Hospital Electronic Syndromic Surveillance (HESS) HL7 Implementation Guide

Document Release 1.3

6/5/2015

Missouri Department of Health and Senior Services

Table of Contents

This implementation guide contains descriptions of HL7 Messages to be sent from hospitals and urgent care facilities for inpatient admissions, emergency department visits and urgent care facility visits. These messages are sent to Missouri Department of Health and Senior Services for syndromic surveillance purposes.

Missouri Department of Health and Senior Services

Revision History

Ver/Rel #	Issue Date	Author	Summary of Changes
Draft V1.0	April 18, 2011		Initial Draft.
V1.1	December 31, 2011		Updates from release final PHIN GUIDE
V1.2	September 14, 2012		Updates for more clarification.
V1.3	June 5, 2015		Updates for more clarification. Removal of HL7 Standard Specifications for HESS Version 2.3.1.
R1.0			
R1.0.1			
R1.0.2			
R1.0.3			

1 Introduction

The term “syndromic surveillance” applies to the use of data from health-seeking behavior that precedes a final diagnosis by a physician such as emergency department (ED) chief complaints, over-the-counter drug sales, and school or work absenteeism. Missouri Department of Health and Senior Services (DHSS), currently receives data from Missouri hospitals under the Hospital Electronic Syndromic Surveillance (HESS) Reporting Rule (19 CSR 10-33.040) specifically for syndromic surveillance. HESS data is processed using the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE), which is web-based software specifically designed for syndromic surveillance.

Syndromic Surveillance will use Chief Complaint information from HL7 Admit-Discharge-Transfer (ADT) messages to provide an early warning system of public health emergencies and for general public health surveillance and analysis. Chief Complaint is the initial complaint provided within the first moments of the admission and does not represent a final diagnosis. The data collection portion of this system is called the Hospital Electronic Syndromic Surveillance (HESS) System. Only the following message types will be accepted:

ADT^A01	Inpatient Admission
ADT^A03	Discharge / End Visit
ADT^A04	Emergency Department Registration
ADT^A08	Updates to information on previously sent A01 and A04 messages.

This Implementation Guide provides the HESS HL7 specifications required for submission of HESS data to DHSS.

1.1 How to Use this Guide

There are currently two versions of HESS HL7 standard specifications in use at DHSS. This Implementation Guide only includes HESS Version 2.5.1.

The following table provides recommendations as to which standard a hospital should use when reporting Syndromic Surveillance data to DHSS.

HESS HL7 Standard	Use Recommendations
HESS Version 2.5.1	• New hospitals who do not currently report Syndromic Surveillance data to DHSS. • Hospitals who report under the current reporting rule but are preparing to upgrade their interfaces should upgrade to HESS Version 2.5.1.

This Implementation Guide is based on the standard https://www.cdc.gov/nssp/documents/guides/syndrsurvmessagguide2_messagingguide_phn.pdf with further constraints specifically for syndromic surveillance requirements. For more information on HL7, go to http://www.hl7.org/.

1.2 Audience

This HESS Implementation Guide for Syndromic Surveillance contains the necessary specifications for data exchange from healthcare to DHSS. This guide is designed for healthcare and public health information systems, data exchange, database management staff, and DHSS public health data analysts and developers who require guidance on Syndromic Surveillance data elements and messaging specifications.

Users of this guide must be familiar with the details of HL7 message construction and processing. This guide is NOT intended to be a tutorial on HL7. For more information about HL7 messaging, go to.http://www.hl7.org/.

1.3Transport Method

Approved facilities will have two options for transmitting HL7 messages to DHSS: HTTPS SOAP or HTTPS POST messages. To help make data transmissions secure, messages will be sent via the HTTPS protocol. Each real-time HL7 message must include a valid username, password, and facility identifier to authenticate a facility's right to access the State data network.

Single Messages: Facilities who submit messages (ADT) one at a time will transmit those using SOAP or POST protocols via HTTPS. DHSS will generate a General Acknowledgement message (ACK) for each message (ADT) indicating that the message was received.

Note: *This message (ACK) does not represent or imply that the message was successfully applied to the applicable State database, only that the message was received.*

Batched Messages: Facilities who transmit messages (ADT) as a batch with intent to process will do so using secured file transfer protocol (SFTP). These messages will be placed in a secured file transfer protocol directory (SFTP). Batched messages (ADTs) must be accompanied by the appropriate batch header and footer segments. Messages (ACKs) are NOT generated by this process.

For more information, reference Appendix B, Message Transmission.

2 General HESS Message Infrastructure

2.1 Basic HL7 Terms

Table 2.1	Basic HL7 Terms
Term	**Definition**
Message	A message is the entire unit of data transferred between systems in a single transmission. It is a series of segments in a defined sequence, with a message type and a trigger event.
Segment	A segment is a logical grouping of data fields. Segments within a defined message may be required or optional and may occur only once or may be allowed to repeat. Each segment is named and identified by a segment ID, a unique 3-character code.
Field	A field is a string of characters. Each field has an element name and is identified by the segment it is in and its sequence within the segment. Usage and cardinality requirements are defined in the Segment Definitions.
Component	A component is one of a logical grouping of items that comprise the contents of a coded or composite field. Within a field having several components, not all components are necessarily required to be populated.
Data Type	A data type restricts the contents and format of the data field. Data types are given a 2- or 3- letter code. Some data types are coded or composite types with several components. The applicable HL7 data type is listed in each field definition.
Delimiters	The delimiter values are given in MSH-1 and MSH-2 and are used throughout the message. The delimiters supported by HESS are: | Field Separator ^ Component Separator & Sub-Component Separator ~ Repetition Separator \ Escape Character

2.2 Data Types for HESS Implementation Guide

The following Data Types have been used in the HESS HL7 Implementation Guide.

Table 2.2	Data Types used in HESS Implementation Guide
Data type	**Data Type Name**
CE	Coded Element
CWE	Coded with Exceptions
CX	Extended Composite ID with check Digit
DTM	Date/Time
EI	Entity Identifier
FN	Family Name
HD	Hierarchic Designator
ID	Coded Value for HL7-defined tables
IS	Coded Value for user-defined tables
MSG	Message Type
NM	Numeric
PL	Person Location
PT	Processing Type
SI	Sequence Identifier
ST	String Data
TS	Timestamp
TX	Text Data
VID	Version Identifier
XAD	Extended Address
XCN	Extended Composite ID Number and Name for Persons
XPN	Extended Person Name

2.3 Encoding Rules

The following list details the encoding rules.

- Encode each segment in the order specified in the Message Structure.
- Begin each segment with the 3-letter segment ID (e.g., PID).
- End each segment with the carriage return terminator (hex 0D). Note that in the examples in this guide, this character is illustrated as "<cr>". This character is a single ASCII character; the segment terminator is NOT the four-character sequence.
- Encode the data fields in the sequence given in the corresponding segment definition tables.
- Encode each data field according to the data type format listed in this guide. Components, subcomponents, or repetitions that are not valued at the end of a field need not be represented by component separators. Likewise, field separators are not required for empty fields at the end of a segment. For example, the data fields and segments below are equivalent:

  |^XXX&YYY&&^| is equal to |^XXX&YYY|

  |ABC^DEF^^| is equal to |ABC^DEF|

  and

MSH|^~\&||Facillity_NPI^0131191934^NPI|||201009221330||
ADT^A04^ADT_A011|P|2.3.1|||||||<cr>

MSH|^~\&||Facillity_NPI^0131191934^NPI|||201009221330||
ADT^A04^ADT_A01|1|P|2.5.1|||||||<cr>

is equal to

MSH|^~\&||Facility_NPI^0131191934^NPI|||201009221330||
ADT^A04^ADT_A01|1|P|2.3.1<cr>

MSH|^~\&||Facility_NPI^0131191934^NPI|||201009221330||
ADT^A04^ADT_A01|1|P|2.5.1<cr>

If a data segment is not documented in this guide, the Sender should not send the segment.

2.4 HESS Message Structure Attributes

The structure of the supported messages in this guide are described in tabular format (refer to the following section). The columns of those tables are used as described in the table below.

Table 2.4	**HESS Message Structure Attributes**	
Attribute	**Definition**	
Segment	A three-character code for the segment plus the square and curly braces structure syntax. If a segment is not documented in this guide, it should not be sent.	
	[XXX]	Optional
	{XXX}	Repeating
	XXX	Required
	[{XXX}]	Optional and Repeating
Name	Name of the segment.	
Description	Explanation of the use of the segment.	
Usage	Describes the use of the segment by HESS. Values used in this implementation are:	
	R	Required. Segment must be sent with fields populated according to the segment definition. Must always be populated.
	RE	Required, but may be empty (segment is not sent). If the Sender has data, it must be sent. The Receiver must be capable of processing data if sent and must not raise an error or warning if the data is not sent.
	O	Optional. There is no specified conformance rules for either Sender or Receiver for this segment in this guide. As an implemented interface must follow known rules for populating segments, a specific interface for a particular Sender or Receiver must constrain this usage to either “R, RE, C, CE, or X”. This has been deliberately left unconstrained in this guide to support differing and sometimes mutually exclusive statutory requirements in different jurisdictions; this must be determined locally.
Cardinality	Defines the minimum and maximum number of times the segment may appear in this message.	
	[0..1]	Segment may be omitted and can have, at most, one occurrence.
	[1..1]	Segment must have exactly one occurrence.
	[0..*]	Segment may be omitted or may repeat an unlimited number of times.
	[1..*]	Segment must appear at least once, and may repeat unlimitednumber of times.

2.5 Constrained Message Types

The following HL7 ADT Messages have been identified for Syndromic Surveillance reporting:

- ADT^A01 Admit / Visit Notification
- ACK^A01 General Acknowledgement
- ADT^A03 Discharge / End Visit
- ACK^A03 General Acknowledgement
- ADT^A04 Register a Patient
- ACK^A04 General Acknowledgement
- ADT^A08 Update Patient Information
- ACK^A08 General Acknowledgement

Message types that are NOT documented in this guide are considered NOT SUPPORTED.

2.5.1 HESS Constrained Message Structure ADT_A01, A04, A08

The following table shows the order in which the ADT^A01, ADT^A04 and ADT^A08 messages are structured.

Table 2.5.1	**HESS Simple Message Structure: A01, A04, and A08**			
Segment	**Name**	**Description**	**Usage**	**Cardinality**
MSH	Message Header	Information explaining how to parse and process the message. This includes identification of message delimiters, sender, receiver, message type, timestamp, etc.	R	[1..1]
EVN	Event Type	Trigger event information for receiving application.	R	[1..1]
PID	Patient Identification	Patient identifying and demographic information.	R	[1..1]
PV1	Patient Visit	Information related to this visit at this hospital including the nature of the visit, critical timing information, and a unique visit identifier.	R	[1..1]
[PV2]	Patient Visit Additional Information	Admit Reason Information.	RE	[0..1]
{OBX}	Observation / Result	Information regarding the chief complaint, patient age, temperature, and other information relevant to the observation of the patient.	R	[1..*]
[{DG1}]	Diagnosis	Admitting Diagnosis and, optionally, Working and Final Diagnosis information. DG1 is RE if a PV2 segment is sent. If no PV2 segment is sent, one or more DG1 segments are required.	RE	[0..*]
[{PR1}]	Procedures	Information relative to various types of procedures performed.	O	[0..*]
[{IN1}]	Insurance	Information about insurance policy coverage.	O	[0..*]

2.5.2 Constrained Message Structure ADT_A03

Table 2.5.2	HESS Simple Message Structure: A03			
Segment	**Name**	**Description**	**Usage**	**Cardinality**
MSH	Message Header	Information explaining how to parse and process the message. This includes identification of message delimiters, sender, receiver, message type, timestamp, etc.	R	[1..1]
EVN	Event Type	Trigger event information for receiving application.	R	[1..1]
PID	Patient Identification	Patient identifying and demographic information.	R	[1..1]
PV1	Patient Visit	Information related to this visit at this hospital including the nature of the visit, critical timing information, and a unique visit identifier.	R	[1..1]
[PV2]	Patient Visit Additional Information	Admit Reason information.	RE	[0..1]
[{DG1}]	Diagnosis	Admitting Diagnosis and, optionally, Working and Final Diagnosis information. DG1 is RE if a PV2 segment is sent. If no PV2 segment is sent, one or more DG1 segments are required.	RE	[0..*]
[{PR1}]	Procedures	Information relative to various types of procedures performed.	O	[0..*]
{OBX}	Observation / Result	Information regarding the chief complaint, patient age, temperature, and other information relevant to the observation of the patient.	R	1..*]
[{IN1}]	Insurance	Information about insurance policy coverage.	O	[0..*]

2.5.3 Constrained Message Structure ACK

Note: *The same Message Structure is used for the ACK^A01, ACK^A03, ACK^A04, and ACK^A08. See Appendix C for more information on the Message Header Segment for the ACK.*

Table 2.5.3	HESS Simple Message Structure: ACK			
Segment	**Name**	**Description**	**Usage**	**Cardinality**
MSH	Message Header	Information explaining how to parse and process the message. This includes identification of message delimiters, sender, receiver, message type, timestamp, etc.	R	[1..1]
MSA	Message Acknowledgement	Acknowledgement information identifying the ability of a receiver to accept a message transmitted.	R	[1..1]

3 Data Elements of Interest for Syndromic Surveillance

In September 2010, the CDC supported the International Society for Disease Surveillance (ISDS) to recommend EHR requirements for Syndromic Surveillance business practices. As part of this effort the ISDS made final recommendations on the minimum data set required for reporting Syndromic Surveillance to public health.

For the purposes of this HESS guide relevant details from the required minimum data set have been added as notes in the "Values/Value Set" column in this guide for each component where applicable.

For more information on the ISDS Final Recommendation please review Section 4, of. http://www.cdc.gov/phin/library/guides/SyndrSurvMessagGuide2_MessagingGuide_PHN.pdf This guide will provide current and future information on the required Minimum Data as recommended by the ISDS.

4 HESS Segment Attributes and Definitions

4.1 HESS Segment Attributes

Table 4.1	**Segment Attributes**
Attribute	**Definition**
Field Name	Descriptive name of the data element.
Sequence (Seq)	Sequence of the elements as they are numbered in the HL7 segment.
Data Type (DT)	A data type restricts the content and format of the data field. Data types are given a 2- or 3- letter code. Some data types are coded or composite types with several components. The applicable HL7 data type is listed in each field definition.
Length (Len)	Maximum length of the field.
Sender Usage Receiver Usage	This indicates whether a data element is required, optional, or conditional in a message, set separately for Senders and Receivers. Legal values are: R Required. Must always be populated by the Sender, and if not present the Receiver may reject the message. RE Required, but may be empty (no value). If the Sender has data, the data must be sent. The Receiver must be capable of processing data if sent, and must not raise an error or warning if the data is not sent. O Optional. There are no specified conformance rules for either Sender or Receiver for this field in this guide. As an implemented interface must follow known rules for populated fields and components, a specific interface for a particular Sender or Receiver must constrain this usage to either "R, RE, C, CE, or X". This value has been deliberately left unconstrained in this guide to support differing and sometimes mutually exclusive statutory requirements in different jurisdictions; this must be determined locally. C Conditional. When conditionality predicate evaluates to "True", considered the same as "R". When condition evaluates to "False". Senders must not populate the field, and Receivers may raise an error if the field is present but must not raise an error if the field is not present. CE When conditionality predicate evaluates to "True", behaves the same as "RE". When conditionality predicate evaluates to "False", the Sender should not populate the field, and the Receiver may raise an application error if the field is present. X Not supported. Senders must not populate. Receivers may ignore the element if it is sent, or may raise an error if field is present. **Note:** *A required field in an optional segment does not mean the segment must be present in the message. It means that if the segment is present, the required fields within that segment must be populated. The same applies to required components of optional fields. If the field is being populated, then the required components must be populated. The same applies to required sub-components of optional components. If a component is being populated, then the required sub-components of that component must be populated.*
Cardinality	Defines the minimum and maximum number of times the field may appear in this segment. [0..0] Field never present. [0..1] Field may be omitted and can have, at most, one occurrence. [1..1] Field must have exactly one occurrence.

Table 4.1	Segment Attributes
Attribute	**Definition**
	[0..n] Field may be omitted or may repeat up to *n* times. [1..n] Field must appear at least once, and may repeat up to *n* times. [0..*] Field may be omitted or repeat an unlimited number of times. [1..*] Field must appear at least once, and may repeat an unlimited number of times. [m..n] Field must appear at least *m* and at most *n* times.
Values/Value Set	Link to value set or literal value of data expected to be populated in the field. Numbers in this field denote the related vocabulary in that HL7 Table. Contains the name and/or the PHIN Value Set (accessible through PHIN VADS) when relevant as well as notes, condition rules, and general/ISDS recommendations.

Note: *Components and subcomponents of a single field are noted as a dotted decimal number.*

5 HESS HL7 Version 2.5.1 Message Segment Definition

5.1 Version 2.5.1 Message Structure and Definitions

The HESS HL7 Version 2.5.1 contains the following segments:

- MSH: Message Header Segment Definition
- EVN: Event Type Segment Definition
- PID: Patient Identification Segment Definition
- PV1: Patient Visit Segment Definition
- PV2: Patient Visit Additional Information Segment Definition
- OBX: Observation/Result Segment Definition
- DG1: Diagnosis Segment Definition
- PR1: Procedures Segment Definition
- IN1: Insurance Segment Definition

The following tables outline the specific message structure and segment definitions supporting the HESS HL7 2.5.1 version. If the segment is not outlined in this section, it is not supported. Do not send any other segments.

5.1.1 MSH: Message Header Segment Definition

The MSH segment defines the intent, source, destination, and selected message syntax specifications. This segment includes identification of message delimiters, sender, receiver, message type, timestamp, etc. The MSH segment is required.

MSH Example:

MSH|^~\&|EHR SYSTEM NAME|MIDLAND HLTH

CTR^9876543210^NPI|MOHESS|MODHSS|201112091114||ADT^A04^ADT_A01|201112091114-0078|P|2.5.1 <cr>

Table 5.1.1		MSH: Message Header Segment Definition					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Field Separator	1	ST	1	R	R	[1..1]	Default Value: "|" (ASCII 124).
Encoding Characters	2	ST	4	R	R	[1..1]	Default Values: "^~\&" (ASCII 94, 126, 92, and 38).
Sending Application	3	HD	227	O	O	[0..1]	Identifies the sending application from the other HL7 message exchange applications belonging to the sender. Hospitals frequently send the name of their software vendor or an internally developed system here. Ex: MYEMR-2000
Sending Facility	4	HD	227	R	R	[1..1]	Field that uniquely identifies the facility associated with the application that sends the message (i.e., the "owner" of the message information). Ex: LOCAL GENERAL HOSPITAL^9876543210^NPI If Acknowledgements are in use, this facility will receive any related Acknowledgement message.
Namespace ID	4.1	IS	20	R	R	[1..1]	Name of originating hospital. HESS suggests that a shortened name, abbreviation or acronym be used in the first component. Ex: LOCAL GENL HOSP

Table 5.1.1		MSH: Message Header Segment Definition					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Universal ID	4.2	ST	199	R	R	[1..1]	Ten digit National Provider Identifier number (NPI). **Note:** NPI Registry *https://nppes.cms.hhs.gov/NPPES/NPIRegistryHome.do*
Universal ID Type	4.3	ID	6	R	R	[1..1]	Literal Value: "NPI"
Receiving Application	5	HD	227	R	R	[1..1]	Literal Value: "MOHESS"
Receiving Facility	6	HD	227	R	R	[1..1]	Literal Value: "MODHSS"
Date/Time of Message	7	TS	26	R	R	[1..1]	**Note:** Date/Time the sending system created the message in the following format: YYYYMMDDHHMMSS[.S[S[S[S]]]]] [+/-ZZZZ] The minimum acceptable precision is to the nearest minute; seconds are desirable. If Coordinated Universal Time (UTC) offset is not sent, it is assumed to the offset of the receiver.
Message Type	9	MSG	15	R	R	[1..1]	**Note:** All messages will be Admit-Discharge- Transfer (ADT) message types. The triggering event is a real-world circumstance causing the message to be sent. Supported trigger events are A01 (Inpatient Admission), A04 (Emergency Department Registration) and A08 (Update).
Message Code	9.1	ID	3	R	R	[1..1]	Literal Value: "ADT" or "ACK"
Trigger Event	9.2	ID	3	R	R	[1..1]	One of the following Literal Values: "A01", "A03", "A04" or "A08"
Message Structure	9.3	ID	7	R	R	[1..1]	Trigger events A01, A04, and A08 share the same "ADT_A01" Message Structure. One of the following Literal Values: "ADT_A01" or "ADT_A03, or "ACK"

Table 5.1.1		MSH: Message Header Segment Definition					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Message Control ID	10	ST	199	R	R	[1..1]	A number or other identifier that uniquely identifies the message and is echoed back in the message acknowledgment segment (MSA). Some hospitals send a Date/Time stamp using microsecond precision or a Date/Time stamp using minute precision plus a sequence number that restarts each day at one or wraps around when it reaches all 9's. Ex: 20101128070123463 or 8X34562 or 201011280701_01234
Processing ID	11	PT	3	R	R	[1..1]	PHVS_ProcessingID_HL7_2x Literal Values: "P for Production, "D" for Debug or "T" for Training. **Note:** Indicates how to process the message as defined in HL7 processing rules.
Version ID	12	VID	5	R	R	[1..1]	Table 0104 Literal Value: "2.5.1"

5.1.2 EVN: Event Type Segment Definition

The EVN segment is used to communicate trigger event information to receiving applications. The EVN segment is required.

EVN Example:

EVN||201102091114|||||MIDLAND HLTH CTR^9876543210^NPI<cr>

Table 5.1.2		EVN: Event Type Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Recorded Date/Time	2	TS	26	R	R	[1..1]	**Note:** Date and time of report transmission from original source (from treating facility). If data flows through an intermediary or third party, the intermediary **must** keep the original date/time of transmission. Most systems default to the system Date/Time when the transaction was entered. YYYYMMDDHHMMSS[.S[S[S[S]]]]] [+/-ZZZZ] The minimum acceptable precision is to the nearest minute; seconds and microseconds are desirable; the Coordinated Universal Time (UTC) offset is not required.
Event Facility	7	HD	241	R	R	[1..1]	**Note:** This is the location where the patient originally presented (original provider of the data).
Namespace ID	7.1	IS	20	R	R	[0..1]	Name of originating facility. **Note:** Recommend the use of the Organization Name Legal Business Name (LBN) associated with the National Provider Identifier Standard provided by Centers for Medicare and Medicaid Services.

Table 5.1.2		EVN: Event Type Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Universal ID	7.2	ST	199	R	R	[1..1]	National Provider Identifier. (10-digit identifier). **Note:** This should be specific for each facility location (not a number representing an umbrella business).
Universal ID Type	7.3	ID	6	R	R	[1..1]	Expected Value: “NPI”

5.1.3 PID: Patient Identification Segment Definition

The PID segment is used as the primary means of communicating patient identification information. This segment contains patient identifying and demographic information that change infrequently. The PID segment is required.

PID Example:

PID|1||20060012168^^^^MR^MIDLAND HLTH CTR&9876543210&NPI||EVERYPERSON^JOE^A^JR^MR^^L||19600401|M||2054-5^BLACK OR AFRICAN AMERICAN^CDCREC|123 MAIN STREET^APT. B^JEFFERSON CITY^29^65102^USA^C^^29051||^^^^^573^5551212|||||029455443300012||||2186-5^Not Hispanic or Latino^CDCREC<cr>

PID Example with Patient Death Date and Patient Death Indicator included:

PID|1||20060012168^^^^MR^MIDLAND HLTH CTR&9876543210&NPI||EVERYPERSON^JOE^A^JR^MR^^L||19600401|M||2054-5^BLACK OR AFRICAN AMERICAN^2.16.840.1.114222.4.11.836|123 MAIN STREET^APT. B^JEFFERSON CITY^29^65102^USA^C^^29051|^^^^^573^5551212|||||029455443300012||||2186-5^Not Hispanic or Latino^ CDCREC ||||||201112080400|Y<cr>

Table 5.1.3		PID: Patient Identification Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Set ID	1	SI	4	R	R	[1..1]	Literal Value: “1”. **Note:** This Set ID numbers the repetitions of the segments. Only one patient per message is supported.

Table 5.1.3		PID: Patient Identification Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Patient Identifier List	3	CX	478	R	R	[1..*]	PID 3 is a repeating field that can accommodate multiple patient identifiers. **Note:** Patient's unique identifier(s) from the facility that is submitting this report to public health officials. Different jurisdictions use different identifiers and may often use a combination of identifiers to produce a unique patient identifier. Patient identifiers should be strong enough to remain a unique identifier across different data provider models, such as a networked data provider or State HIE.
ID Number	3.1	ST	15	R	R	[1..1]	Patient Medical Record Number. This value is to be the same each time the patient visits the hospital. ***Note:*** A Unique Patient Identifier is required (such as Patient Account number or MPI Number). In addition, it is strongly recommended to submit the patient medical record number to facilitate identification of the patient in the event of a required follow-up investigation. Without it, the work required to follow-up on the data provider is greatly increased. Other identifiers for the patient can be sent as repeating fields, but the Medical Record number should always be sent first.
Assigning Authority	3.4	HD	227	O	RE	[0..1]	Table 0363

Table 5.1.3		PID: Patient Identification Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Identifier Type Code	3.5	ID	5	R	R	[1..1]	PHVS_IdentifierType_SyndromicSurveillance ***Note:*** The Unique Patient Identifier occurs in the 1st component of the CX data type. The 5th component, the Identifier type Code, defines the type of identifier used in the 1st component. Example PID-3 Fields: Medical Record Number (MR) |MR101100001^^^^MR| Internal Identifier (PI) |95101100001^^^^PI| External Identifier (PT) |E95101100001^^^^PT| It is recommended that data providers submit the patient medical record number (MR) to facilitate identification of the patient, in the event of a required follow-up investigation. Without the medical record number, the work required to follow-up on the records of interest greatly increases on the data provider and may cause unacceptable delays in public health response. In addition, the medical record number may aid in record de-duplication efforts and in the resolution of apparent transcription errors.
Assigning Facility	3.6	HD	227	O	RE	[0..1]	***Note:*** This component should contain the specific information for the facility that assigned the number in PID 3.1. For example: if Midland Health Center assigned a Medical Record Number in PID 3.1 then PID 3.4 would contain “MIDLAND HLTH CTR&9876543210&NPI”

Table 5.1.3		PID: Patient Identification Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Patient Name	5	XPN	294	R	R	[1..*]	**Note:** Under Missouri's syndromic surveillance reporting rule (19 CSR 33.040), patient name is a part of the minimum data set that all hospitals are required to submit. The first field name contains the primary or legal name of the patient. Therefore, the name type code (PID.5.7) should be "L "(Legal), when populated.
Family Name	5.1	FN	194	RE	RE	[0..1]	Patient last name. Ex: BRADFORD
Given Name	5.2	ST	30	RE	RE	[0..1]	Patient first name. Ex: BRADLEY
Second Given Name or Initials	5.3	ST	30	O	RE	[0..1]	Patient middle initial or middle name. Ex: B
Suffix	5.4	ST	20	O	RE	[0..1]	Patient last name suffix. Ex: SR or JR
Prefix	5.5	ST	20	O	RE	[0..1]	Patient name prefix. Ex: MRS or DR
Name Type Code	5.7	ID	1	R	R	[1..1]	Expected Values: "L" (Legal) – used for patient legal name.
Date/Time of Birth	7	TS	26	R	R	[0..1]	Under Missouri's syndromic surveillance reporting rule (19 CSR 33.040), patient birth date is a part of the minimum data set that all hospitals are required to submit.
Administrative Sex	8	IS	1	RE	RE	[0..1]	PHVS_Gender_SyndromicSurveilance **Note:** Relevant "gender" values are defined in value set.
Race	10	CE	478	RE	RE	[0..*]	PHVS_RaceCategory_CDC **Note:** Patient could have more than one race defined.
Identifier	10.1	ST	20	RE	RE	[0..1]	**Note:** Standardized code for patient race category.

Table 5.1.3		PID: Patient Identification Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Text	10.2	ST	199	O	RE	[0..1]	**Note:** Standardized description associated with code in PID 10.1.
Name of Coding System	10.3	ID	20	CE	C	[0..1]	**Condition Rule:** Required if an identifier is provided in component 1. Expected Value: “CDCREC”
Patient Address	11	XAD	513	RE	RE	[0..1]	**Note:** Expecting only the patient primary (current) address information in the supported components.
Street Address	11.1	SAD	184	RE	RE	[0..1]	
Other Designation	11.2	ST	120	O	O	[0..1]	
City	11.3	ST	50	R	R	[0..1]	
State or Province	11.4	ST	50	R	R	[0..1]	PHVS_State_FIPS_5-2
Zip or Postal Code	11.5	ST	12	R	R	[0..1]	USPS
Country	11.6	ID	20	O	O	[0..1]	PHVS_Country_ISO_3166-1
Address Type	11.7	ID	3	O	O	[0..1]	PHVS_AddressType_CDC Expected Value: ‘C’ (Current or Temporary)
Other Geographic Designation	11.8	ST	50	O	O	[0..1]	
County/Parish Code	11.9	IS	20	RE	RE	[0..1]	PHVS_County_FIPS_6-4
Patient Phone Number - Home	13	XTN	40	R	R	[1..1]	Primary home phone number of the patient. No repetitions. The preferred location is in components PID 13.6 and 13.7 Ex: |^^^^^573^5551212|
Area Code	13.6	NM	5	R	R	[1..1]	Unformatted area, city, or region code of patient’s home phone number. Ex: 573
Local Number	13.7	NM	9	R	R	[1..1]	Unformatted exchange and station portions of patient’s home phone number. Ex: 5551212
Extension	13.8	NM	5	O	O	[0..1]	Although extensions are seldom used with a home phone number, HESS supports their use. Ex: 0123
Patient Account Number	18	CX	250	O	O	[0..1]	
Patient Social Security Number	19	ST	16	RE	RE	[1..1]	Unformatted 9-digit social security number of patient Ex: 123456789

Table 5.1.3		PID: Patient Identification Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Ethnic Group	22	CE	478	RE	RE	[0..1]	PHVS_EthnityGroup_CDC **Note:** Relevant "Ethnicity" values are defined in value set.
Identifier	22.1	ST	20	RE	RE	[0..1]	**Note:** Standardized code for patient ethnic group.
Text	22.2	ST	199	O	O	[0..1]	**Note:** Standardized description associated with code in PID 22.1.
Name of Coding System	22.3	ID	20	CE	C	[0..1]	**Condition Rule:** Required if an identifier is provided in component 1. Expected Value: *"*CDCREC*"*
Patient Death Date and Time	29	TS	26	CE	CE	[0..1]	**Condition Rule:** If the patient expired, this field should contain the patient death date and time. (PV1-36 denotes patient expiration). **Note:** The minimum acceptable precision is to the nearest minute; seconds are desirable. (meaning if you have/know it send it). If Coordinated Universal Time (UTC) offset is not sent, it is assumed to be offset of the receiver.
Patient Death Indicator	30	ID	1	CE	CE	[0..1]	**Condition Rule:** If the patient expired, this field should contain the patient death indicator. Literal Value: "Y"

5.1.4 PV1: Patient Visit Segment Definition

The PV1 segment is used by Registration/Patient Administration applications to communicate information on a visit-specific basis. The PV1 segment is required.

PV1 Examples:

PV1|1|E|Bed 12 ER|E||||||MED||||7|||||20110209_0064^^^^VN^MIDLAND HLTH CTR&9876543210&NPI||||||||||||||||||||||||20111217144208<cr>

PV1 Example with Discharge Date/Time:

PV1|1|E|Bed 12 ER|E||||||MED||||7|||||20110209_0064^^^^VN^MIDLAND HLTH CTR&9876543210&NPI||||||||||||||||||||||||20111217144208|20111217164208<cr>

Note: *If a patient has not been discharged send the field as empty. Do not wait to send data until patient has been discharged. Discharge dates should be sent in subsequent update messages regarding the patient.*

Table 5.1.4		**PV1: Patient Visit Segment Description**					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Set ID – PV1	1	SI	4	RE	RE	[0..1]	**Note:** Set ID numbers the repetitions of the segments. Only one patient per message is supported. Literal Value: “1”
Patient Class	2	IS	1	R	R	[1..1]	PHVS_PatientClass_SyndromicSurveillance **Note**: Patient Classification within facility. Relevant Patient Class values are defined in value set. Expected Values are: “E” = Emergency. “I” = Inpatient. Inpatient data should be sent only when the patient was admitted due to an emergency situation. O = Outpatient.
Assigned Patient Location	3	PL	1220	O	O	[0..1]	
Admission Type	4	IS	2	RE	RE	[0..1]	PHVS_AdmissionType_HL7_2x Expected Values: E – Emergency A – Accident L – Labor R – Routine U – Urgent
Hospital Service	10	IS	3	O	O	[0..1]	Table 0069
Admit Source	14	IS	6	O	O	[0..1]	PHVS_AdmitSource_HL7_2x

Table 5.1.4		PV1: Patient Visit Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Visit Number	19	CX	478	R	R	[1..1]	**Note:** A visit is defined as a discrete or unique clinical encounter within a service department or location. Example: |VN101100001^^^^VN^MIDLAND HLTH CTR&9876543210&NPI|
ID Number	19.1	ST	15	R	R	[1..1]	**Note:** *Unique identifier for a patient visit.*
Assigning Authority	19.4	HD	227	O	RE	[0..1]	Table 0363
Identifier Type Code	19.5	ID	5	R	R	[1..1]	PHVS_IdentifierType_SyndromicSurveillance **Note:** Use the Identifier Type Code that corresponds to the type of ID Number specified in PV1 19.1.
Assigning Facility	19.6	HD	227	O	RE	[0..1]	
Discharge Disposition	36	IS	3	RE	RE	[0..1]	PHVS_DischargeDisposition_HL7_2x **Note:** It is expected that this field will update with multiple submissions.
Admit Date/Time	44	TS	26	R	R	[1..1]	**Note:** Date and time of the patient presentation. YYYYMMDDHHMMSS[.S[S[S[S]]]]] [+/-ZZZZ] The minimum acceptable precision is to the nearest minute; seconds are desirable. If Coordinated Universal Time (UTC) offset is not sent, it is assumed to the offset of the receiver. Example: 2:06:59 PM EST on April 1, 2011 |20110401140569-0500|

Table 5.1.4		PV1: Patient Visit Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Discharge Date/Time	45	TS	26	O	O	[0..1]	**Note:** Send this field as empty if the patient has not been discharged. Do not wait to send data until patient is discharged. YYYYMMDDHHMMSS[.S[S[S[S]]]]] [+/-ZZZZ] The minimum acceptable precision is to the nearest minute; seconds are desirable. If Coordinated Universal Time (UTC) offset is not sent, it is assumed to the offset of the receiver.

5.1.5 PV2: Patient Visit Additional Information Segment Definition

The PV2 segment is a continuation of visit-specific information where the Admit Reason is passed. The PV2 is a required empty segment, meaning that if the information is available it must be sent with the message.

PV2 Example:

PV2|||9131^ABRASION FOREARM INFECT^I9CDX<cr>

Table 5.1.5		PV2: Patient Visit – Additional Information Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Admit Reason	3	CE	478	RE	RE	[0..1]	PHVS_AdministrativeDiagnosis_CDC_ICD-9CM PHVS_CauseOfDeath_ICD-10_CDC PHVS_Disease_CDC
Identifier	3.1	ST	20	RE	RE	[0..1]	
Text	3.2	St	199	RE	RE	[0..1]	**Note:** It is strongly recommended that text be sent to accompany any identifier.
Name of Coding System	3.3	ID	20	C	C	[0..1]	**Condition Rule:** Required if an identifier is provided in component 3.1.

5.1.6 OBX: Observation/Result Segment Definition

The OBX Segment in the ADT Message is used to transmit observations related to the patient and visit. If the data element is carried in an OBX and usage is 'Required', the segment and its fields must be populated. The method for reporting age and chief complaint data is through an OBX segment. The OBX is a required segment.

OBX Examples:

OBX example of CWE value type with Chief Complaint:

- OBX|1|CWE|8661-1^CHIEF COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^STOMACH ACHE|||||F|||201112171531<cr>

OBX examples of NM value type with Patient Age, Patient Temperature, and Patient Pulse Oximetry:

- OBX|2|NM|21612-7^AGE TIME PATIENT REPORTED^LN||43|a^YEAR^UCUM|||||F|||201112171531<cr>
- OBX|3|NM|11289-6^BODY TEMPERATURE:TEMP:ENCTRFIRST:PATIENT:QN^LN||99.1|[degF]^FARENHEIT^UCUM|||||F|||201112171658<cr>
- OBX|4|NM|59408-5^OXYGEN SATURATION:MFR:PT:BLDA:QN:PULSE OXIMETRY^LN||95|%^PERCENT^UCUM|||||F|||201112171658<cr>

OBX examples of TS value type with Patient illness/injury onset date:

- OBX|5|TS|11368-8^ILLNESS OR INJURY ONSET DATE AND TIME:TMSTP:PT:PATIENT:QN^LN||20111215|||||F|||201112171658<cr>

OBX examples of TX value type with Patient triage notes:

- OBX|6|TX|54094-8^TRIAGENOTE:FIND:PT:EMERGENCYDEPARTMENT:DOC^LN||Pain a recurrent cramping sensation.||||||F|||201102121114<CR>

Table 5.1.6		OBX: Observation Result Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Set ID – OBX	1	SI	4	O	RE	[0..1]	**Note:** Set ID numbers the repetitions of the segments. For the first repeat of the OBX segment, the sequence number shall be one (1), for the second repeat, the sequence number shall be two (2), etc. Example: OBX|1|… OBX|2|… OBX|3|…
Value Type	2	ID	3	R	R	[1..1]	Table 0125 **Note:** Identifies the structure of data in observation value (OBX 5).
Observation Identifier	3	CE	478	R	R	[1..1]	PHVS_ObservationIdentifier_SyndromicSurveillance **Note:** Identifies data to be received in observation value (OBX 5).
Identifier	3.1	ST	20	R	R	[1..1]	
Text	3.2	ST	199	O	O	[0..1]	
Name of Coding System	3.3	ID	20	C	C	[0..1]	**Condition Rule:** Required if an identifier is provided in component 1.

Table 5.1.6		OBX: Observation Result Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Observation Value	5	Varies	99999	RE	RE	[0..*]	**Note:** Values received in observation value are defined by value type (OBX 2) and observation identifier (OBX 3). Listed below are the supported fields for each of the supported value types. For CWE Value Type when communicating Chief Complaint to use either Free Text or a value from the following Value Sets: PHVS_AdministrativeDiagnosis_CDC_ICD-9CM PHVS_CauseOfDeath_ICD-10_CDC PHVS_Disease_CDC If data flows through an intermediary or third party, the intermediary must keep the original test (CWE-9) of the transmission. Example OBX Segment (free text): OBX|1|CWE|8661-1^CHIEF COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^STOMACHACHE|||||F|||201112171531<cr> Example OBX Segment (coded and free text): OBX|1|CWE|8661-1^CHIEF COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||7804^DIZZYNESS AND GIDDINESS [780.4]^I9CDX^^^^^^DIZZY|||||F|||20111217153 1<cr>

Beginning of OBX 5 Observation Value Usage Based on Data Type in OBX 2							
TS Data Type							
Time	5.1	DTM	24	RE	RE	[0..1]	**Note:** Example: OBX Segment: Date of Onset OBX|7|TS|11368-8^ILLNESS OR INJURY ONSET DATE AND TIME:TMSTP:PT:PATIENT:QN^LN||20110215|||||f|||201102171658<cr> The minimum acceptable precision is to the nearest day.
TX Data Type							
Text Data	5.1	TX	65536	RE	RE	[0..1]	**Note:** The TX data type is used to carry string data intended for display purposes. It can contain leading blanks (space characters), (e.g. Triage Notes and Clinical Impression) Example: OBX Segment: Triage Notes OBX|1|TX|54094-8^TRIAGENOTE:FIND:PT:EMERGENCYDEPARTMENT:DOC^LN||Pain a recurrent cramping sensation.|||||F|||201102091114<CR>

NM Data type							
Numeric Value	5.1	ST	16	RE	RE	[0..1]	***Note:*** A numeric data type is 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. Example: Numeric value of patient age is communicated via the OBX segment. The age element is represented by the LOINC code: 21612-7 in the OBX observation identifier. The actual data value occurs in the 5th field of the same OBX segment and is the number as defined by the OBX Data Type NM. In the sample below "43" is the number represented as the value of the patient's age. *OBX|4|NM|21612-7^AGE TIME PATIENT REPORTED^LN||43|A^YEAR^UCUM|||||F|||201102171*
CWE Data Type							
Identifier	5.1	ST	20	RE	RE	[0..1]	Code which defines what data is being communicated.
Text	5.2	ST	199	RE	RE	[0..1]	It is strongly recommended that text be sent to accompany any identifier.
Name of Coding System	5.3	ID	20	C	C	[0..1]	**Condition Rule:** Required if an identifier is provided in component 5.1.
Alternate Identifier	5.4	ST	20	RE	RE	[0..1]	
Alternate Text	5.5	ST	199	RE	RE	[0..1]	It is strongly recommended that text be sent to accompany any identifier.
Name of Alternate Coding System	5.6	ID	20	C	C	[0..1]	**Condition Rule:** Required if an identifier is provided in component 5.4.
Original Text	5.9	ST	199	RE	RE	[0..1]	Provide the richest text available in this field.

End of OBX 5 Observation Value Usage Based on Data type in OBX 2								
Units	6	CE	62	C	C	[0..1]	**Note:** Units are a conditional field. If numeric data is sent, the units' field must define the units of the value used in observation value (OBX 5). When reporting Patient Age, Temperature, or Pulse Oximetry use the following value sets to define units communicated in OBX 5.	
							Age	PHVS_AgeUnit_SyndromicSurveillance
							Pulse Oximetry	PHVS_PulseOximetryUnit_UCUM
							Temperature	PHVS_TemperatureUnit_UCUM
Identifier	6.1	ST	20	R	R	[1..1]		
Text	6.2	ST	20	O	O	[0..1]	Standardized description associated with code in OBX 6.1.	
Name of Coding System	6.3	ID	20	C	C	[0..1]	**Condition Rule:** Required if an identifier is provided in component 6.1.	
Observation Result Status	11	ID	1	R	R	[1..1]	PHVS_ResultStatus_HL7_2x Expected Value: 'F'	
Date/Time of the Observation	14	TS	26	O	O	[0..1]		

5.1.7 DG1: Diagnosis Segment Definition

The DG1 segment contains various types of patient diagnosis data. HESS supports Admitting, Working, and Final Diagnosis types. The DG1 may be sent in addition to or in place of the PV2.

DG1 Example:

DG1|1||4739^CHRONIC SINUSITIS NOS^I9CDX||201112171658|A<cr>

DG1|2||04100^STREPTOCOCCUS UNSPECF^I9CDX||201112171858|F<cr>

Table 5.1.7		DG1: Diagnosis Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Set ID – DG1	1	SI	4	R	R	[1..1]	**Note:** Numbers the repetitions of the segments.
Diagnosis code – DG1	3	CE	478	R	R	[1..1]	Use one of the following Value Sets to define the code. PHVS_AdministrativeDiagnosis_CDC_ICD-9CM PHVS_CauseOfDeath_ICD-10_CDC PHVS_Disease_CDC **Note:** Data should be sent on a regular schedule and should not be delayed for diagnosis or verification procedures. Regular updating of data should be used to correct any errors or send data available later. Include V-codes and E-codes. This field is a repeatable field: multiple codes may be sent. The first diagnosis code should be the primary/diagnosis.
Identifier	3.1	ST	20	R	RE	[0..1]	**Note:** Standardized code for diagnosis.
Text	3.2	ST	199	RE	RE	[0..1]	**Note:** Standardized description associated with code in DG1 3.1.

Table 5.1.7		DG1: Diagnosis Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Name of Coding System	3.3	ID	20	C	C	[0..1]	**Condition Rule:** Required if an identifier is provided in component 3.1.
Diagnosis Date/Time	5	TS	26	O	O	[0..1]	
Diagnosis Type	6	IS	2	R	R	[1..1]	PHVS_DiagnosisType_HL7_2x **Note:** Identifies the type of diagnosis being sent. Literal Values: “A” for Admitting diagnosis, “W” for Working diagnosis, or “F” for Final diagnosis. It is critical to be able to distinguish among the diagnosis types when the syndromic system is receiving messages in real-time.

5.1.8 PR1: Procedures Segment Definition

The PR1 segment is used to carry information relative to various types of procedures performed. The PR1 is an optional segment.

PR1 Example:

PR1|1|PROCEDURE CODE|201112171858<cr>

Table 5.1.8		PR1: Procedures Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Set ID – PR1	1	SI	4	R	R	[1..1]	**Note:** Numbers the repetitions of the segments.
Procedure Code	3	CE	478	R	R	[1..1]	Table 0088
Procedure Date/Time	5	TS	26	R	R	[1..1]	

5.1.9 IN1: Insurance Segment Definition

The IN1 segment contains insurance policy coverage information necessary to produce properly pro-rated patient and insurance bills. The IN1 is an optional segment.

IN1 Example:

IN1|1|INSURANCE PLAN ID|INSURANCE COMPANY ID||||||||||||PLAN TYPE<cr>

Table 5.1.9		IN1: Insurance Segment Description					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Set ID – IN1	1	SI	4	R	R	[1..1]	**Note:** Numbers the repetitions of the segments.
Insurance Plan ID	2	CE	478	R	R	[1..1]	Table 0072
Insurance Company ID	3	CX	250	R	R	[1..*]	
Plan Type	15	IS	3	O	O	[0..1]	Table 0086

Appendix A – Sample Messages

The following set of messages is to be used as samples for general message construction of each message type found in this guide.

A.1 A04 EMERGENCY DEPARTMENT REGISTRATION; NO UPDATES; ACKNOWLEDGEMENT REQUESTED

In the following example, a non-Hispanic white female, Ann A. Everyperson, 67 years old, visits the Midland Health Center emergency department with an infected abrasion on her forearm. The Medical Record Number, 20060012168, is sent for the patient identifier. Since this is an Emergency Department visit, PV1-44 reflects the time the patient registered in the Emergency Department. The Admit Reason is coded in ICD-9. The original provider of the data, Midland Health Center, is captured in the EVN-7. The facility location and visit type was provided by Midland Health Center.

Midland Health Center has requested acknowledgement of the message by the State Public Health. A sample acknowledgement is included.

MSH|^~\&|EHR SYSTEM NAME|MIDLAND HLTH CTR^9876543210^NPI|MOHESS|MODHSS

|201102091114||ADT^**A04^ADT_A01**|2011020911140078|P|2.5.1<cr>

EVN||201102091114|||||MIDLAND HLTH CTR^9876543210^NPI<cr>

PID|1||**20060012168^^^^MR**^MIDLAND HLTH
CTR&9876543210&NPI||EVERYPERSON^ANN^A^^MRS^^L||19440209|**F**||2106-

3^**White**^CDCREC|123 MAIN STREET^APT B^JEFFERSON

CITY^29^65102^USA^C^^29051||^^^^^573^5551212|||||029455443300012||||21

86-5^**Not Hispanic or Latino**^CDCREC<cr>

PV1|1|E|Bed 12ER|E|||||MED||||1|||||20110209_0064^^^^VN^MIDLAND HLTH

CTR&9876543210&NPI||||||||||||||||||||||||||20110217144208<cr>

PV2|||9131^ABRASION FOREARM-INFECT^I9CDX<cr>

OBX|1|CWE|8661-1^CHIEF COMPLAINT:FIND PT: PATIENT: NOM:

REPORTED^LN||^^^^^^^^PAIN IN ARM|||||F|||201102091114<cr>

OBX|2|CWE|SS003^FACILITY / VISIT TYPE^PHINQUESTION||1108-

0^EMERGENCY DEPARTMENT^HSLOC|||||F|||201102091114<cr>

OBX|3|NM|21612-7^AGE TIME PATIENT REPORTED^LN||**67|a^YEAR^UCUM**|||||F|||201102091114<cr>

Continuing the example above, State Public Health needs to acknowledge successful receipt (AA

– Application Accept) of the above message (Message ID - 201102091114-0078) from Midland
Health Center.

MSH|^~\&|MOHESS|MODHSS||MIDLAND HLTH

CTR^9876543210^NPI|201102091119||**ACK^A04^ACK**|ACK-201102091119-

0001|P|2.5.1<cr>

MSA|**AA**|**201102091114007|||**
|0<cr>

A.2 A04 EMERGENCY DEPARTMENT REGISTRATION FOLLOWED BY A08 UPDATE

In the next example, a non-Hispanic black male, 52 years old, visits the City General Hospital emergency department with cough and ear pain. City General Hospital does not transmit Medical Record Number, so it uses a unique patient identifier of 95101100001, in PID-3. The chief complaint was sent as free text and an admitting diagnosis was sent in the DG1 segment, coded in ICD-9.

MSH|^~\&|APPLICATION NAME|CITY GENL

HOSP^0133195934^NPI|MOHESS|MODHSS|20110217144317||ADT^**A04^ADT_A01**|E100648329|P|2

.5.1<cr>

EVN||20110217144317|||||CITY GENL HOSP^0133195934^NPI<cr>

PID|1||95101100001^^^^PI^CITY GENL HOSP&0133195934&NPI||BROWN^JAMES^M^JR^MR^^L|||M||2054-
5^**Black or African American**^CDCREC|123 MAIN^SUITE A^JEFFERSON
CITY^29^65102^USA^C^^29051||^^^^^513^5551212|||||95101100001||||2186-

5^**Not Hispanic or Latino**^CDCREC<cr>

PV1||E||E|||||||||1|||||8399193^^^^VN^CITY GENL

HOSP&0133195934&NPI ||||||||||||||||||||||||||20110217144208<cr>

OBX|1|NM|21612-7^AGE TIME PATIENT REPORTED^LN||52|a^YEAR^UCUM|||||F|||201102171443<cr>

OBX|2|CWE|8661-1^CHIEF COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^**HEADACHE FOR 2**

DAYS<cr>

DG1|1||**4739^CHRONIC SINUSITIS NOS^I9CDX|**|20110217154208|A<cr>

Continuing the example above, a non-Hispanic black male, 52 years old, visits the City General Hospital emergency department with cough and ear pain. City General Hospital wants to update the receiving system with new information about the same patient and the same visit.

The Visit Number and Admit Date/Time have not changed; but, the Message Date/Time and Message Control ID have. So, an A08 message is used to transmit the additional information: Temperature, Blood Oxygen Level, and Final Diagnosis.

MSH|^~\&|APPLICATION NAME|CITY GENL

HOSP^0133195934^NPI|MODHSS|MOHESS|**20110217145139**||ADT^**A08^ADT_A01**|**E100648353**|P|2.5.1<cr

> EVN||20110217144317|||||CITY GENL HOSP^0133195934^NPI<cr>

PID|1||95101100001^^^^PI^CITY GENL HOSP&0133195934&NPI||BROWN^JAMES^M^JR^MR^^L|||M||2054-5^**Black or African American**^CDCREC|123 MAIN^SUITE A^JEFFERSON CITY^29^65102^USA^C^^29|051|^^^^^513^5551212|||||95101100001||||2186-

5^**Not Hispanic or Latino**^CDCREC<cr>

PV1||E||E|||||||||1|||||8399193^^^^VN^CITY GENL

HOSP&0133195934&NPI||||||||||||||||||||||||20110217144208<cr>

OBX|1|NM|21612-7^AGE TIME PATIENT REPORTED^LN||52|a^YEAR^UCUM|||||F|||20110217145139<cr>

OBX|2|CWE|8661-1^CHIEF COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^HEADACHE FOR 2 DAYS<cr>

OBX|3|NM|11289-6^BODY

TEMPERATURE:TEMP:ENCTRFIRST:PATIENT:QN^LN||100.1|[degF]^FARENHEIT^UCUM|||||F|||201102171

451

39<cr>

OBX|4|NM|59408-5^OXYGEN

SATURATION:MFR:PT:BLDA:QN:PULSE

OXIMETRY^LN||91|%^PERCENT^UCUM||A|||F|||20110217145139<

cr>

DG1|1||4739^CHRONIC SINUSITIS NOS^I9CDX|||A<cr>

DG1|2||04100^STREPTOCOCCUS UNSPECF^I9CDX|||F<cr>

A.3 A04 EMERGENCY DEPARTMENT REGISTRATION; A01 INPATIENT ADMISSION; A03 DISCHARGE INCLUDING PATIENT DEATH

In the next example, a non-Hispanic white female, 43 years old, visits the Regional Medical Center emergency department with a chief complaint of a stomach ache. The chief complaint was sent as free text.

MSH|^~\&|REG APP|REG MED

CTR^1234567890^NPI|||201102171531||ADT^ **A04^ADT_A01**|201102171531956|P|2.5.1<cr>

EVN||201102171531<cr>

PID|1||FL01059711^^^^PI^REG MED

CTR&1234567890&NPI||WILLIAMS^MARY^^^^^L|||F||2106-3^White^CDCREC|1 MAIN^23^JEFFERSON CITY ^29^65102^USA^C^^29051|^^^^^573^6623344|||||||2186-5^**Not**

Hispanic or Latino^CDCREC<cr>

PV1||E||E|||||||||7|||||V20220217-00274^^^^VN^REG MED

CTR&1234567890&NPI||||||||||||||||||||||||201102171522<cr>

PV2|||78907^ABDOMINAL PAIN, GENERALIZED^I9CDX<cr>

OBX|1|CWE|8661-1^CHIEF

COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^**STOMACH**

ACHE|||||F|||201102171531<cr>

OBX|2|NM|21612-7^AGE TIME PATIENT REPORTED^LN||43|a^YEAR^UCUM|||||F|||201102171531<cr>

DG1|1||78900^ABDMNAL PAIN UNSPCF SITE^I9CDX||201102171531|A<cr>

Continuing the example, the same non-Hispanic white female, 43 years old, visits the Regional Medical Center emergency department with a chief complaint of a stomach ache. The patient is suspect for appendicitis and is admitted as an inpatient. The patient has also reported that she has had a stomach ache since the 15th of February. The patient class (PV1.2) is changed to Inpatient. Admit Date/Time (PV1.44) is updated with the admission date and time.

In this particular case, visit number (PV1.19) has remained the same. However, it is recognized that some insurance companies require the visit number to be changed when a patient is admitted from the Emergency Department.

MSH|^~\&||REG MED

CTR^1234567890^NPI|||201102171658||ADT^**A01^ADT_A01**|201102171658076|P|2.5.

1<cr>

EVN||201102171658<cr>

PID|1||FL01059711^^^^PI^REG MED

CTR&1234567890&NPI||WILLIAMS^MARY^^^^^L|||F||2106-3^White^CDCREC|1 MAIN^23^JEFFERSON CITY ^29^65102^USA^C^^29051||^^^^^573^6623344||||||||2186-5^**Not**

Hispanic or Latino^CDCREC<cr>
PV1||**I**||E|||||||||7|||||**V20220217-00274**^^^^VN^REG MED

CTR&1234567890&NPI||||||||||||||||**09**|||||||**201102171656**<cr>

PV2|||78907^ABDOMINAL PAIN, GENERALIZED^I9CDX<cr>

OBX|1|CWE|8661-1^CHIEF

COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^STOMACH

ACHE||||||F|||201102171531<cr>

OBX|2|NM|21612-7^AGE TIME PATIENT REPORTED^LN||43|a^YEAR^UCUM|||||F|||201102171531<cr>

OBX|3|NM|11289-6^BODY

TEMPERATURE:TEMP:ENCTRFIRST:PATIENT:QN^LN||99.1|[degF]^FARENHEIT^UCUM||A|||F|||201102171

658< cr>

OBX|4|NM|59408-5^OXYGEN

SATURATION:MFR:PT:BLDA:QN:PULSE

OXIMETRY^LN||95|%^PERCENT^UCUM||A|||F|||201102171658<cr>

OBX|5|TS|11368-8^ILLNESS OR INJURY ONSET DATE AND

TIME:TMSTP:PT:PATIENT:QN^LN||20110215||||||F|||201102171658

<cr>

DG1|1||78900^ABDMNAL PAIN UNSPCF SITE^I9CDX|||A<cr>

DG1|2||5409^ACUTE APPENDICITIS NOS^I9CDX|||W<cr>

Continuing the example, the same non-Hispanic white female, 43 years old, visits the Regional Medical Center emergency department with a chief complaint of a stomach ache. The patient has expired and this is indicated in PV1.36 (Code=20). A final diagnosis is also sent. It is also indicated by the “Y” in PID-30 and the Date and Time of Death in PID-29. The discharge date/time (PV1.45) is sent with the A03 message type.

Note: *The structure of the message changes placing the DG1 Segment before the OBX Segment.*

MSH|^~\&|REG APP|REG MED

CTR^1234567890^NPI|||201102172334||ADT^**A03^ADT_A03**|201102172334640|P|2.5.1

<cr>

EVN||201102172334

PID|1||FL01059711^^^^PI^REG MED

CTR&1234567890&NPI||WILLIAMS^MARY^^^^^L|||F||2106-3^White^CDCREC|1 MAIN^23^JEFFERSON CITY ^29^65102^USA^C^^29051|^^^^^573^6623344|||||||2186-5^**Not**

Hispanic or Latino^CDCREC|||||||**201102172334|Y**<cr>

PV1||I||E|||||||||7|||||V20220217-00274^^^^VN^REG MED

CTR&1234567890&NPI||||||||||||||||**20**|||||||201102171656|**201102172334**<cr>

PV2|||78907^ABDOMINAL PAIN, GENERALIZED^I9CDX<cr>

DG1|1||78900^ABDMNAL PAIN UNSPCF

SITE^I9CDX|||A<cr>

DG1|2||5409^ACUTE APPENDICITIS

NOS^I9CDX|||W<cr>

DG1|3||5400^AC APPEND W

PERITONITIS^I9CDX|||F<cr>

OBX|1|HD|SS001^TREATING FACILITY IDENTIFIER^PHINQUESTION||OTHER REG

MED CTR^1234567890^NPI||||||F|||201102171531<cr>

OBX|2|CWE|8661-1^CHIEF

COMPLAINT:FIND:PT:PATIENT:NOM:REPORTED^LN||^^^^^^^^STOMACH

ACHE||||||F|||201102171531<cr>

OBX|3|NM|21612-7^AGE TIME PATIENT REPORTED^LN||43|a^YEAR^UCUM|||||F|||201102171531<cr>

OBX|4|NM|11289-6^BODY

TEMPERATURE:TEMP:ENCTRFIRST:PATIENT:QN^LN||99.1|[degF]^FARENHEIT^UCUM||A|||F|||20110217165

8<cr>

OBX|5|NM|59408-5^OXYGEN

SATURATION:MFR:PT:BLDA:QN:PULSE

OXIMETRY^LN||95|%^PERCENT^UCUM||A|||F|||201102171658<cr

>

OBX|6|TS|11368-8^ILLNESS OR INJURY ONSET DATE AND

TIME:TMSTP:PT:PATIENT:QN^LN||20110215||||||F|||20110217165

8<cr>

A.4 A01 INPATIENT ADMISSION; NO UPDATES

In the following example, a Hispanic white male, age currently 20, is admitted as an inpatient to the Mid-Co Health Center emergency department after falling down the stairs. The Medical Record Number is sent for the patient identifier and the patient account number is sent for the visit number.

MSH|^~\&||MID-COHLTH
CTR^9876543210^NPI|||201110090314||ADT^**A01^ADT_A01**|201110090314-
0017|P|2.5.1<cr>

EVN||20111009031

4<cr>

PID|1||MD01059711^^^ADMITTING^MR^MID-CO HLTH
CTR^9876543210^NPI||~^^^^^^U|||M||2106-

3^White^CDCREC|^^^24^21502||||||||||2135-2^**Hispanic
or Latino**^CDCREC<cr>

PV1||**I**||E|||||||||**6**|||||20111009_0034^^^^AN^MID-CO HLTH CTR&9876543210&NPI

||||||||||||||||||||||||20111009025915<cr>

OBX|1|NM|21612-7^AGE PATIENT QN

REPORTED^LN||2**0|**a^YEAR^UCUM|||||F|||201102171531<cr>

DG1|1||E8809^FALL ON STAIR/STEP NEC^I9CDX|||A<cr>

A.5 BATCH EXAMPLE

In the following example, Mid-Co Health Center sends their syndromic data to their state public health authority. Mid-Co sends the messages that have gathered over the last 12 hour period in batch message format. There are 240 messages.

FHS|^~\&<cr>

BHS|^~\&|ER1|

MID-

CO_HLTH_CTR^9876543210^NPI|MOHESS|MODHSS^2.16.840.1.114222.4.3.2.2.1.163.1^ISO|201

10123123558
<cr>

MSH|^~\&|ER1|MID-CO HLTH CTR^9876543210^NPI|MOHESS
|MODHSS^2.16.840.1.114222.4.3.2.2.1.163.1^ISO|20110123003938||ADT^**A01^ADT_A01**|ER1-
20110123-001|P|2.5.1<cr>

BTS|240|Mid-Co reporting 1-23-2011: 0000 – 1200 hrs<cr> FTS|1<cr>

Appendix B – Message Transmission

B.1 Memorandum of Agreement

Each facility who seeks to establish interfaces with the State data network must be validated prior to processing HL7 messages. For more information about HESS and the hospital recruiting process to send data to HESS, please visit: http://health.mo.gov/data/essence/hospitalrecruit.php,

B.2 Transmission Methods

Web Service Messages: HTTPS can be used to connect to the SOAP Registry web service. The following is a sample SOAP request and response. The placeholders shown would be replaced with actual values.

```
POST /hl7services/HL7WS.asmx HTTP/1.1
Host: http://xxxxxxx.dhss.mo.gov/webservices/HESS/hl7services
Content-Type: text/xml; char set=utf-8
Content-Length: length

SOAP Action: http://tempuri.org/Request or Post Information from Syndromic Surveillance
Registry
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
<soap:Body>

<Request_x0020_or_x0020_Post_x0020_Information_x0020_from_x0020_the_x0020_HESS_
x0020_Registry xmlns="http://tempuri.org/">
<USERID>string</USERID>
<AD_PASSWORD>string</AD_PASSWORD>          (password 1)
<DB_PASSWORD>string</DB_PASSWORD>          (password 2)
<FACILITYID>string</FACILITYID>
<MESSAGEDATA>base64Binary</MESSAGEDATA>
</Request_x0020_or_x0020_Post_x0020_Information_x0020_from_x0020_the_x0020_Immuni
zation_x0020_Registry>
</soap:Body>

</soap:Envelope>
```

HTTPS POST Messages: HTTPS POST can be used to access the State data network. POST messages will contain the following fields:

FIELD NAME	DATA TYPE	NOTES
UserID	String	• The authentication web service expects this to be exactly 8 characters in length. • DHSS will assign each facility a unique user ID. • If an invalid user ID is given, the authentication web service

FIELD NAME	DATA TYPE	NOTES
		will not pass the Message field to the applicable DHSS database. Processing of the message will cease without returning a message.
Facility Id	String	• The authentication web service expects this to be exactly 9 characters in length. • DHSS will assign each facility a unique Facility Id. • If an invalid Facility Id is transmitted, the authentication web service will not pass the Message field to the applicable DHSS application. Processing of the facility submitted message will cease **without** DHSS returning a message.
Message	String	• The HL7 message being sent to DHSS.

B.3 HL7 Batch Protocol

The HL7 Batch Protocol can be used to allow for periodic reporting. The HL7 file and batch header and trailer segments are defined in exactly the same manner as the HL7 message segments; hence, the same HL7 message construction rules used for individual messages can be used to encode and decode HL7 batch files. One batch of messages per file is supported.

The structure of the batch file is constrained as follows:

Table A.3	**Batch Simple File Structure**			
Seq	**Element Name**	**Description**	**Usage**	**Cardinality**
FHS	File Header Segment	Information explaining how to parse and process the file. This includes identification of file delimiters, sender, receiver, timestamp, etc.	R	[1..1]
BHS	Batch Header Segment	Trigger event information for receiving application. One batch per file is supported.	R	[1..1]
{HL7 messages}			R	[1..*]
BTS	Batch Trailer Segment		R	[1..1]
FTS	File Trailer Segment		R	[1..1]

A.3.1 FHS: File Header Segment

The FHS segment is used as the lead-in to a file (group of batches) and appears before the MSH segment. Although the State prefers to receive the FHS segment, it is optional.

FHS Example:

FHS|^~\&|ELRAPP|FACILITYNAME^0987654321^NPI|MOHESS|MODHSS|20110127093425|YCI-MO20090126||IMMYCI20090127-003HL7<cr>

Table A.3.A		FHS – File Header Segment					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
File Field Separator	1	ST	1	R	R	[1..1]	Default Value "|" (ASCII 124).
File Encoding Characters	2	ST	4	R	R	[1..1]	Default Values "^~\&" (ASCII 94, 128, 92 and 38)
File Sending Application	3	HD	227	O	O	[0..1]	
File Sending Facility	4	HD	227	O	RE	[0..1]	
File Receiving Application	5	HD	227	O	O	[0..1]	
File Receiving Facility	6	HD	227	O	O	[0..1]	
File Creation Date/Time	7	TS	26	O	RE	[0..1]	
File Name/ID	9	ST	20	O	RE	[0..1]	
File Header Comment	10	ST	80	O	O	[0..1]	
File Control ID	11	ST	199	O	RE	[0..1]	
Reference File Control ID	12	ST	20	O	RE	[0..1]	

B.3.2 FTS: File Trailer Segment

The FTS segment is used to define the end of a file (group of batches).

FTS Example:

FTS|1<cr>

Table B.3.B		FTS: File Trailer Segment					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
File Batch Count	1	NM	10	R	RE	[1..1]	The number of batches contained in this file. Since this interface is constrained to one batch per field, this number should always be '1'.
File Trailer Comment	2	ST	80	O	O	[0..1]	

A.3.3 BHS: Batch Header Segment Definition

The BHS segment is used to head a group of HL7 messages that comprise a batch.

BHS Example:
BHS|^~\&|ELRAPP|FACILITYNAME^0987654321^NPI|MOHESS|MODHSS|20110127093425<cr>

Table A.3.C		BHS: Batch Header Segment					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Batch Field Separator	1	ST	1	R	R	[1..1]	Default Value "|" (ASCII 124).
Batch Encoding Characters	2	ST	4	R	R	[1..1]	Default Values "^~\&" (ASCII 94, 126, 92 and 38).
Batch Sending Application	3	HD	227	R	R	[1..1]	
Batch Sending Facility	4	HD	227	R	R	[1..1]	
Batch Receiving Application	5	HD	227	R	R	[1..1]	
Batch Receiving Facility	6	HD	227	R	R	[1..1]	
Batch Creation Date/Time	7	TS	26	R	R	[1..1]	
Batch Name/ID	9	ST	20	O	RE	[0..1]	
Batch Header Comment	10	ST	80	O	RE	[0..1]	

Table A.3.C		BHS: Batch Header Segment					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Batch Control ID	11	ST	20	O	RE	[0..1]	
Reference Batch Control ID	12	ST	20	O	RE	[0..1]	

B.3.4 BTS: Batch Trailer Segment Definition

The BTS segment defines the end of a batch of HL7 messages.

BTS Example:

BTS|100|Facility reporting for 2-1-2011cr>

Table B.3.D		BTS: Batch Trailer Segment (BTS)					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Batch Message Count	1	NM	10	R	RE	[0..1]	The number of messages contained in the preceding batch.
Batch Comment	2	ST	80	O	RE	[0..1]	

Appendix C – ACK General Acknowledgement Message

This message type will be returned to the ADT message sender when the message is submitted to the State in single message format using the following segments:

- MSH
- MSA

C.1 MSH: Message Header for General Acknowledgement Message Segment Definition

The following table provides detail for the MSH segment that will be included in the ACK General Acknowledgement message type.

MSH Example:

MSH|1|MODHESS|MODHSS^2.16.840.1.114222.4.3.2.2.1.163.1^ISO|ACK|20111128070123463|P|2.5.1<cr>

Table C.1		MSH: Message Header Segment Definition					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Field Separator	1	ST	1	R	R	[1..1]	Default Value: "|" (ASCII 124).
Encoding Characters	2	ST	4	R	R	[1..1]	Default Values: "^~\&" (ASCII 94, 126, 92, and 38).
Sending Application	3	HD	227	O	O	[0..1]	Identifies the sending application from the other HL7 message exchange applications belonging to the sender. Hospitals frequently send the name of their software vendor or an internally developed system here. Ex: MYEMR-2000
Sending Facility	4	HD	227	R	R	[1..1]	Field that uniquely identifies the facility associated with the application that sends the message (i.e., the "owner" of the message information). Ex: LOCAL GENERAL HOSPITAL^9876543210^NPI If Acknowledgements are in use, this facility will receive any related Acknowledgement message.

Table C.1		MSH: Message Header Segment Definition					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Namespace ID	4.1	IS	20	RE	RE	[0..1]	Name of originating hospital. HESS suggests that a shortened name, abbreviation or acronym be used in the first component. Ex: LOCAL GENL HOSP
Universal ID	4.2	ST	199	R	R	[1..1]	Ten digit National Provider Identifier number (NPI)
Universal ID Type	4.3	ID	6	R	R	[1..1]	Literal Value: “NPI”
Receiving Application	5	HD	227	R	R	[1..1]	Literal Value: “MOHESS”
Receiving Facility	6	HD	227	R	R	[1..1]	Literal Value: “MODHSS”
Date/Time of Message	7	TS	26	R	R	[1..1]	**Note:** *Date/Time the sending system created the message in the following format: YYYYMMDDHHMMSS[.S[S[S[S]]]]] [+/-ZZZZ]* *The minimum acceptable precision is to the nearest minute; seconds are desirable.* *If Coordinated Universal Time (UTC) offset is not sent, it is assumed to the offset of the receiver.*
Message Type	9	MSG	15	R	R	[1..1]	**Note:** *All messages will be Admit-Discharge- Transfer (ADT) message types. The triggering event is a real-world circumstance causing the message to be sent.* *Supported trigger events are A01 (Inpatient Admission), A04 (Emergency Department Registration) and A08 (Update).*
Message Code	9.1	ID	3	R	R	[1..1]	Literal Value: “ADT” or “ACK”
Trigger Event	9.2	ID	3	R	R	[1..1]	One of the following Literal Values: “A01”, “A03”, “A04” or “A08”
Message Structure	9.3	ID	7	R	R	[1..1]	Trigger events A01, A04, and A08 share the same “ADT_A01” Message Structure. One of the following Literal Values: “ADT_A01” or “ADT_A03, or “ACK”

Table C.1		MSH: Message Header Segment Definition					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Message Control ID	10	ST	199	R	R	[1..1]	A number or other identifier that uniquely identifies the message and is echoed back in the message acknowledgment segment (MSA). Some hospitals send a Date/Time stamp using microsecond precision or a Date/Time stamp using minute precision plus a sequence number that restarts each day at one or wraps around when it reaches all 9's. Ex: 20101128070123463 or 8X34562 or 201011280701_01234
Processing ID	11	PT	3	R	R	[1..1]	Literal Values: "P for Production, "D" for Debug or "T" for Training. **Note:** *Indicates how to process the message as defined in HL7 processing rules.*
Version ID	12	VID	5	R	R	[1..1]	Literal Value: "2.3.1" or "2.5.1"
Message Profile Identifier	21	EI	427	O	O	[0..*]	PH_SS-Ack^SS Sender^2.16.840.1.114222.4.3.2.2.1.163.1^ISO or PH_SS-Ack^SSReceiver^2.16.840.1.114222.4.10.3^ISO PH_SS-NoAck^SS Sender^2.16.840.1.114222.4.10.3^ISO or PH_SS-NoAck^SSReceiver^2.16.840.1.114222.4.10.3^ISO PH_SS-Batch^SSR Sender^2.16.840.1.114222.4.10.3^ISO or PHSS-Batch^SSReceiver^2.16.840.1.114222.4.10.3^ISO

C.2 MSA: Message Acknowledgement Segment Definition

In order to acknowledge a correct receipt of a message, message receivers use the MSA segment.

MSA Example:

MSA|AA|201102091114007||||0<cr>

Table C.2		MSA: Message Acknowledge Segment Definition					
Field Name	**Seg**	**DT**	**Length**	**Sender Usage**	**Receiver Usage**	**Cardinality**	**Values/Value Set**
Acknowledgement Code	1	ID	2	R	R	[1..1]	Table 0008
Message Control ID	2	ST	20	R	R	[1..1]	Specifies the value in MSH 10 of the message being acknowledged.
Error Condition	6	CE	250	RE	RE	[0..1]	Table 0357

Appendix D – HESS Code Sets

D1 HESS HL7 Version 2.5.1 Code Set – HL7 and CDC

Table 0008	**Query Results Value** (values suggested by HL7 v 2.5.1) **Note:** *Used for MSA Acknowledgement Code*
Value	**Description**
O	Order plus order status
R	Results without bulk text
S	Status only
T	Full results

Table 0069	**Hospital Service (values suggested by HL7 v 2.5.1)**
Value	**Description**
CAR	Cardiac Service
MED	Medical Service
PUL	Pulmonary Service
SUR	Surgical Service
URO	Urology Service

Table 0072	**No HL7/PHIN Defined Values –** as of 12/22/11
Value	**Description**

Table 0086	**No HL7/PHIN Defined Values -** as of 12/22/11
Value	**Description**

Table 0088	**No HL7/PHIN Defined Values -** as of 12/22/11
Value	**Description**

Table 0104	**Version ID** (values suggested by HL7 v 2.5.1) **Note:** *The only codes listed are those needed for this implementation guide.*
Value	**Description**
2.5.1	Release 2.5.1

Table 0301	Universal ID Type
Value	**Description**
DNS	An Internet dotted name. Either in ASCII or as integers.
GUID	Same as UUID.
HCD	The CEN Healthcare Coding Scheme Designator. (Identifiers used in DICOM follow this assignment scheme.)
HL7	Reserved for future HL7 registration schemes.
ISO	An International Standards Organization Object Identifier
L,M,N	These are reserved for locally defined coding schemes.
Random	Usually a base64 encoded string of random bits. <p> The uniqueness depends on the length of the bits. Mail systems often generate ASCII string "unique names," from a combination of random bits and system names.
URI	Uniform Resource Identifier
UUID	The DCE Universal Unique Identifier
X400	An X400 MHS format identifier
X500	An X500 directory name

Table 0357	Message Error Condition Codes
Value	**Description**
0	Message Accepted
100	Segment Sequence Error
101	Required Field Missing
102	Data Type Error
103	Table Value Not Found
200	Unsupported Message Type
201	Unsupported Event Code
202	Unsupported Processing ID
203	Unsupported Version ID
204	Unknown Key Identifier
205	Duplicate Key Identifier
206	Application Record Locked
207	Application Internal Error

Table 0363	**No HL7/PHIN Defined Values -** as of 12/22/11
Value	**Description**

Table: PHVS_AddressType_CDC(values suggested by HL7 v2.5.1 and CDC) **Value Set OID: 2.16.840.1.114222.4.11.961**	
Value	**Description**
B	Firm/Business
BA	Bad Address
BDL	Birth Delivery Location (address where birth occurred)
BR	Residence At Birth (home address at time of birth)
C	Current Or Temporary
F	Country Of Origin
H	Home
L	Legal Address
M	Mailing
N	Birth (nee) (birth address, not otherwise specified)
O	Office
P	Permanent
RH	Registry Home. Refers to the information system, typically managed by a public health agency, that stores patient information such as immunization histories or cancer data, regardless of where the patient obtains services.

PHVS_AdmissionType_HL7_2x **Note:** *The only codes listed are those needed for this implementation guide.* **Value Set OID: 2.16.840.1.114222.4.11.913**	
Value	**Description of circumstance under which patient was seen**
A	Accident
E	Emergency
L	Labor and Delivery
R	Routine
U	Urgent

PHVS_AdmitSource_HL7_2x **Value Set OID: 2.16.840.1.114222.4.11.918**	
Value	**Description**
1	Physician Referral
2	Clinic Referral
3	HMO Referral
4	Transfer from a Hospital (includes Acute Care)
5	Transfer from a Skilled Nursing Facility
6	Transfer from Another Health Care Facility (includes Nursing Homes)
7	Emergency Room
8	Court/Law Enforcement
9	Information Not Available

PHVS_AgeUnit_SyndromicSurveillance Value Set OID: 2.16.840.1.114222.4.11.3402	
Value	**Description**
d	Day
mo	Month
UNK	Unknown
wk	Week
a	Year

PHVS_Country_ISO_3166-1 Value Set OID: 2.16.840.1.114222.4.11.828	
Value	**Description**
CAN	Canada
MEX	Mexico
USA	United States
UMI	United States Minor Outlying Islands

PHVS_County_FIPS_6-4 County/Parish Value Set OID: 2.16.840.1.114222.4.11.829					
FIPS Code	**County Name**	**FIPS Code**	**County Name**	**FIPS Code**	**County Name**
29001	ADAIR	29079	GRUNDY	29157	PERRY
29003	ANDREW	29081	HARRISON	29159	PETTIS
29005	ATCHISON	29083	HENRY	29161	PHELPS
29007	AUDRAIN	29085	HICKORY	29163	PIKE
29009	BARRY	29087	HOLT	29165	PLATTE
29011	BARTON	29089	HOWARD	29167	POLK
29013	BATES	29091	HOWELL	29169	PULASKI
29015	BENTON	29093	IRON	29171	PUTNAM
29017	BOLLINGER	29095	JACKSON	29173	RALLS
29019	BOONE	29097	JASPER	29175	RANDOLPH
29021	BUCHANAN	29099	JEFFERSON	29177	RAY
29023	BUTLER	29101	JOHNSON	29179	REYNOLDS
29025	CALDWELL	29103	KNOX	29181	RIPLEY
29027	CALLAWAY	29105	LACLEDE	29183	ST. CHARLES
29029	CAMDEN	29107	LAFAYETTE	29185	ST. CLAIR
29031	CAPE GIRARDEAU	29109	LAWRENCE	29186	STE. GENEVIEVE
29033	CARROLL	29111	LEWIS	29187	ST. FRANCOIS
29035	CARTER	29113	LINCOLN	29189	ST. LOUIS
29037	CASS	29115	LINN	29195	SALINE
29039	CEDAR	29117	LIVINGSTON	29197	SCHUYLER
29041	CHARITON	29119	MCDONALD	29199	SCOTLAND
29043	CHRISTIAN	29121	MACON	29201	SCOTT
29045	CLARK	29123	MADISON	29203	SHANNON
29047	CLAY	29125	MARIES	29205	SHELBY
29049	CLINTON	29127	MARION	29207	STODDARD
29051	COLE	29129	MERCER	29209	STONE
29053	COOPER	29131	MILLER	29211	SULLIVAN
29055	CRAWFORD	29133	MISSISSIPPI	29213	TANEY
29057	DADE	29135	MONITEAU	29215	TEXAS
29059	DALLAS	29137	MONROE	29217	VERNON

PHVS_County_FIPS_6-4 County/Parish **Value Set OID: 2.16.840.1.114222.4.11.829**					
FIPS Code	**County Name**	**FIPS Code**	**County Name**	**FIPS Code**	**County Name**
29061	DAVIESS	29139	MONTGOMERY	29219	WARREN
29063	DE KALB	29141	MORGAN	29221	WASHINGTON
29065	DENT	29143	NEW MADRID	29223	WAYNE
29067	DOUGLAS	29145	NEWTON	29225	WEBSTER
29069	DUNKLIN	29147	NODAWAY	29227	WORTH
29071	FRANKLIN	29149	OREGON	29229	WRIGHT
29073	GASCONADE	29151	OSAGE	29510	ST. LOUIS CITY
29075	GENTRY	29153	OZARK		
29077	GREENE	29155	PEMISCOT		

PHVS_DiagnosisType_HL7_2x **Value Set OID: 2.16.840.1.114222.4.11.827**	
Value	**Description**
A	Admitting diagnosis
F	Final diagnosis
W	Working diagnosis

PHVS_DischargeDisposition_HL7_2x **Value Set OID: 2.16.840.1.114222.4.11.915**	
Value	**Description**
01	Discharged to home or self care (routine discharge).
02	Discharged/transferred to a short-term general hospital for inpatient care
03	Discharged/transferred to skilled nursing facility (SNF) with Medicare certification.
04	Discharged/transferred to an intermediate care facility (ICF)
05	Discharged/transferred to another type of institution not defined elsewhere in this code list
06	Discharged/transferred to home under care of organized home health service organization
07	Left against medical advice or discontinued care
08	Discharged/transferred to home under care of a Home IV provider
09	Admitted as an inpatient to this hospital.
10-19	Reserved for national assignment (Discontinued effective 10/16/03)
20	Expired
21-29	Reserved for national assignment (Discontinued effective 10/16/03)
30	Still Patient
31-39	Reserved for national assignment (Discontinued effective 10/16/03)
40	Expired at home
41	Expired in a medical facility (e.g. hospital, SNF, ICF, or free standing hospice)
42	Expired - place unknown
43	Discharged/transferred to a federal health care facility.
44-49	Reserved for national assignment
50	Hospice - home
51	Hospice - medical facility

52-60	Reserved for national assignment
61	Discharged/transferred to hospital-based Medicare approved swing bed
62	Discharged/transferred to an inpatient rehabilitation facility (IRF) including rehabilitation distinct part units of a hospital.
63	Discharged/transferred to a Medicare certified long term care hospital (LTCH).
64	Discharged/transferred to a nursing facility certified under Medicaid but not certified under Medicare.
65	Discharged/transferred to a psychiatric hospital or psychiatric distinct part unit of a hospital.
66	Discharged/transferred to a Critical Access Hospital (CAH).
67-70	Reserved for national assignment
71	Reserved for national assignment (Discontinued effective 4/1/03)
72	Reserved for national assignment (Discontinued effective 4/1/03)
73-99	Reserved for national assignment

PHVS_EthnicityGroup_CDC (from HL7 v2.5.1 and CDC) **Value Set OID: 2.16.840.1.114222.4.11.837**	
Value	**Description**
2135-2	Hispanic or Latino
2186-5	Not Hispanic or Latino

PHVS_Gender_SyndromicSurveillance (values suggested by HL7 v 2.5.1) **Value Set OID: 2.16.840.1.114222.4.11.3403**	
Value	**Description**
F	Female
M	Male
O	Other
U	Unknown / not stated

PHVS_ IdentifierType_Syndromic Surveillance (from HL7 v 2.5.1 and CDC). **Value Set OID: 2.16.840.1.114222.4.11.3405**	
Value	**Description**
AM	American Express
AN	Account Number
ANC	Account Number Creditor
AND	Account Number Debtor
ANON	Anonymous Identifier
ANT	Temporary Account Number
APRN	Advanced Practice Registered Nurse Number
BA	Bank Account Number
BC	Bank Card Number

PHVS_ IdentifierType_Syndromic Surveillance (from HL7 v 2.5.1 and CDC). **Value Set OID: 2.16.840.1.114222.4.11.3405**	
Value	**Description**
BR	Birth Registry Number
BRN	Breed Registry Number
CC	Cost Center Number
CY	County Number
DDS	Dentist License Number
DEA	Drug Enforcement Administration Registration Number
DFN	Drug Furnishing Or Prescriptive Authority Number
DI	Diner's Club Card
DL	Driver's License Number
DN	Doctor Number
DO	Osteopathic License Number
DPM	Podiatrist License Number
DR	Donor Registration Number
DS	Discover Card
EI	Employee Number
EN	Employer Number
FI	Facility ID
GI	Guarantor Internal Identifier
GL	General Ledger Number
GN	Guarantor External Identifier
HC	Health Card Number
IND	Indigenous/Aboriginal
JHN	Jurisdictional Health Number (Canada)
LI	Labor and Industries Number
LN	License Number
LR	Local Registry ID
MA	Patient Medicaid Number
MB	Member Number
MC	Patient's Medicare Number
MCD	Practitioner Medicaid Number
MCN	Microchip Number
MCR	Practitioner Medicare Number

PHVS_ IdentifierType_Syndromic Surveillance (from HL7 v 2.5.1 and CDC). **Value Set OID: 2.16.840.1.114222.4.11.3405**	
Value	**Description**
MD	Medical License Number
MI	Military ID Number
MR	Medical Record Number
MRT	Temporary Medical Record Number
MS	MasterCard
NE	National Employer Identifier
NH	National Health Plan Identifier
NI	National Unique Individual Identifier
NII	National Insurance Organization Identifier
NIIP	National Insurance Payor Identifier (Payor)
NNxxx	National Person Identifier where he xxx is the ISO Table 3166 3-character (alphabetic) Country Code
NP	Nurse Practitioner Number
NPI	National Provider Identifier
OD	Optometrist License Number
PA	Physician Assistant Number
PCN	Penitentiary/Correctional Institution Number
PE	Living Subject Enterprise Number
PEN	Pension Number
PI	Patient Internal Identifier
PN	Person Number
PNT	Temporary Living Subject Number
PPN	Passport Number
PRC	Permanent Resident Card Number
PRN	Provider Number
PT	Patient External Identifier
QA	QA Number
RI	Resource Identifier
RN	Registered Nurse Number
RPH	Pharmacist License Number
RR	Railroad Retirement Number
RRI	Regional Registry ID
SL	State License

PHVS_ IdentifierType_Syndromic Surveillance (from HL7 v 2.5.1 and CDC). **Value Set OID: 2.16.840.1.114222.4.11.3405**	
Value	**Description**
SN	Subscriber Number
SR	State Registry ID
SS	Social Security Number
TAX	Tax ID Number
TN	Treaty Number (Canada)
U	Unspecified Identifier
UPIN	Medicare/CMS (formerly HCFA)'s Universal Physician Identification Numbers
VN	Visit Number
VS	VISA
WC	WIC Identifier
WCN	Workers' Comp Number
XX	Organization Identifier

Value	

PHVS_ObservationIdentifier_SyndromicSurveillance **Value Set OID: 2.16.840.1.114222.4.11.3589**	
Value	**Description**
21612-7	Age Time Patient Reported
11289-6	Body Temperature: Temp:Enctrfrst:Patient:Qn:
8661-1	Chief Complaint:Find:Pt:Patient:Nom:Reported
44833-2	Diagnosis.Preliminary:Imp:Pt:Patient:Nom:
SS003	Facility/Visit Type
11368-8	Illness or Injury onset date and time:TmStp:Pt:Patient:Qn:
59408-5	Oxygen Saturation:MFr:PT:BldA:Qn:Pulse
SS001	Treating Facility Identifier
SS002	Treating Facility Location
54094-8	Triage note:Find:Pt:Emergencydepartment:Doc:

PHVS_PatientClass_SyndromicSurveillance (values suggested by HL7 v 2.5.1) - **Note:** *The only codes listed are those needed for this implementation guide.* **Value Set OID: 2.16.840.1.1114222.4.11.915**	
Value	**Description**
E	Emergency
I	Inpatient
O	Outpatient

PHVS_ProcessingID_HL7_2x **Value Set OID: 2.16.840.1.114222.4.11.1028**	
Value	**Description**
D	Debugging
P	Production
T	Training

PHVS_PulseOximetryUnit_UCUM **Value Set OID: 2.16.840.1.114222.4.11.3590**	
Value	**Description**
%	Percent

PHVS_RaceCategory_CDC (values suggested by HL7 v2.5.1 and CDC) **Value Set OID: 2.16.840.1.114222.4.11.836**	
Value	**Description**
1002-5	American Indian or Alaska Native
2028-9	Asian
2054-5	Black or African American
2076-8	Native Hawaiian or Other Pacific Islander
2106-3	White
2131-1	Other Race

PHVS_ResultStatus_HL7_2x **Value Set OID: 2.16.840.1.114222.4.11.815**	
Value	**Description**
A	Some, but not all, results available
C	Correction to results
F	Final results; results stored and verified. Can only be changed with a corrected result.
I	No results available; specimen received, procedure incomplete
O	Order received; specimen not yet received
P	Preliminary: A verified early result is available, final results not yet obtained
R	Results stored; not yet verified
S	No results available; procedure scheduled, but not done
X	No results available; Order canceled.
Y	No order on record for this test. (Used only on queries)

Z	No record of this patient. (Used only on queries)

Table: PHVS_State_FIPS_5-2
Coding System OID: 2.16.840.1.113883.6.92

FIPS Code	State Name	FIPS Code	State Name	Fips Code	County Name
01	Alabama	20	Kansas	69	Northern Mariana Islands
02	Alaska	21	Kentucky	39	Ohio
60	American Samoa	89	Kingman Reef	40	Oklahoma
04	Arizona	22	Louisiana	41	Oregon
05	Arkansas	23	Maine	70	Palau
81	Baker Island	68	Marshall Islands	95	Palmyra Atoll
06	California	24	Maryland	42	Pennsylvania
08	Colorado	25	Massachusetts	72	Puerto Rico
09	Connecticut	26	Michigan	44	Rhode Island
10	Delaware	71	Midway Islands	45	South Carolina
11	District of Columbia	27	Minnesota	46	South Dakota
64	Federated States of Micronesia	28	Mississippi	47	Tennessee
12	Florida	29	Missouri	48	Texas
13	Georgia	30	Montana	74	U.S. Minor Outlying Islands
66	Guam	76	Navassa Island	49	Utah
15	Hawaii	31	Nebraska	50	Vermont
84	Howland Island	32	Nevada	78	Virgin Islands of the U.S.
16	Idaho	33	New Hampshire	51	Virginia
17	Illinois	34	New Jersey	79	Wake Island
18	Indiana	35	New Mexico	53	Washington
19	Iowa	36	New York	54	West Virginia
86	Jarvis Island	37	North Carolina	55	Wisconsin
67	Johnston Atoll	38	North Dakota	56	Wyoming

PHVS_TemperatureUnit_UCUM **Value Set OID: 2.16.840.1.114222.4.11.919**	
Value	**Description**
Cel	degree Celsius
[degF]	degree Fahrenheit

PHVS_ValueType_HL7_2x **Value Set OID: 2.16.840.1.114222.4.11.1059**	
Value	**Description**
AD	Address
CE	Coded Entry
CF	Coded Element With Formatted Values
CK	Composite ID With Check Digit
CN	Composite ID And Name
CP	Composite Price
CX	Extended Composite ID With Check Digit
DT	Date
ED	Encapsulated Data
FT	Formatted Text (Display)
MO	Money
NM	Numeric
PN	Person Name
RP	Reference Pointer
SN	Structured Numeric
ST	String Data
TM	Time
TN	Telephone Number
TS	Time Stamp (Date & Time)
TX	Text Data (Display)
XAD	Extended Address
XCN	Extended Composite Name And Number For Persons
XON	Extended Composite Name And Number For Organizations
XPN	Extended Person Name
XTN	Extended Telecommunications Number

Other ISDS Recommended Values for ADT Message type are outlined in the following table. Refer to https://phinvads.cdc.gov/vads/SearchVocab.action website for values.

Note: *These are very large value sets*

PHVS Tables		
Value Set	**Value Set OID**	**Value Set Name / Description**
PHVS_AdministrativeDiagnosis_CDC_ICD-9CM	2.16.840.1.114222.4.11.856	ICD-9 CM Administrative Diagnosis Codes used for billing purposes, Reason for Study, DG1 Diagnosis segments Keyword: ICD-9 Vol 1 & 2.
PHVS_CauseOfDeath_ICD-10_CDC	2.16.840.1.114222.4.11.3593	The list provides ICD-10 codes and associated cause-of-death titles for the most detailed listing of causes of death. This list is maintained by CDC NCHS.
PHVS_Disease_CDC	2.16.840.1.114222.4.11.909	Disease or Disorder.
USPS Zip Code Look Up		
www.usps.com		United States Postal Service Zip Code look-up database.