

NAACCR HL7 E-PATH TRANSMISSION STANDARDS

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NAACCR Annual Meeting, June 2005

Cambridge, Massachusetts

Overview

- NAACCR E-Path Transmission Work Group
- Importance of Data Transmission Standards
- How HL7 E-Path Messaging Works
- The NAACCR HL7 E-Path Standard
- The NAACCR Pipe Delimited E-Path Standard
- Work Group Progress
- Continuing Work Group Goals

NAACCR E-Path Transmission Work Group

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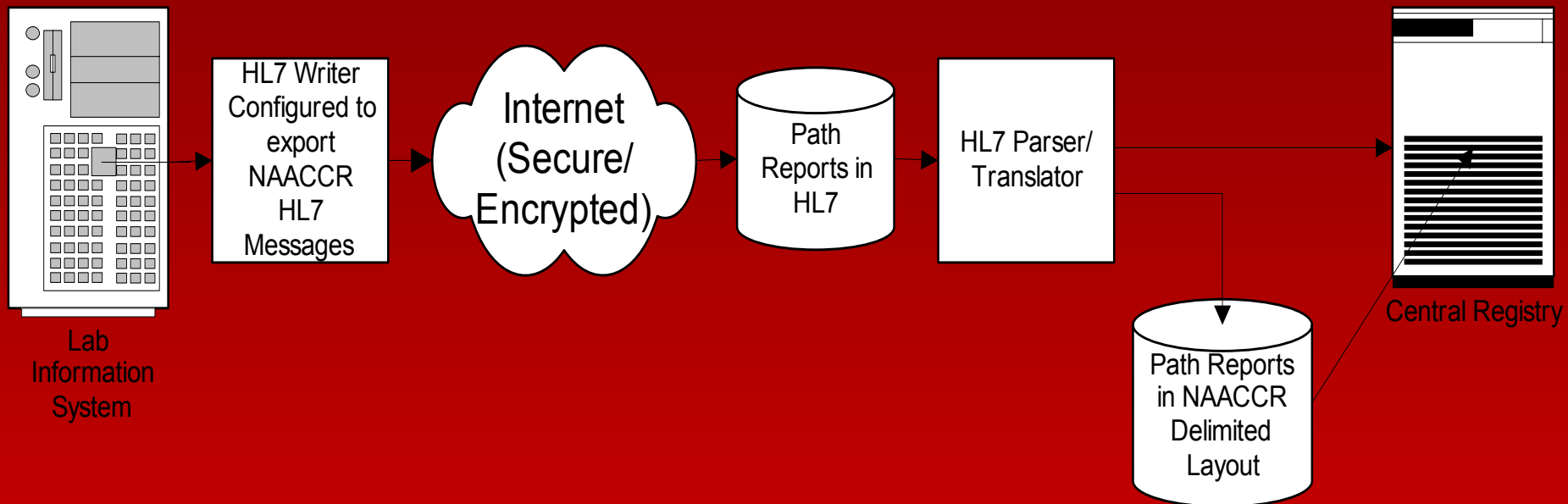
Dan Pollock, MD
CDC

Wendy Scharber, RHIT, CTR
Minnesota Cancer Surveillance System

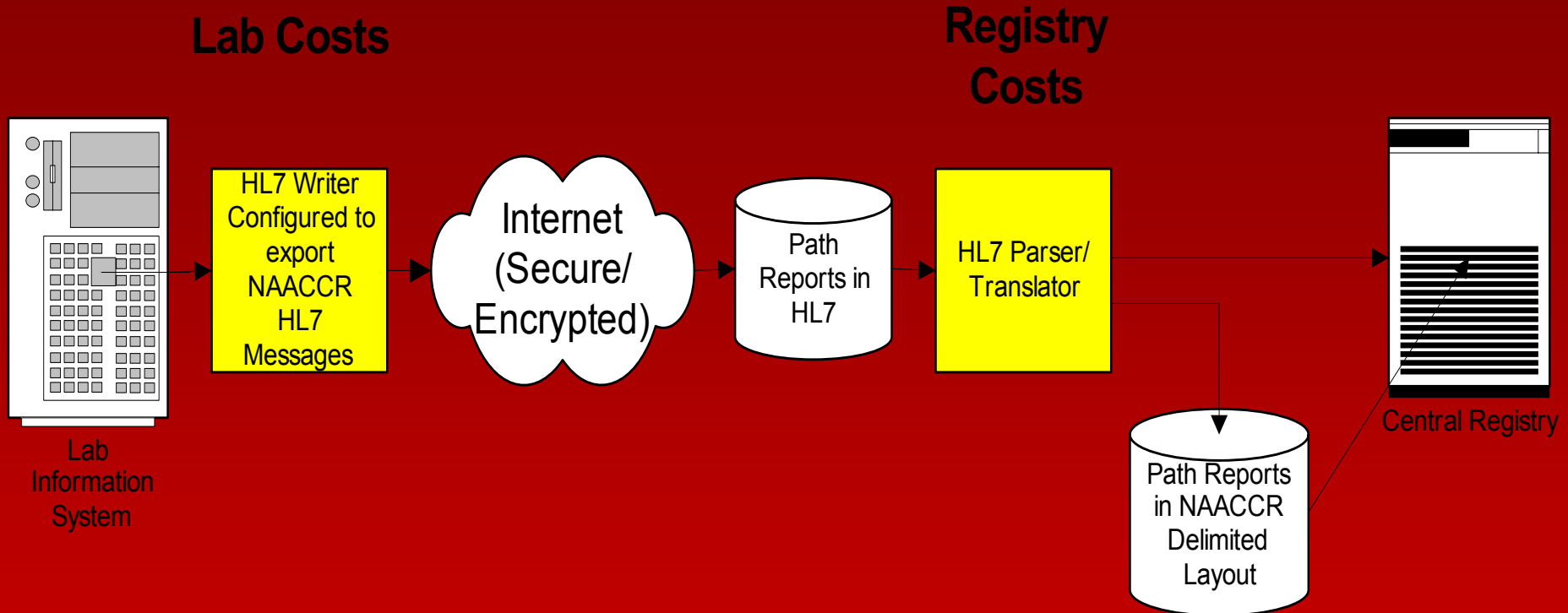
The Importance of E-Path Data Transmission Standards

- Demand for electronic pathology reporting is increasing at a dramatic pace
- Standards save time and money for pathology lab vendors and registries
- Standards improve data quality

An Example Data Flow of HL7 E-Path Messages



Primary Cost Factors for Establishing HL7 E-Path Messaging



Reducing Costs for Lab Vendors and Registries

- Lab Vendors: Write an HL7 interface once, use it to export to many registries
 - Does not necessarily mean that lab vendor won't try to recoup this one-time cost from many registries!!
- Registries: Write an HL7 interface once, use it to receive E-Path reports from many labs
 - Guess what? Minnesota may have already completed most of this work for you!!

How is the NAACCR E-Path HL7 Standard Defined?

- Implementation Guide for Transmission of Laboratory-Based Reports to Cancer Registries using Version 2.3.1 of the HL7 Standard Protocol
 - A well defined coding manual for translating electronic laboratory pathology reports to and from a format suitable for automated electronic transmissions between path labs and registries

What is in the HL7 Implementation Guide?

- Introduction
- HL7 Concepts
- Segment Definitions
- HL7 Batch Protocol
- Appendices
 - Data types
 - Example Path Report HL7 Message
 - Code Tables
 - Summary Table (HL7 segments, NAACCR data items)

Rules of Engagement for Constructing the HL7 Standard

1. Adhere to the HL7 Standards

- HL7 organization has already defined basic rules for HL7 messaging
- Offers a lot of flexibility
- <http://www.hl7.org>

2. Use HL7 standards to tightly specify rules for E-Path messaging

Harmonization Registration

July 12-15, 2005

The 6th HL7 Int'l Affiliates Meeting

July 21~23, 2005

GIS Convention Center, Taipei, Taiwan

[Click Here to Register](#)**Health Level Seven**

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Recent HL7 News

- [FDA Honors HL7/PhRMA SPL Working Group with Commissioner's Special Citation Award](#)
- [Health Level Seven Supports EHR Interoperability Collaboration Process to Promote Industry-Proven Options](#)
- [Health Level Seven Receives ANSI Approval for Arden Syntax, Version 2.5](#)
- [Health Level Seven Receives ANSI Approval of Common Terminology Services, Version 1](#)
- [HL7 Receives ANSI Approval of Three Version 3 Specifications Including CDA, Release 2](#)
- [HL7 Structured Documents Technical Committee Opens Balloting for CDA, Release 2.0 Implementation Guide for Core Record](#)

NEW HL7 Polo Shirts

New HL7 Long Sleeve Blue Polo Shirts. [Click the shirt](#)

BENEFACTORS

The NAACCR HL7 E-Path Message Type

- Lab result information is reported through Observational Results (Unsolicited) (ORU)/Event R01 messages
- ORU^R01 messages are composed of specifically defined HL7 segments

HL7 Message Definitions

- Messages are composed of segments
- Segments are made up of components (and sub-components, i.e. address: street, city, zip)
- A fixed number of components are defined for each segment
 - MSH (20), PID (30), OBX (17)
- Each component is separated by the delimiter character |
- Components may be Required, Required when Available, Optional, Conditional, Not Used
- Segments begin with the type identifier (MSH, PID, OBX, etc.)
- Segments are terminated by carriage returns

Structure of the HL7 E-Path Message

<u>ORU^R01</u>	<u>Observational Results (Unsolicited)</u>	<u>Chapter</u>
MSH	Message Header segment	3
PID	Patient Identification segment	3
[{{NK1}}	Next-Of-Kin segment	3
[PV1]	Patient Visit segment	3
{		
[ORC]	Order common segment	3
OBR	Observations Report ID segment	3
{{NTE}}	Notes and comments segment	3
{		
[OBX]	Observation/Result segment	3
{ [NTE] }	Notes and comments segment	3
}		
}		

HL7 E-Path Message Segments

- Message Header (MSH) Segment
 - Message Control/Routing Information
 - Sending facility
 - Date and time of transmission
- Patient Identification (PID) Segment
 - Patient Identification and Demographics
 - Patient name
 - SSN
 - Gender
 - Birth Date
- Next of Kin/Associated Parties (NK1) Segment (Optional)
 - Next of kin
 - Contact information

HL7 E-Path Message Segments (cont.)

- Patient Visit (PV1) Segment
 - Provider information
 - Attending physician
 - Referring physician
- Common Order (ORC) Segment
 - Pathology order information
 - Ordering facility
 - Ordering facility address
 - Ordering facility AHA number
- Observation Request (OBR) Segment
 - Information specific to the pathology request/order
 - Type of report (i.e. final diagnosis, correction,...)
 - Date and time specimen received
 - Pathologist interpreting the observation

HL7 E-Path Message Segments (cont.)

- Observation/Result (OBX) Segment
 - Specific observation identifier
 - Path-Final Diagnosis
 - Path-Gross Pathology
 - Path-SNOMED CT Code(s)
 - Specific observation
 - Text of the Path-Final Diagnosis

HL7 E-Path Message Segments (cont.)

- Notes and Comments (NTE) Segment (Optional)
- Batch Segments
 - File Header (FHS) Segment
 - File Trailer (FTS) Segment
 - Batch Header (BHS) Segment
 - Batch Trailer (BTS) Segment

Report Identification		Patient Information			
Institution:	3932	Chart/MRN:	00466144	Address	112 Broad Street
Pathology ID:	97 810430	SSN/SIN:			Apartment 10
Report Date:	2003-11-24	Surname:	SAMPLE30	City/Town:	ATLANTA
Report Type:	Correction	Given Name:	ALLEN	State/Prov:	GA
Requester ID:		Sex:	M	Zip/Post Code:	30301
Requester:		Date of Birth:	1953-06-21	Country:	
Procedure Date:	2003-09-22	Age:	47 (at procedure date)		
Surgeon ID:	163741	Insurer:	USHC		
Surgeon:	CHARLES, HANNAH	Insurance No:	3270686987		
Pathologist ID:	109771	Race:			
Pathologist:	MARTIN, QUINCY	Ethnicity:			

DIAGNOSIS	LEFT INGUINAL LYMPH NODE - GRANULOMATOUS LYMPHADENITIS	
	jlM	
Clinical History	47-year old white female with (L) UOQ breast mass	
Tissue Submitted	Left inguinal node	
Gross Pathology:	The specimen is received fresh labeled lymph node. The specimen consists of two nodes 2.3 and 2.2. cm each. The cut surface is bulky tan to pink in colour and fleshy.	
	MQ/jlM	

Microscopic	Sections of left inguinal lymph node demonstrated an encapsulated node which is largely replaced by epithelioid granulomate without necrosis. Special stains do not reveal the presence of organisms. The background lymphocytes are both B and T lymphocytes and include macrophages and occasional neutrophils and plasma cells. Reed-Sternberg cells are not demonstrated.	
Supplements/Addenda	Material was requested by Dr. D. Bannerly, Saint Joseph's Hospital for review.	
	A report from Dr. Patterson was received.	
	DIAGNOSIS: Consistent with peripheral T-cell lymphoma with epithelioid histocytes (Lennert's lymphoma), see description and comment - lymph node, left inguinal (biopsy from November 24, 2003)	
	(See attached report).	
	/hmb	
	Tissue was submitted for lymph node protocol. A report from Dr. H. Perez, Chandler Health Science Center was received. DIAGNOSIS: (See attached report).	
	LYMPH NODE; INGUINAL REGION, BIOPSY: NON-NECROTIZING GRANULOMATOUS LYMPHADENITIS.	
	/hmb	
HITECK PATHOLOGY LABORATORY		
ATLANTA, GA 30303		
HTECK LABORATORY SYSTEMS, INC.		

Corresponding HL7 Message

```
MSH|^~\&|HLS|HITECK PATH LAB-ATLANTA^3D9328409^CLIA||STJ|20031124122230||ORU^R01|200311241222300023|P|2.3.1 <CR>
PID|1||97 810430^^^^PI^HITECK PATH LAB-ATLANTA &3D9328409&CLIA~00466144^^^^PT^ST JOSEPH'S&3932&CMA~3270686987^^^^PN^US
HEALTHCARE||SAMPLE30^ALLAN||19530621|M|||112 BROAD STREET^APT 10^ATLANTA^GA^30301^ <CR>
PV1|1|||||ATTENDINGID^ATTENDINGDR^MANAGING|REFERRINGID^REFERRER^FOLLOWUP^^^^DR| <CR>
ORC|RE|||||||||||||ATLANTA CANCER SPECIALISTS|STREET ADDRESS 1^SUITE #^ATLANTA^GA^30303<CR>
OBR|1||97810430|11529-5^SURGICAL PATH REPORT^LN^^PATHOLOGY
REPORT^L|||20030922||EMLOYEEID^PHLEBOTOMIST^PAMELA|||||164341^SURGEON^HANNAH^^^DR|||||||E|||||||109772&PATHOLOGIST&QUINCY
<CR>
OBX|1|TX|22637-3^FINAL DIAGNOSIS^LN^^DIAGNOSIS^L|1|LEFT INGUINAL LYMPH NODE - GRANULOMATOUS LYMPHADENITIS|||||F<CR>
OBX|2|TX|22637-3^FINAL DIAGNOSIS^LN^^DIAGNOSIS^L|1|/jm <CR>
OBX|3|TX|^^^^Clinical History^L|2|? lymphoma Quick Section|||||F<CR>
OBX|4|TX|22633-2^Nature of Specimen^NS^^Tissue Submitted^L|3|Left inguinal node|||||F<CR>
OBX|5|TX|22634-0^Gross Pathology^LN^^Gross Pathology^L|4|The specimen is received fresh labelled lymph node. The specimen consists of two nodes 2.3
and 2.2. cm each. The cut surface is bulky tan to pink in colour and fleshy.|||||F<CR>
OBX|6|TX|22634-0^Gross Pathology^LN^^Gross Pathology^L|4|QP/jm|||||F<CR>
OBX|7|TX|11529-5^SURGICAL PATH^LN^^Microscopic^L|5|Sections of left inguinal lymph node demonstrated an encapsulated node which is largely replaced
by epithelioid granulomata without necrosis. Special stains do not reveal the presence of organisms. The background lymphocytes are both B and T
lymphocytes and include macrophages and occasional neutrophils and plasma cells. Reed-Sternberg cells are not demonstrated.|||||F<CR>
OBX|8|TX|22639-9^Supplemental Reports/Addendum^LN^^Supplements/Addenda^L|6| Material was requested by Dr. D. Consult, Saint Joseph's Hospital for
review. |||||C<CR>
OBX|9|TX|22639-9^Supplemental Reports/Addendum^LN^^Supplements/Addenda^L|6|A report from Dr. C. Darwin was received.|||||C<CR>
OBX|10|TX|22639-9^Supplemental Reports/Addendum^LN^^Supplements/Addenda^L|6|DIAGNOSIS: Consistent with peripheral T-cell lymphoma with
epithelioid histocytes (Lennert's lymphoma), see description and comment - lymph node, left inguinal (biopsy from November 24, 1997). (See attached report).
/HMB|||||C<CR>
OBX|11|TX|22639-9^Supplemental Reports/Addendum^LN^^Supplements/Addenda^L|6|Tissue was submitted for lymph node protocol. A report from Dr. B.
Study, Sunnybrook Health Science Center was received.|||||C<CR>
OBX|12|TX|^^^^Supplements/Addenda^L|7|DIAGNOSIS: (See attached report). LYMPH NODE; INGUINAL REGION, BIOPSY. NON-NECROTIZING
GRANULOMATOUS LYMPHADENITIS. /hmb|||||C<CR>
OBX|13|SN|21612-7^Reported PatientAge^LN^^Pat_age^L|1|^050|Y|||||F<CR>
```

OBX Segments

```
OBX|1|TX|22637-3^FINAL DIAGNOSIS^LN^^DIAGNOSIS^L|1|LEFT INGUINAL LYMPH NODE - GRANULOMATOUS  
LYMPHADENITIS|||||F<CR>  
OBX|2|TX|22637-3^FINAL DIAGNOSIS^LN^^DIAGNOSIS^L|1|/ljm <CR>  
OBX|3|TX|^^^^Clinical History^L|2|? lymphoma Quick Section|||||F<CR>  
OBX|4|TX|22633-2^Nature of Specimen^NS^^Tissue Submitted^L|3|Left inguinal node|||||F<CR>  
OBX|5|TX|22634-0^Gross Pathology^LN^^Gross Pathology^L|4|The specimen is received fresh labelled lymph node. The specimen consists  
of two nodes 2.3 and 2.2. cm each. The cut surface is bulky tan to pink in colour and fleshy.|||||F<CR>
```

- OBX-3 specifies the observation identifier
 - LOINC codes may be used in OBX-3 to code the type of observation
 - LOINC serves as a universal name and numeric identifier for identifying lab results
 - Path-Final Diagnosis = NAACCR #7450 = LOINC 22637-3
- OBX-5 specifies the observation result

Work Group Progress Since NAACCR 2004



Work Group Progress

- June-December 2004
 - Draft HL7 Implementation Guide
 - Synchronization with Minnesota HL7 Specifications
 - Component requirement status
- January-June 2005
 - Delimited E-Path Layout
 - Reviewed and updated each delimited field
 - Added new fields for compatibility with HL7 standard (65 → 79 fields)
 - Improvements to the Draft HL7 Guide
 - Ready to release Draft Version 1.1

NAACCR E-Path Pipe-Delimited Layout

- Pipe delimited
- Specifically defined variable length fields
- NAACCR HL7 E-Path messages can be mapped/translated to the delimited layout
- Can be used as an alternative to HL7 E-Path messages
 - Florida has been using the delimited layout for several years

Example Field Definition from Pipe Delimited Data Dictionary

PATH--FINAL DIAGNOSIS

HL7 Element Name and Number	NAA CCR Item #	Maximum Length	Source of Standard	Field Position #
OBX-5 Observation Value (Path Final Diagnosis) #00573	7450	5000	HL7	59

Description:

Summarizes the microscopic findings for each specimen examined. Confirms or denies gross findings of malignancy, given the histologic type of the cancer and, in some instances, the grade (required field—part of the minimum dataset).

Allowable Values and Format:

Alphanumeric plus spaces, or all blank. No returns or line feeds are allowed within the text. Do not pad with blank spaces to maximum length. Embedded delimiters '|' should be escaped with a backslash '\ ' (e.g., "one|two|three" → "one\two\three").

Short Term Goals Thru 2005

- Finalize Draft Implementation Guide
 - Subcomponent requirement status
- Incorporate HL7 Implementation Guide and Delimited Layout into NAACCR Standards Volume V
- Full ratification and publication by NAACCR
 - E-Path Committee
 - IT Committee
 - NAACCR Board

Long Term Goals

- Provide support for tissue banking in HL7 message
- Develop conformance testing tools for lab vendors and registries
- Provide support for synoptic pathology reporting in HL7 message

Resources Available for Registries Wishing Develop HL7 Capabilities

- Minnesota HL7 Parser/Translator
 - Developed to parse NAACCR HL7 messages into the delimited layout
 - Written in Java (portable to many platforms)
 - May require modifications to be compatible with the most current NAACCR E-Path standards

The End

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