CitiusTech

Introduction to HL7 Data Types

Session 2

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Contents

Introduction (1/4)

- The types of data that can be used in a field are predefined by HL7 and are used throughout the standard for all message structures
- For example a string, timestamp, formatted text, coded element or address
- Additional data types may be present in each data type, available as components or subcomponents
- Other data types are used by complex data types to express the kind of data contained
- For instance, a data type cannot reference data types that already reference multiple components, because there is no way to code the information at that level
- The data type gives the following attributes:
  - Format of information
  - Number of sub-elements

Introduction (2/4)

Data Types:

- Data types may be either primitive or composite

Primitive Data Types	Composite Data Types
Data types consist of a series of characters as specified by the data type. Examples: ▪ A string, formatted text, timestamp etc. ▪ Information about site address	Data types are made up of a series of components that are themselves assigned to a data type, which may again be either primitive or composite data types. The components of a component are called sub-components, and they may only be assigned primitive data types. Example: Address, person name

Introduction (3/4)

Data Type Length

- Usually, length is not of conceptual importance in HL7 messages, however, several HL7-aware applications are implemented using some form of data storage that impose length limitations on the data

Normative Length

- Only specified for primitive data types
- Length is defined using one of two forms below:
  - minimum and the maximum length separated by two dots, e.g. m..n
  - List of possible values for length separated by commas, e.g. x,y,z
- Minimum length is always 1 or more
- If an item is optional, and there is no content present, the item is considered as not populated, rather than present with a length of 0
- Value domains, like Parts of Names and Addresses, do not have a fixed minimum and maximum length specified
- In several cases, a system stores the data of these value domains using data storage mechanisms of fixed lengths, such as relational databases, and must impose a limitation on the amount of stored information

Conformance Length

- Minimum length to be stored by an application is defined by conformance length
- Value that does not meet the minimum specified length will not be truncated by the conformant application
- Conformance length is also the minimum value that may be assigned to maximum length in an implementation profile
- Conformance length may be followed by:
- "=" denotes the value may never be truncated **or** "#" the truncation behavior defined for the data type applies
- Truncated pattern may not necessarily be implemented by the application, even if applied to an item
- If an application adopts a truncated pattern, the same should be stated in their conformance profiles

Introduction (4/4)

Type and Conformant/Field Lengths

- The table below summarizes how various length parameters interact. It provides an example of each combination and outlines the implications for implementations.
- The second data type listed refers to the underlying data type the cited one is based upon.

Since the base data type of ED.3 is ID and it doesn't allow truncation and length beyond 15 characters same rules are applicable for ED.3.

Since ED and CWE are composite data types, minimum and maximum lengths are not assigned

Primitive data type may have either normative or conformative lengths specified.

ID/DT	LEN	C.LEN	Implication
CX.5	2..5		• CX.5 will include length between 2 to 5. • Truncation is not allowed.
ID	1..	15=	• The conformance length is 15 – applications must be able to properly handle all values, which includes the range of allowed lengths for this component.
ED.3		32	• Applications must be able to handle mime types up to a length of 32. • Since truncation is not allowed, applications must respond with an error if the length of a mime type exceeds the length it can handle without truncation.
ID	1..	15=	
CWE.1		20=	• If populated, the value must be at least one character, with no upper limit. • Applications must support codesystem identifiers up to 20 characters long. • Since the identifier is useless if truncated, truncation is not allowed.
ST	1..		

Note

1. Normative or conformance lengths are specified on the data type, they may also be specified on the components and/or fields where the data type is used.
2. If specified on the components and/or fields, they override the length specified for the data type (but must be consistent with the information on the type).

Contents

HL7 Tables (1/6)

There are 5 types of HL7 tables:

- HL7-defined Tables
- User-defined Tables
- External Tables
- Local Tables
- Imported Tables

HL7 Tables (2/6)

HL7-defined Tables:

VALUE	DESCRIPTION	ITEM#
A01	ADMIT A PATIENT	10
A02	TRANSFER A PATIENT	11
A03	DISCHARGE A PATIENT	12
A04	REGISTER A PATIENT	13
A05	PREADMIT A PATIENT	14
A06	TRANSFER AN OUTPATIENT TO INPATIENT	15
A07	TRANSFER AN INPATIENT TO OUTPATIENT	16

- An HL7 table is a set of values defined and published by HL7
- These values may not be redefined locally, however the table itself may be extended to accommodate locally-defined values

HL7 Tables (3/6)

User-defined Tables:

Value	Description	Comment
F	Female	
M	Male	
O	Other	
U	Unknown	
A	Ambiguous	
N	Not applicable	

- A user-defined table is a set of values that are locally or site defined
- These tables are not defined in the standard, but are still given a user-defined table number to enable implementations
- HL7 sometimes publishes suggested values that a site may use as a starter set (e.g. Administrative Gender)

HL7 Tables (4/6)

Local Tables:

- A local table is a table with a non-HL7 assigned table identifier and which contains a set of locally or site defined values
- It may be locally assigned to local fields in Z segments or to HL7 fields having a CWE data type

HL7 Tables (5/6)

External Tables:

- An external table is a set of coded values defined and published by another standards organization
- External tables arise from applications where the concepts and possibly the codes are established by external agencies due to regulatory requirements or agreements between HL7 and other standards organizations
- The CF, CNE and CWE data type are used to represent values for these fields

Example:
Diagnosis Code using ICD-10 codes

ICD-10 Codes	Section Name
A00-A09	Intestinal infectious diseases
A15-A19	Tuberculosis
A20-A28	Certain zoonotic bacterial diseases
A30-A49	Other bacterial diseases
A50-A64	Infections with a predominantly sexual mode of transmission
A65-A69	Other spirochetal diseases
A70-A74	Other diseases caused by chlamydiae
A75-A79	Rickettsioses

HL7 Tables (6/6)

Imported Tables:

Code	Short Description	Comment / Full Vaccine Name
54	adenovirus, type 4	adenovirus vaccine, type 4, live, oral
55	adenovirus, type 7	adenovirus vaccine, type 7, live, oral
82	adenovirus, NOS	adenovirus vaccine, NOS
24	anthrax	anthrax vaccine
19	BCG	Bacillus Calmette-Guerin vaccine
27	botulinum antitoxin	botulinum antitoxin
26	cholera	cholera vaccine
29	CMVIG	cytomegalovirus immune globulin, intravenous
56	dengue fever	dengue fever vaccine
12	diphtheria antitoxin	diphtheria antitoxin
28	DT (pediatric)	diphtheria and tetanus toxoids, adsorbed for pediatric use
20	DTaP	diphtheria, tetanus toxoids and acellular pertussis vaccine

- An imported table is a set of coded values defined by other standards organization
- Imported tables are published by HL7 on behalf of other organizations
- Their content is not subject to approval by HL7
- Table 0292 - Vaccines administered is an example of an imported table

Contents

Data Type Groups

Data type are categorized into three groups:

- Text and numeric
- Money
- Date and time
- Controlled vocabulary

Contents

Text and Numeric Data Type (1/11)

Text data types are:

- ST (plain string data)
- TX (long text strings)
- FT (formatted text)

Numeric data types are:

- NM (numbers)
- SN (structured numeric)
- NA (Numeric Array)
- MA (Multiplexed Array)
- CQ (Composite Quantity)

Text and Numeric Data Type (2/11)

Table Description

Columns present in the table are:

- **SEQ** - Sequence of element in message
- **LEN** – Length of field
- **DT** - Data type
- **R/M** - Field is required by HL7 to accept or to be mandated by the NYS legislation. If there is no designation, it is considered optional
- **RP#** - This field can be reported
- **TB#** - Approved corresponding code table

Text and Numeric Data Type (3/11)

ST (String Data)

HL7 Component Table - ST – String Data

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
						String Data

- Short, left justified (i.e.no leading blank space, trailing blanks optional), <1000 chars

Examples:

1. |Here is an example|
2. ^http://www.pacs.poupon.edu/wado.jsp^

Text and Numeric Data Type (4/11)

TX (Text Data)

HL7 Component Table - TX – Text Data

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
						Text Data

- String data meant for user display (on a terminal or printer), would not necessarily be left justified since leading spaces may contribute greatly to the clarity of the presentation to the user
- As this type of data is intended for display, it may contain certain escape character sequences designed to control the display
- Long, <65536 chars, repetition character as paragraph break, leading spaces can be included, trailing spaces should be removed

Example:

| The patient breathes with difficulty.~ There is history of respiratory illness on both sides of the patient's family.|

Text and Numeric Data Type (5/11)

FT (Formatted Text Data)

HL7 Component Table - FT – Formatted Text Data

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
						Formatted Text Data

- This data type is derived from the TX data type by allowing the addition of embedded formatting instructions

Example:

\.ti 5\The patient breathes with difficulty.\.br\\.ti 5\. This is some other information

Text and Numeric Data Type (6/11)

Escape sequences are:

- \H\ start highlighting
- \N\ normal text (end highlighting)
- \F\ field separator
- \S\ component separator
- \T\ subcomponent separator
- \R\ repetition separator
- \E\ escape character

Text and Numeric Data Type (7/11)

NM (Numeric)

HL7 Component Table - NM – Numeric

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
	1..16					Numeric

- A number represented as a series of ASCII numeric characters consisting of an optional leading sign (+ or -), the digits and an optional decimal point
- In the absence of a sign, the number is assumed to be positive
- If there is no decimal point the number is assumed to be an integer

Examples:

1. |+0201.20|
2. |-999|

Text and Numeric Data Type (8/11)

SN (Structured Numeric)

HL7 Component Table - SN – Structured Numeric

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1	1..2		ST	O		Comparator
2			NM	O		Num1
3	1..1		ST	O		Separator/Suffix
4			NM	O		Num2

- Clinical results and ranges

Examples:

1. |^10^-^20|
2. |>^100| (greater than 100)

- If **<num1>** and **<num2>** are both non-null, then the separator/suffix must be non-null
- The separators can be "**-**" or "**+**" or "**/**" or "**.**" or "**:**"

Text and Numeric Data Type (9/11)

CQ (Composite Quantity with units)

HL7 Component Table - CQ –Composite Quantity with Units

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1			NM	O		Quantity
2			CWE	O	9999	Units

- Quantity (NM) – This component specifies the numeric quantity or amount of an entity.
- Units (CWE) – This component species the units in which the quantity is expressed.
- **Syntax** – <quantity (NM)> ^ <units (CWE)>

Examples:

1. |12^kg|
2. |150^lb&&ANSI+| weight in pounds is customary and lb unit is defined within ANSI+.

Text and Numeric Data Type (10/11)

NA (Numeric Array)

HL7 Component Table - NA – Numeric Array

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1			NM	O		Value1
2			NM	O		Value2
3			NM	O		Value3
4			NM	O		Value4

- It is used to transmit test/observation results
- Each component represents a value in vector
- **Syntax** - <value1 (NM)> ^ <value2 (NM)> ^ <value3 (NM)> ^ <value4 (NM)> ^ …

Examples:

1. |125^34^-22^-234^569^442^-212^6| (vector of 8 numbers)
2. |1.2^-3.5^5.2~2.0^3.1^-6.2~3.5^7.8^-1.3| (3 x 3 array of numbers)

Text and Numeric Data Type (11/11)

MA (Multiplexed Array)

HL7 Component Table - MA – Multiplexed Array

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1			NM	O		Sample Y From Channel 1
2			NM	O		Sample Y From Channel 2
3			NM	O		Sample Y From Channel 3
4			NM	O		Sample Y From Channel 4

- It is used to transmit waveform data over multiple channels
- ^ →Channel and ~ → time samples
- **Syntax** - <sample 1 from channel 1 (NM)> ^ <sample 1 from channel 2 (NM)> ^ <sample 1 from channel 3 (NM)> ...~<sample 2 from channel 1 (NM)> ^ <sample 2 from channel 2 (NM)> ^ <sample 2 from channel 3 (NM)> ...~

Examples:

1. |0^0^0~1^1^1~2^2^2~3^3^3~4^4^4~5^5^5|(3 channels (identical), 6 time-samples
2. |0~1~2~3~4~5~6~7~8~9~10| (2: 1 channel, 11 time-samples)

Contents

Money Data Type (1/2)

MO (Money)

HL7 Component Table - MO – Money

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1		=	NM	O		Quantity
2	3..3		ID	O	0913	Denomination

- This data type specifies amount of money and the denomination in which it is expressed

Example:
|Quantity ^ Denomination| → |100^USD|

Money Data Type (2/2)

CP (Composite Price)

HL7 Component Table - CP – Composite Price

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1			MO	R		Price
2	1..2		ID	O	0205	Price Type
3		=	NM	O		From Value
4		=	NM	O		To Value
5			CWE	C		Range Units
6	1..1		ID	O	0298	Range Type

- This data type is often used to define a repeating field within a given segment

Example:
|100.00&USD^UP^0^9^min^P~150.00&USD^UP^10^16^min^F|
(Pro-rated Unit Price is $100.00 for time between 0 to 9 minutes)
(Price for anesthesia offered for 0-9 minutes and 10-16 minutes)

Contents

Date and Time Data Type (1/4)

DT (Date)

HL7 Component Table - DT – Date

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
	(4..8)	8				Date

- It specifies the century and year with optional precision to month and day
- **Syntax** - YYYY[MM[DD]]

  The number of digits populated specifies the precision using the format specification YYYY[MM[DD]]. Therefore:

  - The first four digits are used to specify a precision of **year**
  - The first six are used to specify a precision of **month**
  - The first eight are used to specify a precision of **day**

Example:
|20070723| (**Note**: 2007^07^23 – is a wrong format)

Date and Time Data Type (2/4)

TM (Time)

HL7 Component Table - TM –Time

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
	2..16	13#				Time

- It specifies the hour of the day with optional minutes, seconds, fraction of second using a 24-hour clock notation and time zone
- **Syntax** - HH[MM[SS[.S[S[S[S]]]]]][+/-ZZZZ]

Example:
|103000.90+0530|

Date and Time Data Type (3/4)

DTM (Time Stamp)

HL7 Component Table - DTM – Date/Time

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
	4..24	8#				Date/Time

- It specifies a point in time using a 24-hour clock notation
- **Syntax** - YYYY[MM[DD[HH[MM[SS[.S[S[S[S]]]]]]]]][+/-ZZZZ]

Example:
|20070723103000.90+0530|

Date and Time Data Type (4/4)

DR (Date Range)

HL7 Component Table - DR – Date/Time Range

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1			DTM	O		Range Start Date/Time
2			DTM	O		Range End Date/Time

- The first component contains the earliest date/time (time stamp) in the specified range
- The second component contains the latest date/time in the specified range. Note that the TS (time stamp) data type allows the specification of precision
- **Syntax:** YYYY[MM[DD[HH[MM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^YYYY[MM[DD[HH[MM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]

Example:

|20070723103000.90+0530^20070723133000.90+0530|

Contents

Controlled Vocabulary Data Type (1/15)

- HL7 provides many data types that allow multiple components for the purpose of sending complex identifier values. These values might be names, addresses , internal locations . Or telephone numbers. Often , these types include internal identifiers as well as externally readable values.

Internal
• HL7 Defined • User/Locally Defined

External
• Allows use of well-known taxonomy without the need to republish • Licensing by implementers • SNOMED, CPT etc.

Controlled Vocabulary Data Type – Examples (2/15)

Medical Records/Information Management Data Type

- PPN: Performing Person Time Stamp

Address Data Type

- AD: Address
- XAD: Extended Address

Implicitly Referenced Tables

- ID : Coded values for HL7 defined tables
- IS : Coded values for user defined tables

Explicitly Referenced Tables

- CNE : Coded with no Exception
- CWE : Coded with Exception

Demographics Data Types

- XPN: Extended Person Name
- XTN: Extended telecommunications number

Common Data Types

- EI : Entity Identifier
- HD : Hierarchic Designator

Code Values Data Types

- CX: Entended Composite ID with Check digit
- XCN: Entended Composite ID number and name

Controlled Vocabulary Data Type (3/15)

Identifier - ID

HL7 Component Table - ID – Coded Value for HL7 Defined Tables

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
	1..	15=				Coded Value for HL7-Defined Tables

- It is the coded value from the HL7 Table

Example:

Seventh Component of Data type XAD (Extended Address Type) takes values from HL7 table 0190, Address Type, for which HL7 provides values:

- BA : Bad Address
- H : Home
- B : Business
- L : Legal
- C : Current/Temporary
- P : Permanent

Controlled Vocabulary Data Type (4/15)

Identifier - IS

HL7 Component Table - IS – Coded Value for User-Defined Tables

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
	1..	20=				Coded Value for User-Defined Tables

- It is the coded value from the User Defined table

Example:

PID-8 (SEX)
Suggested Values : F, M, O, U → |F|
Used Values : 1 ,2, 3, 4 → |1|

Controlled Vocabulary Data Type (5/15)

Identifier – HD (Hierarchic Designator)

HL7 Component Table - HD – Hierarchic Designator

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1		20=	IS	O	0300	Namespace ID
2		199=	ST	C		Universal ID
3	1..6		ID	C	0301	Universal ID Type

- May be used to represent either a value from an internal code set **or** a value from an explicitly referenced external code set or identifier type

Controlled Vocabulary Data Type (6/15)

Identifier – HD (Hierarchic Designator)

- **Namespace ID (IS)**
  - Can be used to specify a value from an internal code set
  - If this component for the HD data type is present, second and third components can be optional
- **Universal ID (ST)**
  - Can be used to specify a value from an external code set
- **Universal ID type (ID)**
  - Specifies the identifier type or code set used in the second component, Universal ID
  - If this component is present, then the second must be present (although in this case the first is optional)
  - Both, the second and third components, should either be valued (both non-null) or not valued (i.e. both null)

Controlled Vocabulary Data Type (7/15)

Identifier – HD (Hierarchic Designator)

Examples:

1. A DNS example
   |^falcon.iupui.edu^DNS|
2. local identifier and universal ID types:
   |LAB1^2.16.840.1.113883.19.1.2.3.3.4.6.7^ISO|
3. A HD that looks like an IS data type
   1. |LAB1|
   2. |RX.PIMS.SystemB.KP.CA.SCA|
4. A UUID example
   |^478A0114-EBF0-7701-A023-6841FF05731A^UUID|
   A UUID (Universal Unique Identifier) is a 128-bit number used to uniquely identify some object or entity on the internet

Controlled Vocabulary Data Type (8/15)

Code Values – CWE (Coded With Exceptions)

HL7 Component Table - CWE – Coded with Exceptions

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1		20=	ST	O		Identifier
2		199#	ST	O		Text
3	1..12		ID	C	0396	Name of Coding System
4		20=	ST	O		Alternate Identifier
5		199#	ST	O		Alternate Text
6	1..12		ID	C	0396	Name of Alternate Coding System

- May be used to represent either a value from an explicitly referenced external code set **OR** a non-encoded text value
- It has 21 components
- In CNE data type, the components remains same except the first component (CNE-1 Identifier) is mandatory
- Other tables are allowed in the field **OR** The external table may be locally extended **OR** When the code may be replaced by local text

Example:

|m^meter^ISO+|

Site C sends metric units of measure in a CWE-type field.

The value is selected from ISO 2955-1983

Controlled Vocabulary Data Type (9/15)

Differentiating – CWE (Coded With Exception) & CNE (Coded with No Exceptions)

CNE – Coded with No Exceptions	CWE – Coded with Exceptions
The CNE data type is used when a required or mandatory coded field is needed.	The CWE data type is used when: ▪ More than one table may be applicable ▪ The specified HL7 or externally defined table may be extended with local values ▪ When text is in place, the code may be omitted
The specified HL7 table or imported or externally defined coding system must be used and may not be extended with local values.	The specified HL7 or externally defined table may be extended with local values
Text may not replace the code.	When text is in place, the code may be omitted.
A CNE field must have an HL7 defined or external table associated with it.	The set of allowable values from which the identifier code is drawn may be extended on a site-specific basis.

Controlled Vocabulary Data Type (10/15)

Code Values - CX (Extended Composite ID with Check Digit)

HL7 Component Table - CX – Extended Composite ID with Check Digit

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1		15=	ST	R		ID Number
2		4=	ST	O		Identifier Check Digit
3	3..3		ID	O	0061	Check Digit Scheme
4			HD	C	0363	Assigning Authority
5	2..5		ID	R	0203	Identifier Type Code
6			HD	O		Assigning Facility

- Identifier Type code: When the assigning authority is responsible for more than one kind of identifier
- It has 12 components

Examples:

1. |12345^5^M10^EMR App Name^MRN |
2. |182298172^2^M12^US Govt^SSN |

Controlled Vocabulary Data Type (11/15)

Demographics – XPN (Person Name)

HL7 Component Table - XPN– Extended Person Name

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1			FN	RE		Family Name
2		30#	ST	O		Given Name
3		30#	ST	O		Second and Further Given Names or Initials Thereof
4		20#	ST	O		Suffix (e.g., JR or III)
5		20#	ST	O		Prefix (e.g., DR)
6				W		Degree (e.g., MD)

- It comprises of 15 components

Examples:

1. Adam A. Everyman III PhD
   |Everyman^Adam^A^III^DR^^L^^^^^^^PHD|
2. Ludwig van Beethoven
   |Beethoven&van^Ludwig^^^^^L|

Controlled Vocabulary Data Type (12/15)

Demographics XTN - Extended Telecommunication Number

HL7 Component Table - XTN – Extended Telecommunication Number

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1				W		Telephone Number
2	3..3		ID	O	0201	Telecommunication Use Code
3	2..8		ID	R	0202	Telecommunication Equipment Type
4		199=	ST	C		Communication Address
5		3=	SNM	O		Country Code
6		3=	SNM	O		Area/City Code
7		9=	SNM	C		Local Number
8		5=	SNM	C		Extension
9		199#	ST	O		Any Text
10		4=	ST	O		Extension Prefix

Example:
If the Los Angeles facility were assigned code 333, and if the "outside" telephone number at the LA office is (626) 555-1234, then the field would be transmitted as:
|^WPN^PH^^^626^5551234^1234^333|

Controlled Vocabulary Data Type (13/15)

Code Values - XCN (Extended Composite ID Number and Name)

HL7 Component Table - XCN – Extended Composite ID Number and Name for Persons

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1		15=	ST	C		Person Identifier
2			FN	C		Family Name
3		30#	ST	O		Given Name
4		30#	ST	O		Second and Further Given Names or Initials Thereof
5		20#	ST	O		Suffix (e.g., JR or III)
6		20#	ST	O		Prefix (e.g., DR)

- It comprises of 25 fields (Transfer of name + identifier + identifier type + internationalization information)

Controlled Vocabulary Data Type (14/15)

Code Values - XCN (Extended Composite ID Number and Name)

Examples:

1. Dr. Harold Hippocrates' provider ID was assigned by the Provider Master and was first issued at Good Health Hospital within the Community Health and Hospitals System:

   |12188^Hippocrates^Harold^H^IV^Dr^MD^^&Provider Master.Community Health and Hospitals&L^L^9^M10^DN^&Good Health Hospital.Community Health and Hospitals&L^A|

2. Ludwig van Beethoven's medical record number was assigned by the Master Patient Index and was first issued at Fairview Hospital within the University Hospitals System:

   |10535^van Beethoven&van^Ludwig^A^III^Dr^PHD^^&MPI.Community Health and Hospitals&L^L^3^M10^MR^& Good Health Hospital.Community Health and Hospitals&L^A|

Controlled Vocabulary Data Type (15/15)

XAD (Extended Address)

HL7 Component Table - XAD – Extended Address

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1			SAD	O		Street Address
2		120#	ST	O		Other Designation
3		50#	ST	O		City
4		50#	ST	O		State or Province
5		12=	ST	O		Zip or Postal Code
6	3..3		ID	O	0399	Country

- This data type specifies the address of a person, place or organization plus associated information

Example:

While healthcare systems exchange patient demographics information PID segment will have patient address field which is of type XAD as shown in the sample below.

PID|||PATID1234^5^M11||JONES^WILLIAM^A^III||19610615|M-||C|1200 N ELM STREET^^GREENWOODS^ND^27401-1020|GL|(91-9)3791212|(919)2713434||S||

PATID12345001^2^M10|123456789|9-87654^NC

Contents

Reference Data Type (1/4)

ED (Encapsulated Data)

HL7 Component Table - ED – Encapsulated Data

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1			HD	O		Source Application
2	4..11		ID	R	0834	Type of Data
3		32=	ID	O	0291	Data Subtype
4	1..6		ID	R	0299	Encoding
5			TX	R		Data

- Data which is non-textual or mixture of textual and non-textual.

Reference Data Type (2/4)

- Following example shows the sending of a radiology report as a Word document packaged/embedded inside of an HL7 message inside OBX-5 using ED data type:

Example:

1. MSH|^~\&|PSCRIBE||RDHL701||20021021070646||ORU^R01|20021021070646|P|2.3
   PID|||12345||Bob^Joe|…
   PV1||I|IQ^363^07||…
   OBR|1|P123|F123|502^CHEST XRAY^L|…
   OBX|1|ED|502^CHEST XRAY^L||Word^TEXT^^Base64^JVBERi0xLjMKJeTjz9IKNSAwI…(many more bytes!)

Reference Data Type (3/4)

RP : Reference Pointer

HL7 Component Table - RP – Reference Pointer

SEQ	LEN	C.LEN	DT	OPT	TBL#	COMPONENT NAME
1		999#	ST	O		Pointer
2			HD	O		Application ID
3	4..11		ID	O	0834	Type of Data
4		32=	ID	O	0291	Subtype

- This data type transmits information about data stored on another system.
- It contains a reference pointer that uniquely identifies the data on the other system, the identity of the other system and the type of data
- It has the following properties:
  - External data is referenced from HL7
  - Avoids overhead of carrying actual data

Reference Data Type (4/4)

RP : Reference Pointer

Examples:

1. A CDA document accessed by FTP:
   |/cdasvc/u28864099/s9076500a/e77534/d55378.xml^&ftp://www.saintelsewhere.org&URI^text^x-hl7-cda-level-one|

2. A DICOM image accessed by HTTP and converted to JPEG (using the ISO/DICOM WADO standard); note that ampersands in the Pointer string are escaped to "\T\" to avoid conflict with the sub-component delimiter:
   |?requestType=WADO\T\study=1.2.840.113848.5.22.9220847989\T\series=1.2.840.113848.5.22.922084798.4\T\object=1.2.840.113848.5.22.922084798.4.5^&https://www.pacs.poupon.edu/wado.jsp&URI^image^jpeg|

Thank You

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