.2 Narrative reports as batteries with many OBX	7-5
7.1.3 Suffixes for defining observation IDs for common components of narrative reports	7-6

## Table of Contents

---

7.1.4 Coding schemes	7-10
<b>7.2 MESSAGE DEFINITIONS</b>	<b>7-13</b>
7.2.1 ORU/ACK - unsolicited transmission of an observation message (event R01)	7-13
7.2.2 QRY/ORF - query for results of observation (events R02, R04)	7-15
<b>7.3 SEGMENTS</b>	<b>7-15</b>
7.3.1 OBR - observation request segment	7-15
7.3.2 OBX - observation/result segment	7-30
<b>7.4 EXAMPLE TRANSACTIONS</b>	<b>7-49</b>
7.4.1 Query/response	7-49
7.4.2 Unsolicited	7-50
7.4.3 Example message	7-51
7.4.4 Example of narrative report messages	7-53
7.4.5 Reporting cultures and susceptibilities	7-56
7.4.6 Results reporting	7-58
7.4.7 Patient-specific clinical data with an order	7-59
<b>7.5 CLINICAL TRIALS</b>	<b>7-59</b>
7.5.1 Terminology and concepts	7-60
<b>7.6 CLINICAL TRIALS - TRIGGER EVENTS AND MESSAGE DEFINITIONS</b>	<b>7-63</b>
7.6.1 CRM - clinical study registration message (events C01-C08)	7-63
7.6.2 CSU - unsolicited study data message (events C09-C12)	7-64
7.6.3 CM0, CM1, CM2 - clinical trials master file messages	7-64
<b>7.7 CLINICAL TRIALS - SEGMENT DEFINITIONS</b>	<b>7-65</b>
7.7.1 CSR - clinical study registration segment	7-65
7.7.2 CSP - clinical study phase segment	7-68
7.7.3 CSS - clinical study data schedule segment	7-69
7.7.4 CTI - clinical trial identification segment	7-70
7.7.5 CM0 clinical study master segment	7-70
7.7.6 CM1 clinical study phase master segment	7-71
7.7.7 CM2 clinical study schedule master segment	7-71
<b>7.8 CLINICAL TRIALS - EXAMPLES</b>	<b>7-71</b>
7.8.1 CRM - message when patient registered on a clinical trial	7-71
7.8.2 CRM - message when patient begins a phase of a clinical trial	7-71
7.8.3 CSU - message reporting monthly patient data updates to the sponsor	7-71
<b>7.9 PRODUCT EXPERIENCE</b>	<b>7-73</b>
7.9.1 Terminology and concepts	7-74
<b>7.10 PRODUCT EXPERIENCE - TRIGGER EVENTS AND MESSAGE DEFINITIONS</b>	<b>7-76</b>
7.10.1 PEX - product experience message (events P07, P08)	7-76
7.10.2 SUR - summary product experience report (event P09)	7-78
<b>7.11 PRODUCT EXPERIENCE - SEGMENTS DEFINITIONS</b>	<b>7-80</b>
7.11.1 PES - product experience sender segment	7-80
7.11.2 PEO - product experience observation segment	7-83
7.11.3 PCR - possible causal relationship segment	7-88

7.11.4 PSH - product summary header segment	7-93
7.11.5 PDC - product detail country segment	7-96
7.11.6 FAC - facility segment	7-98
<b>7.12 PRODUCT EXPERIENCE - EXAMPLE MESSAGES</b>	<b>7-100</b>
<b>7.13 PRODUCT EXPERIENCE - REFERENCES</b>	<b>7-101</b>
<b>7.14 WAVEFORM SUMMARY</b>	<b>7-101</b>
<b>7.15 WAVEFORM RESULT DATA TYPES</b>	<b>7-102</b>
7.15.1 NA - numeric array	7-102
7.15.2 MA - multiplexed array	7-102
7.15.3 CD - channel definition	7-103
<b>7.16 WAVEFORM SPECIFIC OBSERVATION ID SUFFIXES</b>	<b>7-105</b>
7.16.1 Timing information (TIM)	7-106
7.16.2 Channel definition data (CHN)	7-106
7.16.3 Waveform digital data (WAV)	7-106
7.16.4 Waveform annotation (ANO)	7-107
<b>7.17 COMBINING RULES FOR WAVEFORM OBX SEGMENTS</b>	<b>7-107</b>
<b>7.18 RESTRICTIONS ON VALUATION OF OBX SEGMENT FIELDS</b>	<b>7-108</b>
7.18.1 OBX segment - TIM category	7-109
7.18.2 OBX segment - CHN category	7-109
7.18.3 OBX segment - WAV category	7-110
7.18.4 ANO category OBX segment	7-110
<b>7.19 WAVEFORM RESPONSE TRIGGER EVENTS</b>	<b>7-111</b>
7.19.1 W01 - waveform result, unsolicited transmission of requested information	7-111
7.19.2 W02 - waveform result, response to query	7-111
<b>7.20 EXAMPLE MESSAGES FOR GENERIC WAVEFORM DATA</b>	<b>7-111</b>
7.20.1 Example 1: “channel-block” format, using three separate sets of TIM, CHN, WAV and category OBX segments:	7-112
7.20.2 Example 2: “channel-block” format, using a single set of TIM, CHN, WAV and category OBX segments, with multiple channels within the one WAV category result segment:	7-112
7.20.3 Example 3: “channel-multiplexed” format, with multiple channels within the one WAV category result segment:	7-113
7.20.4 Example 4: “channel-block” format, using three separate sets of TIM, CHN, WAV and category OBX segments with a break in waveform data used to pinpoint waveform annotations for channels one and three:	7-113
<b>7.21 OUTSTANDING ISSUES</b>	<b>7-113</b>
<b>CHAPTER 8 - MASTER FILES</b>	<b>8-1</b>
<b>8.1 PURPOSE</b>	<b>8-1</b>
<b>8.2 TRIGGER EVENTS</b>	<b>8-2</b>
<b>8.3 MESSAGES</b>	<b>8-3</b>

## Table of Contents

---

8.3.1 MFN/MFK - master files notification	8-3
8.3.2 MFD/ACK - master files delayed application acknowledgment	8-4
8.3.3 MFQ/MFR - master files query	8-4
<b>8.4 GENERAL MASTER FILE SEGMENTS</b>	<b>8-5</b>
8.4.1 MFI - master file identification segment	8-5
8.4.2 MFE - master file entry segment	8-7
8.4.3 MFA - master file acknowledgment segment	8-8
<b>8.5 GENERIC MASTER FILE EXAMPLES</b>	<b>8-9</b>
8.5.1 ZL7 segment (proposed example only)	8-9
8.5.2 MFN message with original acknowledgment mode	8-10
8.5.3 Enhanced mode application-level acknowledgment to the MFN message	8-10
8.5.4 Delayed application-level acknowledgment	8-11
<b>8.6 STAFF AND PRACTITIONER MASTER FILES</b>	<b>8-12</b>
8.6.1 MFN/MFK - staff/practitioner master file message	8-12
8.6.2 STF - staff identification segment	8-12
8.6.3 PRA - practitioner detail segment	8-17
8.6.4 Example: doctor master file MFN message	8-19
<b>8.7 TEST/OBSERVATIONS MASTER FILES</b>	<b>8-20</b>
8.7.1 General approach of test/observation master files	8-20
8.7.2 MFN/MFR - test/observation master file	8-21
8.7.3 OM1 - general segment (fields that apply to most observations)	8-22
8.7.4 OM2 - numeric observation segment	8-39
8.7.5 OM3 - categorical test/observation segment	8-43
8.7.6 OM4 - observations that require specimens segment	8-44
8.7.7 OM5 - observation batteries (sets) segment	8-47
8.7.8 OM6 - Observations that are calculated from other observations segment	8-48
<b>8.8 LOCATION MASTER FILES</b>	<b>8-50</b>
8.8.1 Patient location master file message (MFN/MFK)	8-50
8.8.2 LOC - location identification segment	8-50
8.8.3 LCH - location characteristic segment	8-53
8.8.4 LRL - location relationship segment	8-56
8.8.5 LDP - location department segment	8-58
8.8.6 LCC - location charge code segment	8-61
8.8.7 Example: MFN location master file message	8-62
<b>8.9 CHARGE DESCRIPTION MASTER FILES</b>	<b>8-63</b>
8.9.1 Charge description master file message (MFN/MFK)	8-63
8.9.2 CDM - charge description master segment	8-63
8.9.3 PRC - pricing segment	8-66
8.9.4 Example: MRN message charge description master file	8-70
<b>8.10 CLINICAL TRIALS MASTER FILES</b>	<b>8-71</b>
8.10.1 Clinical trials master file message (MFN/MFK)	8-71
8.10.2 CM0 - clinical study master segment	8-72
8.10.3 CM1 - clinical study phase master segment	8-74
8.10.4 CM2 - clinical study schedule master segment	8-74

<b>8.11 OUTSTANDING ISSUES</b>	<b>8-75</b>
8.11.1 We invite proposals for the specification of other HL7-wide master files segments.	8-75
 <b>CHAPTER 9 - MEDICAL RECORDS/INFORMATION MANAGEMENT</b>	 <b>9-1</b>
<b>9.1 PURPOSE</b>	<b>9-1</b>
9.1.1 Definition of terms and concepts	9-1
<b>9.2 DOCUMENT MANAGEMENT SECTION</b>	<b>9-3</b>
<b>9.3 ASSUMPTIONS</b>	<b>9-3</b>
<b>9.4 TRIGGER EVENTS AND MESSAGE DEFINITIONS</b>	<b>9-3</b>
9.4.1 MDM/ACK - original document notification (event T01)	9-4
9.4.2 MDM/ACK - original document notification and content (event T02)	9-4
9.4.3 MDM/ACK - document status change notification (event T03)	9-5
9.4.4 MDM/ACK - document status change notification and content (event T04)	9-5
9.4.5 MDM/ACK - document addendum notification (event T05)	9-5
9.4.6 MDM/ACK - document addendum notification and content (event T06)	9-6
9.4.7 Document edit notification (event T07)	9-6
9.4.8 MDM/ACK - document edit notification and content (event T08)	9-7
9.4.9 MDM/ACK - document replacement notification (event T09)	9-7
9.4.10 MDM/ACK - document replacement notification and content (event T10)	9-8
9.4.11 MDM/ACK - document cancel notification (event T11)	9-8
<b>9.5 MESSAGE SEGMENTS</b>	<b>9-9</b>
9.5.1 TXA - transcription document header segment	9-9
9.5.2 OBX - observation segment usage	9-18
<b>9.6 EXAMPLE MESSAGE</b>	<b>9-19</b>
<b>9.7 QUERY</b>	<b>9-20</b>
9.7.1 QRY/DOC - document query (event T12)	9-20
 <b>CHAPTER 10 - SCHEDULING</b>	 <b>10-1</b>
<b>10.1 PURPOSE</b>	<b>10-1</b>
10.1.1 Schedules, appointments, and services and resources	10-1
10.1.2 Application roles	10-5
10.1.3 Trigger events, statuses, reasons, and types	10-8
10.1.4 Appointments, orders, and referrals	10-9
10.1.5 Glossary	10-9
10.1.6 Organization of this chapter: trigger events and message definitions	10-11
<b>10.2 PLACER APPLICATION REQUESTS AND TRIGGER EVENTS</b>	<b>10-12</b>
10.2.1 Request new appointment booking (event S01)	10-14
10.2.2 Request appointment rescheduling (event S02)	10-14
10.2.3 Request appointment modification (event S03)	10-15
10.2.4 Request appointment cancellation (event S04)	10-15
10.2.5 Request appointment discontinuation (event S05)	10-15
10.2.6 Request appointment deletion (event S06)	10-15

## Table of Contents

---

10.2.7 Request addition of service/resource on appointment (event S07)	10-16
10.2.8 Request modification of service/resource on appointment (event S08)	10-16
10.2.9 Request cancellation of service/resource on appointment (event S09)	10-16
10.2.10 Request discontinuation of service/resource on appointment (event S10)	10-17
10.2.11 Request deletion of service/resource on appointment (event S11)	10-17
<b>10.3 FILLER APPLICATION MESSAGES AND TRIGGER EVENTS UNSOLICITED</b>	<b>10-17</b>
10.3.1 Notification of new appointment booking (event S12)	10-18
10.3.2 Notification of appointment rescheduling (event S13)	10-18
10.3.3 Notification of appointment modification (event S14)	10-19
10.3.4 Notification of appointment cancellation (event S15)	10-19
10.3.5 Notification of appointment discontinuation (event S16)	10-19
10.3.6 Notification of appointment deletion (event S17)	10-19
10.3.7 Notification of addition of service/resource on appointment (event S18)	10-20
10.3.8 Notification of modification of service/resource on appointment (event S19)	10-20
10.3.9 Notification of cancellation of service/resource on appointment (event S20)	10-20
10.3.10 Notification of discontinuation of service/resource on appointment (event S21)	10-20
10.3.11 Notification of deletion of service/resource on appointment (event S22)	10-20
10.3.12 Notification of blocked schedule time slot(s) (event S23)	10-21
10.3.13 Notification of opened ("un-blocked") schedule time slot(s) (event S24)	10-21
10.3.14 Notification that patient did not show up for scheduled appointment (event S26)	10-21
<b>10.4 QUERY TRANSACTIONS AND TRIGGER EVENTS</b>	<b>10-21</b>
10.4.1 Original mode queries - display oriented	10-22
10.4.2 Original mode queries - record oriented	10-22
10.4.3 SQM/SQR - schedule query message and response (event S25)	10-23
10.4.4 Enhanced mode queries	10-25
<b>10.5 MESSAGE SEGMENTS</b>	<b>10-25</b>
10.5.1 ARQ - appointment request segment	10-25
10.5.2 SCH - schedule activity information segment	10-33
10.5.3 RGS - resource group segment	10-39
10.5.4 AIS - appointment information - service segment	10-40
10.5.5 AIG - appointment information - general resource segment	10-43
10.5.6 AIL - appointment information - location resource segment	10-46
10.5.7 AIP - appointment information - personnel resource segment	10-50
10.5.8 APR - appointment preferences segment	10-53
<b>10.6 EXAMPLE TRANSACTIONS</b>	<b>10-56</b>
10.6.1 Request and receive new appointment - event S01	10-56
10.6.2 Unsolicited notification of rescheduled appointment - event S13	10-57
10.6.3 Request and receive new appointment with repeating interval - event S01	10-58
<b>10.7 IMPLEMENTATION CONSIDERATIONS</b>	<b>10-59</b>
10.7.1 Logical relationship of resource and service segments	10-59
10.7.2 Multiple placer applications	10-59
<b>10.8 ISSUES</b>	<b>10-59</b>
10.8.1 Logical relationship of resource and service segments	10-59
<b>CHAPTER 11 - PATIENT REFERRAL</b>	<b>11-1</b>

<b>11.1 PURPOSE</b>	<b>11-1</b>
11.1.1 Patient referral and responses	11-1
11.1.2 Application roles and data process	11-3
11.1.3 Glossary	11-5
<b>11.2 PATIENT INFORMATION REQUEST MESSAGES AND TRIGGER EVENTS</b>	<b>11-6</b>
11.2.1 RQI/RPI - request for insurance information (event I01)	11-7
11.2.2 RQI/RPL - request/receipt of patient selection display list (event I02)	11-7
11.2.3 RQI/RPR - request/receipt of patient selection list (event I03)	11-8
11.2.4 RQP/RPI - request for patient demographic data (event I04)	11-9
11.2.5 RQC/RCI - request for patient clinical information (event I05)	11-10
11.2.6 RQC/RCL - request/receipt of clinical data listing (event I06)	11-11
11.2.7 PIN/ACK - unsolicited insurance information (event I07)	11-12
<b>11.3 PATIENT TREATMENT AUTHORIZATION REQUESTS</b>	<b>11-12</b>
11.3.1 RQA/RPA - request patient authorization message	11-12
11.3.2 RQA/RPA - request for treatment authorization information (event I08)	11-14
11.3.3 RQA/RPA - request for modification to an authorization (event I09)	11-15
11.3.4 RQA/RPA - request for resubmission of an authorization (event I10)	11-15
11.3.5 RQA/RPA - request for cancellation of an authorization (event I11)	11-15
<b>11.4 PATIENT REFERRAL MESSAGES AND TRIGGER EVENTS</b>	<b>11-15</b>
11.4.1 REF/RRI - patient referral message	11-15
11.4.2 REF/RRI - patient referral (event I12)	11-17
11.4.3 REF/RRI - modify patient referral (event I13)	11-18
11.4.4 REF/RRI - cancel patient referral (event I14)	11-18
11.4.5 REF/RRI - request patient referral status (event I15)	11-18
<b>11.5 SEGMENTS</b>	<b>11-18</b>
11.5.1 RFI - referral information segment	11-18
11.5.2 AUT - authorization information segment	11-22
11.5.3 PRD - provider data segment	11-23
11.5.4 CTD - contact data segment	11-26
<b>11.6 EXAMPLES</b>	<b>11-28</b>
11.6.1 RQI message using an I01 event with an immediate response	11-28
11.6.2 RQA message using an I08 event with an immediate response	11-28
11.6.3 RQA message using an I08 event with a deferred response	11-29
11.6.4 REF message using an I11 event with an immediate response	11-30
11.6.5 REF message using an I11 event with a deferred response	11-31
11.6.6 RQC inquiry message using an I05 event with an immediate response	11-32
<b>11.7 ISSUES</b>	<b>11-34</b>
11.7.1 HL7 overlapping with ASC X12N	11-34
<b>CHAPTER 12 - PATIENT CARE</b>	<b>12-1</b>
<b>12.1 INTRODUCTION AND OVERVIEW</b>	<b>12-1</b>
12.1.1 Glossary	12-1
12.1.2 Scenario descriptions	12-2
12.1.3 Trigger events	12-3
12.1.4 Use of action codes	12-3

---

## Table of Contents

---

12.1.5 Message construction rules	12-5
<b>12.2 MESSAGE DEFINITIONS</b>	<b>12-7</b>
12.2.1 PGL/ACK - patient goal message (events PC6, PC7, PC8)	12-7
12.2.2 PPR/ACK - patient problem message (events PC1, PC2, PC3)	12-8
12.2.3 PPP/ACK - patient pathway message (problem-oriented) (events PCB, PCC, PCD)	12-10
12.2.4 PPG/ACK - patient pathway message (goal-oriented) (events PCG, PCH, PCJ)	12-11
12.2.5 QRY - patient care problem query (event PC4)	12-11
12.2.6 PRR - patient problem response (event PC5)	12-12
12.2.7 QRY - patient goal query (event PC9)	12-12
12.2.8 PPV - patient goal response (event PCA)	12-13
12.2.9 QRY - patient pathway (problem-oriented) query (event PCE)	12-13
12.2.10 PTR - patient pathway (problem-oriented) response (event PCF)	12-14
12.2.11 QRY - patient pathway (goal-oriented) query (event PCK)	12-15
12.2.12 PPT - patient pathway (goal-oriented) response (event PCL)	12-16
<b>12.3 MESSAGE SEGMENTS</b>	<b>12-17</b>
12.3.1 GOL - goal detail segment	12-17
12.3.2 PRB - problem detail segment	12-20
12.3.3 ROL - role segment	12-24
12.3.4 PTH - pathway segment	12-25
12.3.5 VAR - variance segment	12-27
<b>12.4 EXAMPLE TRANSACTIONS</b>	<b>12-28</b>
<b>12.5 IMPLEMENTATION CONSIDERATIONS</b>	<b>12-29</b>
<b>12.6 ONGOING ISSUES</b>	<b>12-29</b>
<b>APPENDIX A - DATA DEFINITION TABLES</b>	<b>A-1</b>
<b>A.1 INTRODUCTION</b>	<b>A-1</b>
<b>A.2 MESSAGE TYPES</b>	<b>A-1</b>
<b>A.3 SEGMENTS</b>	<b>A-3</b>
<b>A.4 HL7 AND USER-DEFINED TABLES - ALPHABETIC SORT</b>	<b>A-5</b>
<b>A.5 HL7 AND USER-DEFINED TABLES - NUMERIC SORT</b>	<b>A-11</b>
<b>A.6 DATA ELEMENT NAMES</b>	<b>A-53</b>
<b>APPENDIX B - LOWER LAYER PROTOCOLS</b>	<b>B-1</b>
<b>APPENDIX C - NETWORK MANAGEMENT</b>	<b>C-1</b>
<b>C.1 TRIGGER EVENTS AND MESSAGE DEFINITIONS</b>	<b>C-1</b>
12.1.1 NMQ - Network management query message	C-1
12.1.2 NMD - Network management data message	C-2



<b>C.2 NETWORK MANAGEMENT SEGMENTS</b>	<b>C-2</b>
C.2.1 NCK - system clock segment	C-2
C.2.2 NST - statistics segment	C-3
C.2.3 NSC - status change segment	C-5
C.2.4 QRD - query definition segment usage	C-7
 <b>APPENDIX D - VERSION 2.2 BNF MESSAGE DESCRIPTIONS</b>	 <b>D-1</b>
<b>D.1 BNF DESCRIPTIONS OF HL7 VERSION 2.2 ABSTRACT MESSAGES</b>	<b>D-1</b>
D.1.1 Overview	D-1
D.1.2 Tokens	D-1
D.1.3 BNF Message Definitions	D-2
 <b>APPENDIX E - GLOSSARY</b>	 <b>E-1</b>

