



HL7 Basics – More Than Just Pipes

Objective: Provide basic HL7 understanding with progressively more complex topic discussion of HL7 standards and structures.

Presenter:

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Topics:

- What is HL7?
- HL7 Messages Types – What do I need?
- HL7 Segments
- HL7 Field Format
- Data Exchange Standards
- Using NPR to create HL7 Interfaces
(real-time vs. batch)
- Future of HL7 - HL7 version 2.x vs. 3.x

What is HL7?

HL7 Organization Definition:

- *Health Level Seven is one of several [American National Standards Institute \(ANSI\)](http://www.hl7.org) -accredited Standards Developing Organizations (SDOs) operating in the healthcare arena. Most SDOs produce standards (sometimes called specifications or protocols) for a particular healthcare domain such as pharmacy, medical devices, imaging or insurance (claims processing) transactions. Health Level Seven's domain is clinical and administrative data. www.hl7.org*
- **HL7 provides a method for disparate systems to communicate clinical and administration information in a normalized format with acknowledgement of receipt.**

HL7 Message Types – What do I need?

- **HL7 has many Message Types, which can make the entire process of determining what you need daunting.**
 - **Admission, Discharge, Transfer (ADT)**
 - **Order Message (ORM, ORR, RDE, etc...)**
 - **Financial Management (DFT, BAR)**
 - **Ancillary Data Reporting (ORU, CRM, etc...)**
 - **Master File Notification (MFN, MFQ, etc...)**
 - **Medical Records/Information Management (MDM)**
 - **Scheduling (SRM, SIU, SQM)**
 - **Patient Referral (RQI, REF, RQA, etc...)**
 - **Patient Care (PGL, PPR, PPG, etc...)**

HL7 Message Types – What do I need?

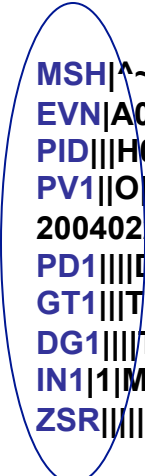
- Fortunately when evaluating a vendors product you usually receive an interface specification document or list of HL7 interfaces needed.
- Based on that list you will select the interfaces needed for your specific integration needs.
- The most common Message Types are:
 - Admission, Discharge, and Transfer (ADT)
 - Order Entry (ORM)
 - Ancillary Data Reporting (ORU)

HL7 Message

- Lets take a closer look at an HL7 message:

```

MSH|^~\&|ADT||ENGINE||20040301192350||ADT^A04|ADT757452230|P|2.1|||
EVN|A04|20040301192350|
PID|||H000000076||TESTCHRISTIANSEN^JOHN^||19931212|M|||1400 CHARLES ST^^LOVES PARK^IL^61111|||
PV1||O|HH.ADULT^^|ELE||^^|DEM^DEMING,RICHARD E|^|^|||AROU|||^|RCR||MED|HHC||REG RCR||
200402251124||
PD1|||DEM^DEMING,RICHARD E||
GT1|||TESTCHRISTIANSEN,JOHN||1400 CHARLES ST^^LOVES PARK^IL^61111|885-2277|||SP|745-69-5847|||
DG1|||TEST
IN1|1|MCR-A||MEDICARE|PO BOX 1602^^OMAHA^NE^68101||Y|||UNK|||SP|||1|||7896547
ZSR|||UNKNOWN
  
```



HL7 Segments

HL7 Message Type

HL7 Fields separated by
BAR - |field|

HL7 Fields – closer look at MSH Segment:

- Every HL7 message has an Message Header Segment (MSH) segment
- The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.
- The MSH also contains the Message Control ID (MCI). The MCI is used to acknowledge a receipt of an HL7 message. This will be discussed in more detail.

MSH|^~\&|SEM||PYX||20040301192350||ADT^A04|ADT757452230|P|2.3||



HL7 Basics – More Than Just Pipes

HL7 Segment Mapping Table – MSH

- Mapping Tables segment in the [HL7 Message Structure \(Optional\)/Required HL7 Segment](#)

SEQ	LEN	DT	OPT	ELEMENT NAME
1	1	ST	R	Field Separator
2	4	ST	R	Encoding Characters
3	180	HD	O	Sending Application
4	180	HD	O	Sending Facility
5	180	HD	O	Receiving Application
6	180	HD	O	Receiving Facility
7	26	TS	O	Date/Time Of Message
8	40	ST	O	Security
9	7	CM	R	Message Type
10	20	ST	R	Message Control ID
11	3	PT	R	Processing ID
12	8	ID	R	Version ID
13	15	NM	O	Sequence Number
14	180	ST	O	Continuation Pointer
15	2	ID	O	Accept Acknowledgment Type
16	2	ID	O	Application Acknowledgment Type
17	2	ID	O	Country Code
18	6	ID	O	Character Set
19	60	CE	O	Principal Language Of Message

Data Type



HL7 Basics – More Than Just Pipes

HL7 Fields – closer look at the MSH Seg

MSH|^~\&|SEM||PYX||20040301192350||ADT^A04|ADT757452230|P|2.3|||

Components: <message type (ID)> ^ <trigger event (ID)>

SEQ	LEN	DT	OPT	ELEMENT NAME
1	1	ST	R	Field Separator
2	4	ST	R	Encoding Characters
3	180	HD	O	Sending Application
4	180	HD	O	Sending Facility
5	180	HD	O	Receiving Application
6	180	HD	O	Receiving Facility
7	26	TS	O	Date/Time Of Message
8	40	ST	O	Security
9	7	CM	R	Message Type
10	20	ST	R	Message Control ID
11	3	PT	R	Processing ID
12	8	ID	R	Version ID
13	15	NM	O	Sequence Number
14	180	ST	O	Continuation Pointer
15	2	ID	O	Accept Acknowledgment Type
16	2	ID	O	Application Acknowledgment Type
17	2	ID	O	Country Code
18	6	ID	O	Character Set
19	60	CE	O	Principal Language Of Message

HL7 Message Types – closer look.

- **Lets focus on the most common HL7 interfaces:**
 - **Admission, Discharge, and Transfer (ADT)**
 - Order Entry (ORM)
 - Ancillary Data Reporting (ORU)

HL7 Message Types – closer look

- **Admission, Discharge, and Transfer (ADT)**
 - **Send patient demographic, visit, insurance, and diagnosis information typically from Admissions (ADM)**
 - **Every HL7 message is generated based on an Event trigger.**
 - **Segments included in an ADT Message**
 - **The most common HL7 Interface is the ADT**

HL7 Message Types – closer look.

- Lets focus on the most common HL7 interfaces:
 - Admission, Discharge, and Transfer (ADT)
 - **Order Entry (ORM)**
 - Ancillary Data Reporting (ORU)

HL7 Message Types – closer look

- **Order Entry (ORM)**
 - **ORM are used to send:**
 - **Radiology Orders**
 - **Order Entry (OE) Orders**
 - **Laboratory Orders (MIC/BBK/PTH/LAB)**
 - **ORM events are triggered on NEW, CANCEL, EDIT, HOLD, REACTIVATE**
 - **Segments included in an [ORM Message](#)**

HL7 Message Types – closer look.

- **Lets focus on the most common HL7 interfaces:**
 - Admission, Discharge, and Transfer (ADT)
 - Order Entry (ORM)
 - **Ancillary Data Reporting (ORU)**

HL7 Message Types – closer look

- **Order Entry (ORU)**
 - **ORU are used to send:**
 - **Radiology Reports**
 - **Department Reports**
 - **Nursing Results**
 - **Laboratory Results (MIC/BBK/PTH/LAB)**
 - **ORU Events are triggered by NEW, CANCEL, or UPDATE.**
 - **Segments included in an [ORU Message](#)**

HL7 Messages – Look at common Segments

- We just look at HL7 ADT, ORM, and ORU. They have several common Segments which contain Patient Info

ADT

MSH	Message Header
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Demo
[{NK1}]	Next of Kin
PV1	Patient Visit
[PV2]	Patient Visit - Add Info.
[{DB1}]	Disability Information
[{OBX}]	Observation/Result
[{AL1}]	Allergy Information
[{DG1}]	Diagnosis Information
[DRG]	Diagnosis Related Group
[{PR1}	Procedures
[{ROL}]	Role
[{GT1}]	Guarantor
[{IN1}	Insurance

ORU

MSH	Message Header
[PID	Patient Identification
[PD1]	Additional Demographics
[{NK1}]	Next of Kin
[{NTE}]	Notes and Comments
[PV1	Patient Visit
[PV2]]	Patient Visit - Add Info
[ORC]	Order common
OBR	Observations Report ID
[{NTE}]	Notes and comments
[OBX]	Observation/Result
[{NTE}]	Notes and comments
[{CTI}]	Clinical Trial Identification
[PCC]	Continuation Pointer

ORM

MSH	Message Header
[{NTE}]	Notes and Comments
PID	Patient Identification
[PD1]	Additional Demographics
[{NTE}]	Notes and Comments
[PV1	Patient Visit
[PV2]]	Patient Visit- Additional Info
[{IN1	Insurance
[IN2]	Insurance Additional Info
[IN3]	Insurance Add'l Info - Cert.
[GT1]	Guarantor
[{AL1}]	Allergy Information
ORC	Common Order
[	Order Detail Segment ORC, etc

HL7 Messages – Look at common Segments

- We just look at HL7 ADT, ORM, and ORU. They have several common Segments with contain Patient Info
- **HL7 Messages that contain patient information MUST have at least a PID and PV1.**
- **PID contains general information about the patient, i.e., Medical Record #, Name, Account Number, DOB, Gender, Phone #, etc...**
- **PV1 contains general visit information about the patient, i.e., Location, Class, Consulting Doc, Referring Doc, etc...**



HL7 Basics – More Than Just Pipes

HL7 Segment – Closer look at PID

SEQ	LEN	DT	OPT	ELEMENT NAME
1	4	SI	O	Set ID - PID
2	20	CX	B	Patient ID
3	20	CX	R	Patient Identifier List
4	20	CX	B	Alternate Patient ID - PID
5	48	XPN	R	Patient Name
6	48	XPN	O	Mother's Maiden Name
7	26	TS	O	Date/Time of Birth
8	1	IS	O	Sex
9	48	XPN	O	Patient Alias
10	80	CE	O	Race
11	106	XAD	O	Patient Address
12	4	IS	B	County Code
13	40	XTN	O	Phone Number - Home
14	40	XTN	O	Phone Number - Business
15	60	CE	O	Primary Language
16	80	CE	O	Marital Status
17	80	CE	O	Religion
18	20	CX	O	Patient Account Number
19	16	ST	B	SSN Number - Patient
20	25	DLN	O	Driver's License Number - Patient
21	20	CX	O	Mother's Identifier
22	80	CE	O	Ethnic Group
23	60	ST	O	Birth Place
24	1	ID	O	Multiple Birth Indicator
25	2	NM	O	Birth Order
26	80	CE	O	Citizenship
27	60	CE	O	Veterans Military Status
28	80	CE	O	Nationality
29	26	TS	O	Patient Death Date and Time
30	1	ID	O	Patient Death Indicator

PID|||H00000076||TESTCHRISTIANSEN^JOHN^||19931212|M|||1400 CHARLES ST
 ^^LOVES PARK^IL^61111||885-2277|||S||D000000844|745-69-5847|||^



HL7 Basics – More Than Just Pipes

HL7 Segment – Closer look at PV1

SEQ	LEN	DT	OPT	ELEMENT NAME	SEQ	LEN	DT	OPT	ELEMENT NAME
1	4	SI	O	Set ID - PV1	26	12	NM	O	Contract Amount
2	1	IS	R	Patient Class	27	3	NM	O	Contract Period
3	80	PL	O	Assigned Patient Location	28	2	IS	O	Interest Code
4	2	IS	O	Admission Type	29	1	IS	O	Transfer to Bad Debt Code
5	20	CX	O	Preadmit Number	30	8	DT	O	Transfer to Bad Debt Date
6	80	PL	O	Prior Patient Location	31	10	IS	O	Bad Debt Agency Code
7	60	XCN	O	Attending Doctor	32	12	NM	O	Bad Debt Transfer Amount
8	60	XCN	O	Referring Doctor	33	12	NM	O	Bad Debt Recovery Amount
9	60	XCN	O	Consulting Doctor	34	1	IS	O	Delete Account Indicator
10	3	IS	O	Hospital Service	35	8	DT	O	Delete Account Date
11	80	PL	O	Temporary Location	36	3	IS	O	Discharge Disposition
12	2	IS	O	Preadmit Test Indicator	37	25	CM	O	Discharged to Location
13	2	IS	O	Re-admission Indicator	38	80	CE	O	Diet Type
14	3	IS	O	Admit Source	39	2	IS	O	Servicing Facility
15	2	IS	O	Ambulatory Status	40	1	IS	B	Bed Status
16	2	IS	O	VIP Indicator	41	2	IS	O	Account Status
17	60	XCN	O	Admitting Doctor	42	80	PL	O	Pending Location
18	2	IS	O	Patient Type	43	80	PL	O	Prior Temporary Location
19	20	CX	O	Visit Number	44	26	TS	O	Admit Date/Time
20	50	FC	O	Financial Class	45	26	TS	O	Discharge Date/Time
21	2	IS	O	Charge Price Indicator	46	12	NM	O	Current Patient Balance
22	2	IS	O	Courtesy Code	47	12	NM	O	Total Charges
23	2	IS	O	Credit Rating	48	12	NM	O	Total Adjustments
24	2	IS	O	Contract Code	49	12	NM	O	Total Payments
25	8	DT	O	Contract Effective Date					

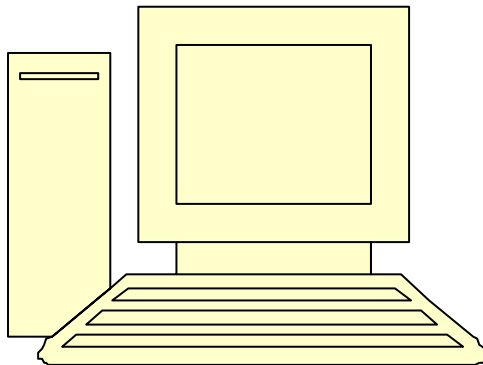
PV1|||CCU^CCU31^31|ELE||PED^300^B|DEM^DEMING,RICHARD E|^|^CCU|||AR 20
 OU||Y|DEM^DEMING,RICHARD E|IN||SP|||||||||||||||SWA||ADM IN|||200402181007|^

Data Exchange Standards

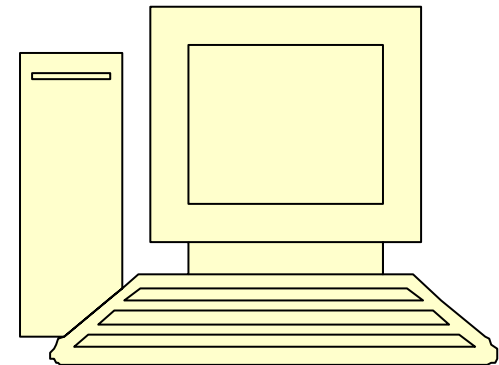
- **We've look at HL7 Message, Segments, and Fields. Now lets look at how you transmit them to another vendor.**
- **Lower Level Protocol (LLP) is a term used when discussing the transmission of the HL7 Messages.**
- **Lower Levels (layers 1 thru 4) support the actual transmission or movement of the data.**
- **The term Lower Level Protocol is referring to the portion of the ISO OSI (Open System Interconnect). The OSI is divided into seven layers or levels.**

Data Exchange Standards

- **HL7 Messages** are typically moved via a network connection between two systems that reside on the same network.
- Each system has a role in the communication. One acts as the **CLIENT** and the other acts as the **Server**. Typically the one sending the data is the **CLIENT**, but that does not have to be.



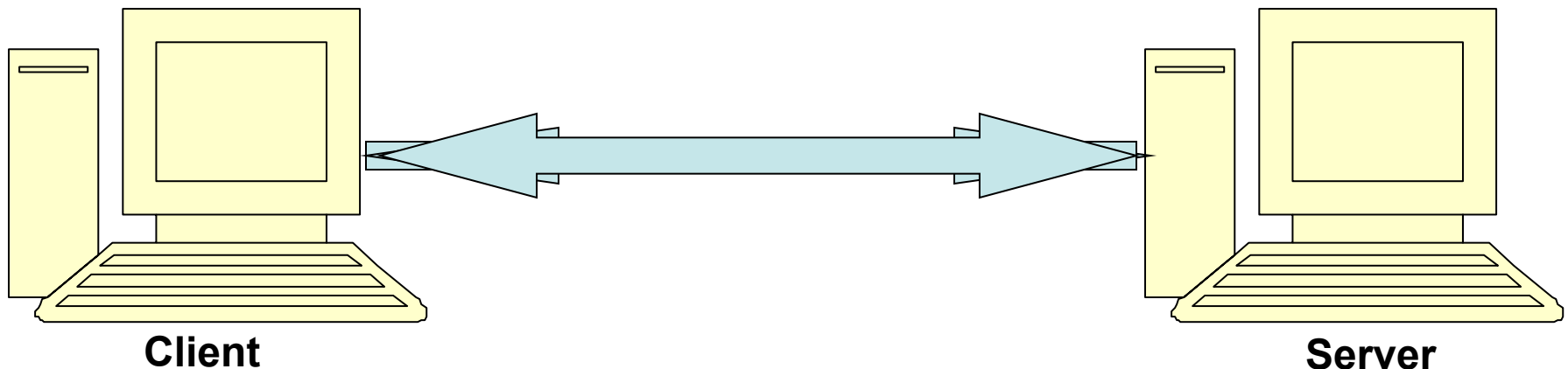
Client



Server

Data Exchange Standards

- The **CLIENT** will open a **TCP/IP Socket** with the **SERVER**.
- This connection will be exclusively used for these two systems to communicate.



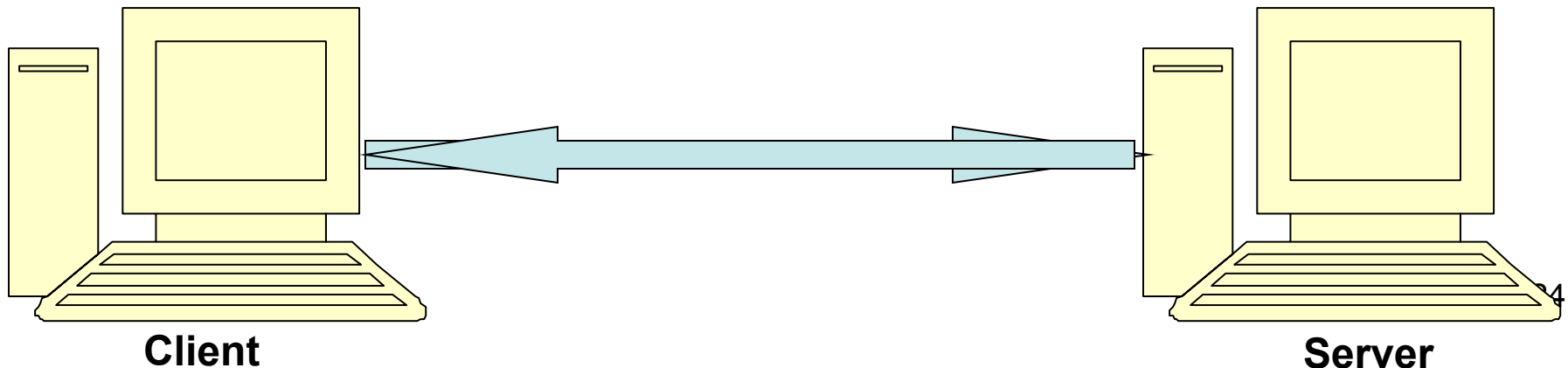
Data Exchange Standards

- Once the TCP/IP Connection is established the sending system can deliver an HL7:

```
MSH|^~\&||SEM|||200605221309||ADT^A04|ADT1.1.9198|P|2.1  
EVN|A04|200605221309  
PID|1||M00001327||TEST^RECURRING^^^^||19680215|F|^^^^^|^^^^^|L000029512|  
74  
DG1|1|TX||PROTIMES
```

- The receiving system will acknowledge the message using an ACK Message:

```
MSH|^~\&|||SWA|200605221309||ACK|ADT1.1.9200|P|2.1|||  
MSA|AA|ADT1.1.9198
```



Data Exchange Standards

- The acknowledgment of the delivery of a message is a significant feature that HL7 LLP provides.
- In the MSH of the sending message is a field called the Message Control ID (MCI).

```
MSH|^~\&||SEM|||200605221309||ADT^A04|ADT1.1.9198|P|2.1
EVN|A04|200605221309
PID|1||M000001327||TEST^RECURRING^^^^||19680215|F^^^^^|^^^^^|L000029512|
74
DG1|1|TX||PROTIMES
PV1|1|O|RCA^^|||HARR^HARNER^ROBERT|HARR^HARNER^ROBERT|RCR|U|||
MSH|^~\&|||SWA|200605221309||ACK|ADT1.1.9200|P|2.1|||
MSA|AA|ADT1.1.9198
```

- The acknowledgment contains the MCI of the HL7 message and confirms the message was received.

Data Exchange Standards

- Other methods can be used to deliver HL7 messages to the receiving system.
 - Send message via FTP
 - Download and copy to a shared folder
- HL7 also has a Batch Mode for transmitting messages. This method is used to transmit several HL7 messages at one time. Message structure:

```
[FHS]           (file header segment)
  { [BHS]       (batch header segment)
    { [MSH      (zero or more HL7 messages)
      .... .... ....] }
    [BTS] }     (batch trailer segment)
[FTS] (file trailer segment) Notes:
```

Using NPR to Create an HL7 Interface

- **Creating an NPR report in the format of an HL7 message is definitely a significant task but doable.**
- **The report can be scheduled to deliver the file to an FTP server.**
- **NPR report interfaces are more batch mode than real-time.**
- **Hospitals have created HL7 NPR Report Interfaces for almost all message types.**

Future of HL7 – Version 2.x vs. 3.x

- **Version 2.x has been approved by ANSI since the early 90' s and is used throughout the Healthcare industry almost exclusively.**
- **Version 3.x is a departure from the 2.x version in how the messages are formatted, but does offer some advantages for Web publishing and self documenting.**
- **Version 3.x is based on XML, which is a Web based language.**
- **Some movement in the market to transition to 3.x**

Future of HL7 – Version 2.x vs. 3.x

HL7 Version 2.3.1 – 87 characters

```
MSH|^~\&|LAB^foo^bar|767543|ADT|767543|19900314130405||ACK^|XX3657|P|2.3.1  
MSA|AA|ZZ9380
```

HL7 Version 3 – 477 characters

```
<ACK>  
<MSH>  
  <MSH.1>|</MSH.1>  
  <MSH.2>^~\&|</MSH.2>  
  <MSH.3>  
    <HD.1>LAB</HD.1>  
    <HD.2>foo</HD.2>  
    <HD.3>bar</HD.3>  
  </MSH.3>  
  <MSH.4>  
    <HD.1>767543</HD.1>  
  </MSH.4>  
  <MSH.5>  
    <HD.1>ADT</HD.1>  
  </MSH.5>  
  <MSH.6>  
    <HD.1>767543</HD.1>  
  </MSH.6>
```

Message Continued:

```
<MSH.7>19900314130405</MSH.7>  
<MSH.9>  
  <CM_MSG_TYPE.1>ACK</CM_MSG_TYPE.1>  
</MSH.9>  
<MSH.10>XX3657</MSH.10>  
<MSH.11><PT.1>P</PT.1></MSH.11>  
<MSH.12>  
  <VID.1>2.3.1</VID.1>  
</MSH.12>  
</MSH>  
<MSA>  
  <MSA.1>AA</MSA.1>  
  <MSA.2>ZZ9380</MSA.2>  
</MSA>  
</ACK>
```

Objective: Provide basic HL7 understanding with progressively more complex topic discussion of HL7 standards and structures.

That concludes my presentation.

My hope is that I've met your expectations.

If you have any questions please feel free to contact me at the number below.

Presenter:

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ASCII Table

Char	Dec	Char	Dec	Char	Dec	Char	Dec	Char	Dec	Char	Dec
(nul)	0	(syn)	22	,	44	B	66	X	88	n	110
(soh)	1	(etb)	23	-	45	C	67	Y	89	o	111
(stx)	2	(can)	24	.	46	D	68	Z	90	p	112
(etx)	3	(em)	25	/	47	E	69	[	91	q	113
(eot)	4	(sub)	26	0	48	F	70	\	92	r	114
(enq)	5	(esc)	27			G	71	]	93	s	115
(ack)	6	(fs)	28			H	72	^	94	t	116
(bel)	7	(gs)	29			I	73	_	95	u	117
(bs)	8	(rs)	30	4	52	J	74	`	96	v	118
(ht)	9	(us)	31	5	53	K	75	a	97	w	119
(nl)	10					L	76	b	98	x	120
(vt)	11					M	77	c	99	y	121
(np)	12					N	78	d	100	z	122
(cr)	13	#	35	9	57	O	79	e	101	{	123
(so)	14	\$	36	C	58	P	80	f	102	|	124
				;	59	Q	81	g	103	}	125
				<	60	R	82	h	104	~	126
				=	61	S	83	i	105	(del)	127
(dc1)	17					T	84	j	106		
(dc2)	18	(	40	>	62	U	85	k	107		
(dc3)	19	)	41	?	63	V	86	l	108		
(dc4)	20	*	42	@	64	W	87	m	109		
(nak)	21	+	43	A	65						

ASCII 28 is an HL7 Ending Message Character

ASCII 11 is an HL7 Beginning Message Character

ASCII 13 is an HL7 End Segment Character

HL7 Basics – More Than Just Pipes

HL7 ADT Event Codes

Event	Description	Event	Description	Event	Description
A01	Admit / visit notification	A21	Patient goes on "leave of absence"	A41	Merge - patient account number
A02	Transfer a patient	A22	Patient returns "leave of absence"	A42	Merge visit - visit number
A03	Discharge/end visit	A23	Delete a patient record	A43	Move patient information - internal ID
A04	Register a patient	A24	Link patient information	A44	Move account informationr
A05	Pre-admit a patient	A25	Cancel pending discharge	A45	Move visit information - visit number
A06	Change outpatient to an inpatient	A26	Cancel pending transfer	A46	Change external ID
A07	Change inpatient to an outpatient	A27	Cancel pending admit	A47	Change internal ID
A08	Update patient information	A28	Add person information	A48	Change alternate patient ID
A09	Patient departing - tracking	A29	Delete person information	A49	Change patient account number
A10	Patient arriving - tracking	A30	Merge person information	A50	Change visit number
A11	Cancel admit/visit notification	A31	Update person information	A51	Change alternate visit ID
A12	Cancel transfer	A32	Cancel patient arriving - tracking		
A13	Cancel discharge/end visit	A33	Cancel patient departing - tracking		
A14	Pending admit	A34	Merge - patient ID only		
A15	Pending transfer	A35	Merge - account number only		
A16	Pending discharge	A36	Merge - patient ID and account#		
A17	Swap patients	A37	Unlink patient information		
A18	Merge patient information	A38	Cancel pre-admit		
A19	QRY/ADR - Patient query	A39	Merge person - external ID		
A20	Bed status update	A40	Merge patient - internal ID		

MSH	Message Header
EVN	Event Type
PID	Patient Identification
[PD1]	Additional Demographics
[{NK1}]	Next of Kin /Associated Parties
PV1	Patient Visit
[PV2]	Patient Visit - Additional Info.
[{DB1}]	Disability Information
[{OBX}]	Observation/Result
[{AL1}]	Allergy Information
[{DG1}]	Diagnosis Information
[DRG]	Diagnosis Related Group
[{PR1	Procedures
[{ROL}]	Role
}]	
[{GT1}]	Guarantor
[
{IN1	Insurance
[IN2]	Insurance Additional Info.
[{IN3}]	Insurance Add'l Info - Cert.
]	
]	
[ACC]	Accident Information
[UB1]	Universal Bill Information
[UB2]	Universal Bill 92 Information

- **HL7 ADT Messages are made up of Required, Optional, and Repeating Segments**
- **Optional Segments are enclosed with [] brackets**
- **Repeating Segments are enclosed with { } brackets**
- **Some Segments are Optional Repeating [{ }]** – for example the Guarantor Segment

MSH	Message Header	
{		
[
PID	Patient Identification	
[PD1]	Additional Demographics	
{[NK1]}	Next of Kin/Associated Parties	• Optional fields are denoted by [] brackets
{[NTE]}	Notes and Comments	• Repeating fields are denoted by { } brackets
[PV1	Patient Visit	
[PV2]]	Patient Visit - Additional Info	
]		
{		
[ORC]	Order common	
OBR	Observations Report ID	
{[NTE]}	Notes and comments	
{		
[OBX]	Observation/Result	
{[NTE]}	Notes and comments	
}		
{[CTI]}	Clinical Trial Identification	
}		
}		
[DSC]	Continuation Pointer	

```

MSH      Message Header
[ { NTE } ] Notes and Comments (for Header)
[
  PID      Patient Identification
  [ PD1 ]  Additional Demographics
  [ { NTE } ] Notes and Comments (for Patient ID)
  [ PV1 ]  Patient Visit
  [ PV2 ]  Patient Visit- Additional Info
  [ { IN1 } ] Insurance
  [ IN2 ]  Insurance Additional Info
  [ IN3 ]  Insurance Add' l Info - Cert.
] ]
[ GT1 ]   Guarantor
[ { AL1 } ] Allergy Information
]
{
  ORC      Common Order
  [
    Order Detail Segment OBR, etc.
    [ { NTE } ] Notes and Comments (for Detail)
    [ { DG1 } ] Diagnosis
    [
      {
        OBX      Observation/Result
        [ { NTE } ] Notes and Comments (for Results)
      }
    ]
  ]
]
[ { CTI } ] Clinical Trial Identification
[ BLG ]    Billing Segment
}

```

- **Optional fields are denoted by [] brackets**
- **Repeating fields are denoted by { } brackets**

Here an abbreviated list of Data Types as an example:

Data Type Category/ Data type	Data Type Name	Notes/Format
Alphanumeric		
ST	String	
TX	Text data	
FT	Formatted text	
Numerical		
CQ	Composite quantity with units	<quantity (NM)> ^ <units (CE)>
MO	Money	<quantity (NM)> ^ <denomination (ID)>
NM	Numeric	
SI	Sequence ID	
SN	Structured numeric	<comparator (ST)> ^ <num1 (NM)> ^ <separator/suffix> ^ <num2 (NM)>
Identifier		
ID	Coded values for HL7 tables	
PL	Person location	<pointer (ST) > ^ < application ID (HD)> ^ <type of data (ID)> ^ <subtype (ID)>
PT	Processing type	<point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ < location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>
Date/Time		
DT	Date	YYYY[MM[DD]]
TM	Time	HH[MM[SS[.S[S[S[S]]]]][+/-ZZZZ]
TS	Time stamp	YYYY[MM[DD][HHMM[SS[.S[S[S[S]]]]]]][+/-ZZZZ] ^ <degree of precision>

HL7 Basics – More Than Just Pipes

HL7 Viewer

HL7 Editor - [Editor: 3]

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0 - MSH|^~\&||SWA||200705231023||ADT^A05|ADT1.1.2752|P|2.1
1 - EVN|A05|200705231023
2 - PID|1||M000000690||TEST^KATHY^~~~~|NANCY|19150502|F|SMITH^KATHY^~~~~|UNK|123 MOCKINGBIRD LN^^ROCKFORD^IL^61104|WIN|815 233-7888|815 987-5580||M||L000016154|345-68-7888
3 - DG|1|1|T^X||ISCR
4 - INK|1|1|TEST^BRUCE^~~~~|HUS|123 MOCKINGBIRD LN^^ROCKFORD^IL^61104|815 233-7888
5 - PV|1|1|PIBHC^~~~~|COPD^COPELAND^DANNY|COPD^COPELAND^DANNY|WHIMA^WHITMAN^MARC||AROU||CL||MED|||||||||SWA|PRE||20070727|1145
6 - GT|1|1|TEST^KATHY^~~~~|123 MOCKINGBIRD LN^^ROCKFORD^IL^61104|815 233-7888||SPI345-68-7888||CRO|425 E STATE ST^^ROCKFORD^IL^61104|815 987-5580
7 - IN|1|1|MCR-B||MEDICARE|P O BOX 1602^^OMAHA^NE^68101||402 351-2860||||||^SP|||||||||COVERAGE A B|345687888
8 - IN|1|2|ECOCRO||ECOH/MIDWEST/CITY OF RKFDIPO BOX 303^^ONALASKA^WI^54650-0303||815391-7005|34568||||||^SP|||||||||XOH45445615
  
```

Segment Value	Segment Sequence	Field Name	Value Length	Running Total Segment Length
PID	0		4	5
1	1	Set ID - PID	1	7
M000000690	2	Patient ID (External ID)	0	8
	3	Patient ID (Internal ID)	10	19
	4	Alternate Patient ID - PID	0	20
TEST^KATHY^~~~~	5	Patient Name	14	35
NANCY	6	Mother's Maiden Name	5	41
19150502	7	Date of Birth	8	50
F	8	Sex	1	52
SMITH^KATHY^~~~~	9	Patient Alias	15	68
UNK	10	Race	3	72
123 MOCKINGBIRD LN^^ROCKFORD^IL^61104	11	Patient Address	37	110
WIN	12	County Code	3	114
815 233-7888	13	Phone Number - Home	12	127
815 987-5580	14	Phone Number - Business	12	140
	15	Primary Language	0	141

Status

Please provide business card or contact Iatric System for a complementary copy of our HL7 viewer.