

Preliminary Recommendation

Core EHR Data Requirements for Syndromic Surveillance

International Society for Disease Surveillance

Meaningful Use Workgroup

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Contact: Charles Ishikawa, MSPH
cishikawa@syndromic.org

26 Lincoln Street, Suite 3
Brighton, MA 02135
617.779.0880



INTERNATIONAL SOCIETY
FOR DISEASE SURVEILLANCE

Acknowledgements

ISDS Meaningful Use Workgroup

- Michael A. Coletta, MPH (Workgroup Chair), Virginia Department of Health
- Ryan Gentry, Indiana State Department of Health
- Julia E. Gunn, RN, MPH, Boston Public Health Commission
- Richard S. Hopkins, MD, MSPH, Florida Department of Health
- Geraldine S. Johnson, MS, New York State Department of Health
- Bryant T. Karras MD, State of Washington, Department of Health
- Karl Soetebier, Georgia Department of Community Health
- David Swenson, MEd, State of New Hampshire, Department of Public Health Services
- Office of Surveillance, Epidemiology, and Laboratory Science and Career Development, CDC
 - Public Health Surveillance Program Office: Pamela A. Meyer, PhD, MSPH
 - Division of Healthcare Information: Samuel Groseclose, DVM, MPH; Taha Kass-Hout, MD, MS
 - Public Health Informatics and Technology Program Office: Nikolay Lipskiy, MD, DrPH, MBA
 - Northrop Grumman: Sergei Li, PMP; Sundak Ganesan, MD; Mark Meadows; Adam Browning

ISDS Board of Directors

- David Buckeridge, MD, PhD, ISDS President, McGill University and Montreal Public Health Department
- John S. Brownstein, PhD, ISDS Vice-President, Harvard Medical School
- Howard Burkom, PhD, Johns Hopkins University Applied Physics Laboratory
- Jean-Paul Chretien, MD, PhD, Lieutenant Commander, US Navy
- Duncan Cooper, MRes, PhD, Bradford and Airedale Teaching Primary Care Trust
- Julia E. Gunn, RN, MPH, Boston Public Health Commission
- Bill Lober, MD, University of Washington
- Joseph S. Lombardo, PhD, Johns Hopkins Applied Physics Laboratory
- Marc Paladini, MPH, New York City Department of Health and Mental Hygiene

Staff

- Charlie Ishikawa, MSPH
- Anne Gifford, MPH
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Executive Summary

The International Society for Disease Surveillance (ISDS), with the support of the Centers for Disease Control and Prevention, Office of Surveillance Epidemiology, and Laboratory Services, BioSense Program, convened a Workgroup in July 2010 to describe a contemporary business model of syndromic surveillance and make recommendations to support Stage 1¹ meaningful use of electronic health record (EHR) technology.

This document contains preliminary recommendations for a minimum data set and definitions to support syndromic surveillance practice based on an initial, high-level assessment of syndromic surveillance objectives, business processes, and activities. The document also provides recommendations for vocabulary and mapping of these health data to HL7 message elements, **but in its current preliminary form is not an HL7 message implementation guide.** Efforts to develop such a guide are underway and future versions of this document (i.e., provisional and final) will incorporate this work.

In this preliminary recommendation, ISDS intends to provide:

- **EHR technology vendors** with business intelligence for research, development and planning
- **Eligible healthcare professionals² and hospitals** with a resource for working with vendors and public health authorities
- **Public Health stakeholders** with a foundation for realizing the future potential of EHR technology to improve population health

By January 2011, the ISDS will release a comprehensive business model of syndromic surveillance and its core health data requirements, reflecting in-depth analysis by the Meaningful Use Workgroup and a community consensus-driven process.

In addition to giving preliminary recommendations for health data standards, this document presents the timeline for developing the contemporary business model of syndromic surveillance, and previews the issues that will be considered in documenting syndromic surveillance business processes and its core health data requirements.

¹ Medicare and Medicaid Programs; Electronic Health Record Incentive Program: 42 CFR Parts 412, 413, 422, and 495 CMS-0033-P, RIN 0938-AP78

² Eligible healthcare professionals: Section 1848(o)(5)(C) as added by the Recovery Act section 4101 defines the term eligible professional to mean a physician as defined in section 1861(r), which includes the following five types of professionals: doctor of medicine or osteopathy, a doctor of oral surgery or dental medicine, a doctor of podiatric medicine, a doctor of optometry, or a chiropractor.

1. Introduction

The International Society for Disease Surveillance (ISDS) works to improve population health by advancing the science and practice of surveillance to support timely and effective prevention and response. We facilitate interdisciplinary collaboration, and promote and conduct research, education, and advocacy.

ISDS members represent the depth and breadth of surveillance practice. Members are informaticians, frontline epidemiologists, researchers, and clinicians who have pioneered the use of electronic health data for automated and timely population health surveillance. Innovation, diversity, pragmatism, and continual learning are cultural norms that drive our membership and fuel this rapidly evolving area of public health science and practice.

ISDS is a resource for best practices and lessons learned in syndromic surveillance. Members are public health professionals with practical, on-the-ground experience in establishing and maintaining relationships with clinical providers. For nearly a decade, ISDS members have managed interagency electronic health data transactions, operated large databases, automated epidemiological analyses, implemented and assessed novel methodologies, and communicated this surveillance information to public health decision makers for use in monitoring and mitigating public health threats.

1.1 The CMS EHR Incentive Program³, EHR Meaningful Use, and ISDS

ISDS applauds improving population and public health as a policy priority for the Medicare and Medicaid EHR Incentive Program. There is widespread support among ISDS members for EHR technology standards that enhance the ability of public health authorities to monitor community and population health.

Furthermore, ISDS endorses efforts to ensure interoperability among electronic immunization, laboratory, and syndromic patient records. Such interoperability will be crucial for realizing the future potential of these data for improved public health surveillance.

ISDS strongly supports the inclusion of a syndromic surveillance standard in the final Stage 1 meaningful use rule for EHR certification⁴. ISDS membership is highly invested to the success of Stage 1, because success is essential to making the most of this tremendous opportunity and federal investment.

³ <https://www.cms.gov/EHRIncentivePrograms/> (Accessed: 9/24/2010)

⁴ <http://healthit.hhs.gov/portal/server.pt?open=512&objID=1153&mode=2> (Accessed: 9/24/2010)

ISDS with the support of the BioSense Program (CDC/OSELS) has convened a Meaningful Use Workgroup to document current syndromic surveillance business standards and data requirements that best support Stage 1 meaningful use of electronic health record (EHR) technology by public health departments.

This document is our preliminary recommendation for core EHR data requirements for syndromic surveillance.

1.2 Meaningful Use Workgroup Charter

By January 2011, the Workgroup will recommend a contemporary business model of syndromic surveillance and its core data requirements, using a community consensus-driven process.

1.2.1 Final Product and Project Timeline

The Workgroup's final product in January 2011 will:

- Describe the core business processes, model use cases and workflows that support the production of syndromic surveillance data in clinical settings, the communication of these data to public health departments, and the use of health data within public health departments.
- Specify health data content and messaging standards that are core to the business.

Workgroup and community input on the final product will be ensured through an iterative, consensus-driven process. ISDS will seek comments from key public health stakeholders through the Joint Public Health Informatics Taskforce (JPHIT). Workgroup products will be made available and vetted on the following schedule:

1. **Preliminary recommendation:** Late September/Early October 2010
2. **Provisional recommendation:** November 2010
3. *Comment Period:* November – December 2010
4. **Final recommendation:** January 2011

1.2.2 Membership

The eight-member group consists of syndromic surveillance experts from state and local health departments from across the U.S. Workgroup members are actively engaged in day-to-day system operations and are developing or implementing health information exchange technologies.

1.2.3 Partnerships

ISDS staff supports the Workgroup and has partnered with the CDC's Office of Surveillance, Epidemiology, and Laboratory Services to ensure that the Workgroup's product properly supports Meaningful Use, Stage 1.

The Joint Public Health Informatics Taskforce (JPHIT) is the forum through which ISDS will communicate the provisional and final recommendations to stakeholders.

1.3 Challenges of the Meaningful Use Workgroup Charter

The Workgroup recognizes the following fundamental challenges to their charge:

- There is an urgent need for this work
- Advances in the science and practice are continual and the field is diverse
- Success of the EHR certification program to impact population and public health will depend on how quickly public health authorities (PHA) with limited resources can make effective use of syndromic data, and how well PHA's with high capability can continue to innovate
- The HITECH Act is an opportunity to document and critically examine the process of syndromic surveillance and to advance the field of surveillance as a whole
- Future evolution of syndromic surveillance may change the requirements

1.4 Workgroup Agenda: Provisional and Final Recommendations

Following this preliminary recommendation, the Workgroup will conduct an in-depth analysis of the business of syndromic surveillance, by deconstructing the large processes in to their smaller task sets and requirements. As part of this charge, the Workgroup will identify the objectives of syndromic surveillance, and the business processes and use cases that support the objectives.

For the remainder of this project, the Workgroup will:

- Fully develop the contemporary business model for syndromic surveillance
- Account for variations in practice
- Draw a clear distinction between syndromic surveillance and other forms of public health surveillance
- Incorporate best practices
- Evaluate and possibly change the preliminary minimum data set and vocabulary code set recommended in Appendix A - C
- Consider the current and potential role of the following candidate health data elements in syndromic surveillance:
 - i. Laboratory and radiology orders and results
 - ii. Additional patient demographics
 - iii. Additional vital sign data (e.g., heart rate, respiratory, blood pressure, height, and weight)
 - iv. A stronger definition for a pseudo-identified, unique patient ID and a clearer process to maintain the ID in order to re-identify a patient if needed during follow-up investigations
 - v. Discussion of using metadata elements to organize data such as facility or contact information

- vi. Observation, symptoms, and clinical findings
- vii. Pregnancy status
- viii. Triage notes
- ix. Data elements that could be used to assess severity of illness (e.g. Ventilated / Intubated indicators)
- x. Intensive care unit indicators
- xi. Capturing contact information for the report, if additional follow-up is required
- xii. Capturing the sender of data: If data flows through an intermediary system, a method to track the pathway of the message

2. Audience, Scope, and Assumptions

2.1 Audience

In this preliminary recommendation, ISDS intends to provide:

- **EHR technology vendors** with business intelligence for research, development and planning
- **Eligible healthcare professionals⁵ and hospitals** with a resource for working with vendors and public health authorities
- **Public Health stakeholders** with a foundation for realizing the future potential of EHR technology to improve population health

2.2 Scope

This preliminary recommendation is:

- A **minimum** data set and definitions to support syndromic surveillance practice based on an initial, high-level assessment of syndromic surveillance objectives, business processes, and activities
- A preview of future public health surveillance business needs
- Initial work towards providing EHR developers with guidance for system development

This preliminary recommendation is **not**:

- Intended for use in EHR certification or as an HL7 message implementation guide
- The final or provisional recommendation
- Fully reflective of the perspectives and capabilities of all public health stakeholders and business partners

2.3 Assumptions

- a. Health data being sent and received is collected and captured by a health information system
- b. Variations in state and local laws and practices may result in additional EHR data requirements for syndromic surveillance
- c. Public health authority will be able to receive, manage, analyze, and meaningfully use HL7 messages
- d. HIPAA does not restrict covered entities (e.g., healthcare organizations) from sharing health records with public health agencies that are authorized by law to receive health data
- e. Unless data are missing in a field designated as required, the sending of records should not be delayed:

⁵ Eligible healthcare professionals: Section 1848(o)(5)(C) as added by the Recovery Act section 4101 defines the term eligible professional to mean a physician as defined in section 1861(r), which includes the following five types of professionals: doctor of medicine or osteopathy, a doctor of oral surgery or dental medicine, a doctor of podiatric medicine, a doctor of optometry, or a chiropractor.

- i. Data elements designated as **RE** (Required, but may be empty) indicate that the field is a required field and must be supported within the source health information system. The reporting of data is setting-specific. If data are present, then they must be reported. However, if there are no data captured in the field due to the setting (e.g. no chief complaint data for a trauma patient) and the field is blank, the message may be sent with the field containing no data.
 - ii. Data elements designated as **R** (Required) indicate that the field is a required field and must be supported by the health information system. A value must be present in the field in order for the message to be accepted.
 - iii. Data elements designated as **O** (Optional): Optional for data to be sent in a message. Usage of these data elements should be determined at the state or local level.
- f. This document reflects a perspective based in applications of syndromic surveillance to infectious diseases, the area where the field has the greatest amount of experience. In the future the Workgroup will explore other applications that are becoming more routine (e.g., chronic diseases), and may result in additional requirements

3. The Contemporary Business Model for Syndromic Surveillance

Syndromic Surveillance: Public health surveillance⁶ emphasizing the use of near “real-time” pre-diagnostic data and statistical tools to detect and characterize unusual activity for further public health investigation.

The contemporary syndromic surveillance business model describes to eligible healthcare providers and EHR technology vendors these aspects of syndromic surveillance:

- Necessary infrastructure
- High-value products
- Essential business transactions
- Critical workflows

In this preliminary recommendation, the Workgroup reached consensus on high-level business goal, objectives, and processes. This section serves as a general description of contemporary business practice and as the starting point for further development of the business model.

3.1 Business goals and objectives

Based on the Workgroup’s high-level assessment, the objectives of syndromic surveillance include the following:

Syndromic Surveillance Business Objectives	
Monitoring	Provide intelligence / data for flexible, timely situation awareness across care delivery communities and authorized government agencies prior to, during, and after an incident or event.
Assessment	Assist in the severity assessment of possible threat(s), to support public health investigations and recommend courses of action.
Detection	Support early identification or ruling out of public health threats, conditions of public health importance, or suspected incident(s).

⁶ Public Health Surveillance: Ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health

Syndromic Surveillance Business Objectives	
Process Improvement	Continuously develop and evaluate new and improved processes, practices and methods for syndromic surveillance.
Communication	Obtain data to inform the public and stakeholder organizations about conditions of public health importance.
Partnerships	Liaise with and support health data providers, media, first responders, and government decision makers.

3.2 Processes and workflows

This document supports the scope of syndromic surveillance that the Workgroup considered to be core objectives, specifically, monitoring, assessment, and detection.

The business processes that were assessed and are supported by the provisional minimum dataset (See Section 4 and Appendix A - C), include the following:

Business Process	Objective Met	Sample Scenario(s)
Add and validate a new syndromic surveillance data source	Process Improvement	
Conduct Routine Trend Monitoring for Infectious Disease	Detection	Seasonal Influenza, Gastrointestinal illness
Monitoring of an already detected incident for a Localized Disease Outbreak	Monitoring, Assessment	Gastrointestinal clusters (Norovirus, Salmonella, Ciguatera)
Monitoring of an already detected incident for a Large Disease Outbreak	Monitoring, Assessment	Novel influenza virus infection
Special monitoring due to an anticipated or potential threat	Detection, Monitoring, Assessment	Special incident monitoring (natural disasters, Superbowl, etc.)

4. Core EHR Data Requirements

Appendix A and B presents the preliminary recommendation for EHR data requirements to support public health syndromic surveillance, specifically a minimum health data set that is commonly used in syndromic surveillance.

Appendix C presents sample messages in HL7 format. These informative examples are likely to change as the Workgroup's agenda progresses.

4.1 Transmission and Reception of Data

This document focuses on the transmission of electronic health data from eligible healthcare providers (senders) and reception by public health authorities (receiver). Health data transmitted are captured in a health information system during a patient's visit to a healthcare facility.

Senders of data include, but are not limited to: hospitals, emergency departments, urgent care centers, primary care centers, community health centers, clinician networks, hospital corporations, corporate third party operators of information brokers, regional data centers for hospitals, health information exchanges (HIE), and regional health information organizations (RHIO).

The receiver perspective is from the state or local jurisdiction point of view. Data transmission to a federal authority is not explicitly addressed.

Frequency of data transmitted from the sender to the receiver is no less than every 24 hours. However, all parties involved in the transmission (i.e., eligible healthcare provider, EHR technology vendor, and public health authority), need determine the actual periodicity of data exchange on a case-by case basis.

The sender is capturing and sending all the specified data elements for all patient records. When data are updated, related records will be re-sent.

4.2 Key Terms & Definitions

This section describes the definitions of the table columns in Appendix A.

Column Name	Definition
Data Element Name	Name of the minimum data set element.
Description of field, including rules/constraints	Description of the data element, including the rules and constraint requirements.

Column Name	Definition
Usage	<p>Refers to whether an element must appear in the message. The Usage codes are:</p> <p>R – Required: Indicates that the field is a required field and must be supported by the EHR system. A value must be present in the field in order for the message to be accepted.</p> <p>RE – Required, but can be empty: Indicates that the field is a required field and must be supported by the EHR system. The reporting of data is setting-specific. If data is present, then it must be reported. However, if there is no data captured in the field due to the setting (e.g. no chief complaint data for a trauma patient) and the field is blank, the message may be sent with the field containing no data.</p> <p>O – Optional: Optional for data to be sent in a message. Usage of these data elements will be determined at the state or local level.</p>
Cardinality	Minimum and maximum number of times the element may appear.
Vocabulary / Code Set	Vocabulary or code set values that define the data element values.
HL7 Field 2.3.1/2.5.1 Mapping	The Meaningful Use Final Rule for syndromic surveillance supports both HL7 version 2.3.1 and 2.5.1. This field lists the candidate HL7 version 2.3.1 element to which the corresponding minimum data set element may map.
Field Length	Length of the field derived from HL7 2.5.1 to allow compatibility with 2.31 and 2.5.1 based systems
Notes	Describes additional notes that are relevant to the rules and/or processing of the data element field.

Appendix A. Preliminary Minimum Data Set Commonly Used for Public Health Syndromic Surveillance

The following table contains a preliminary minimum list of data elements commonly used by public health authorities to conduct syndromic surveillance. These are subject to change in accordance with applicable state and local laws and practices.

Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
Facility Identifier	Unique facility identifier of facility providing data	R	[1..1]	Recommended: National Provider Identifier	MSH.4.2	199	<ul style="list-style-type: none"> Use facility identifier for state or local reporting only. This is due to agreements with many health data providers that explicitly state that states or localities will not expose them to a third party like the federal government

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Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
							when reporting above state level. <ul style="list-style-type: none"> This number should be specific for each facility location (not a number representing an umbrella business)
Facility Name	Name of facility providing data	RE	[0..1]		MSH.4.1	20	
Facility Location	Street address of facility location	RE	[0..1]		OBX.2 = XAD OBX.3 = {Facility Location} OBX.5.1 = (value)	184	

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Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
	City of facility location	RE	[0..1]	USGS GNIS City Value Set	OBX.2 = XAD OBX.3 = {Facility Location} OBX.5.3 = (value)	50	
	County of facility location	RE	[0..1]	FIPS 6-4 Use numeric codes	OBX.2 = XAD OBX.3 = {Facility Location} OBX.5.9 = (value)	20	
	State of facility location. Use 2-character abbreviation.	RE	[0..1]	FIPS 5-2 Use numeric codes	OBX.2 = XAD OBX.3 = {Facility Location} OBX.5.4 = (value)	50	

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Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
Unique Visiting ID	Unique identifier for a patient visit. A visit is defined as a discrete or unique clinical encounter within a service department or location.	R	[1..1]		PV1.19.1	15	
Visit Date / Time	Date/Time of patient presentation	R	[1..1]		PV1.44	26	
Unique Patient Identifier	Unique identifier for the patient	R	[1..1]	PID.3.5 codes from HL7 Table #0203.	PID.3	250 Total (15 for identifier)	
Medical record #	Patient medical record number	O	[0..1]	PID.3.5 codes from HL7 Table #0203. Identifier Type Codes	PID.3	250 Total (15 for identifier)	It is recommended to submit the patient medical record number to facilitate identification of the patient, in the event

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Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
							of a required follow-up investigation. Without the medical record number, the work required to follow-up on the health data provider end greatly increases.
Age	Numeric value of patient age	R	[1..1]	OBX.3 is LOINC value.	OBX.2 = NM OBX.3 = 21612-7 OBX.5 = (value)	16 when NM datatype	The Workgroup recognizes a technical constraint where age being required through the OBX segment is a deviation from the standard HL7 format of the recommended messages. The Workgroup will explore what the implications are to

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Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
							practices due to this requirement. Note: Sending DOB is <u>not</u> acceptable.
Age units	Unit corresponding to numeric value of patient age (e.g. Days, Month or Years)	R	[1..1]	UCUM Age Units	OBX.6 of the Reported Patient Age OBX	478 Total	
Gender	Gender of patient	RE	[0..1]	HL7 v2.5.1 Administrative Sex (Table 0001)	PID.8	1	
Zip Code	Zip Code of patient home address. Minimum of 5 digits.	RE	[0..1]	USPS	PID.11.5	12	See examples of HL7 coded foreign zip codes at end of report.

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Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
State	State of patient home address. Use 2-character abbreviation.	RE	[0..1]	FIPS 5-2 Use numeric code	PID.11.4	50	
Country	Country of patient home address.	RE	[0..1]	ISO 3166-1 Country Value Set	PID.11.6	3	
Race	Race of patient	RE	[0..*]	CDC Race Category Value Set	PID.10	478 Total	
Ethnicity	Ethnicity of patient	RE	[0..*]	CDC Ethnicity Group Value Set	PID.22	478 Total	
Diagnosis / Injury Code	Diagnosis or injury code of patient condition	RE	[0..*]	ICD-9 Clinical Modification diagnosis code Or SNOMED Disorder/ Disease domain	DG1.3	478 Total	Do not wait to send data until diagnosis is given. This will likely be an update.

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Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
Diagnosis Type	Qualifier for Diagnosis / Injury Code specifying type of diagnosis	RE	[0..*]	HL7 2.5.1 - Diagnosis Type (Table 0052)	DG1.6	2	
Discharge Disposition	Discharge disposition of patient	RE	[0..1]	National Uniform Billing Committee (NUBC) – Patient Status UB04 codes	PV1.36 Note: If the patient’s discharge disposition is “expired”, the patient death indicator in PID.30 could be “Y” and the Date/Time of Patient death, in PID.29, could be populated. Both fields are optional in the HL7 standard.	3	This field will update with multiple submissions. Ambulatory values were added to imply what an outpatient ambulatory care facility could /should send in this field.

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Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
Disposition Date / Time	Date and time of disposition	RE	[0..1]		PV1.45	26	Send this field as empty if the patient has not been discharged. Do not wait to send data until patient is discharged.
Patient Class	Patient classification within facility	RE	[0..1]	HL7 v.2.5.1 – Patient Class (Table #0004)	PV1.2	1	It is recommended that health data receivers (i.e., the public health authority) constrain these data using the patient class code set (example: only send records where patient class = E, I, O). There is a potential for a large amount of data if not constrained. However, if the public health

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Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
							authority does not choose to constrain these health data, this field will be critical.
Chief Complaint / Reason for visit	Short description, recorded when seeking care	RE	[0..*]	This field needs to be the richest free text description of the patient's chief complaint. If both the free text chief complaint text and drop down selection chief complaint text is available, send only the free text chief complaint. If the chief complaint is only from drop down	PV2.3	478 Total If free text, component length is 199.	This value is critical for syndromic surveillance; Since, however, there are settings or scenarios in which this field may be blank (e.g. trauma patient). Therefore, the Usage value is 'RE'.

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Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
				list fields, then concatenate all drop down list chief complaints and submit.			
Temperature	1 st recorded temperature	RE	[0..1]	LOINC for Coded Observation Identifier (OBX.3) UCUM for Coded Numeric Units (OBX.6) Temperature Units OBX.14 for Date/time of the observation	OBX.2 = NM OBX.3 = 8310-5^BODY TEMPERATUR E^LN OBX.5 = (value)	16 when NM datatype	Temperature may provide value in classifying certain conditions, such as pandemic flu.
Pulse Oximetry	1 st recorded pulse oximetry value	RE	[0..1]	LOINC for Coded Observation Identifier (OBX.3) UCUM for Coded Numeric Units (OBX.6)	OBX.2 = NM OBX.3 = 59408-5^SaO2% BldA PulseOx^LN	16 when NM datatype	OBX.3 is LOINC value.

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Data Element Name	Description of field, including rules / constraints	Usage	Cardinality	Vocabulary / Code Set	HL7 Field 2.3.1/2.5.1 Mapping	Field Length	Notes
				Generic Pulse Oximetry: 59408-5 On Room Air Pulse Oximetry: 59410-1 Units OBX.6 = % percent OBX.14 for Date/time of the observation	OBX.5 = (value)		
Date of onset	Date that patient began having symptoms of condition being reported	RE	[0..1]	LOINC for Coded Observation Identifier (OBX.3)	OBX.2 = TS OBX.3 = 11368-8^Illness/Injury Onset Date/time^LN OBX.5 =	26 when TS datatype	

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					(value)		
Report Date/Time	Date and time of report transmission from original source	R	[1..1]		EVN.2	26	If data flows through an intermediary or third party, the intermediary must keep the original date/time of transmission.

Appendix B: Suggested Message Types Based on Select Business Processes and Minimum Data Set

ADT^A01 Admit/Visit Notification

ADT^A04 Register a Patient

ADT^A08 Update Patient Information

Most ADT messages contain similar segments and therefore this is a constrained list based on when in the admissions process the requested data is most likely present.

It does not matter if you use 2.3.1 or 2.5.1, the basic structure would be the same for both. All of the above message types could utilize this structure and still conform to HL7 processing rules.

Message 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, in our case, the reported date/time.	R	[1..1]
PID	Patient Identification	Patient identifying and demographic information.	R	[1..1]
PV1	Patient Visit	Information related to this visit at the eligible healthcare professional's office or hospital	R	[1..1]

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 Appendix B: Suggested Message Types Based on Data Elements and Use

		including the nature of the visit, critical timing information and a unique visit identifier.		
[PV2]	Patient Visit Additional Information	Admit Reason / Chief Complaint information.	O	[0..1]
[[OBX]]	Observation/Result Segment	Additional data that doesn't fit into other segments	O	[0..*]
[[DG1]]	Diagnosis	Diagnosis information	O	[0..*]

Appendix C: Sample Messages in HL7 format

A04 Emergency Department Registration; no Updates

MSH|^~\&||MIDLAND HLTH CTR^9876543210^NPI|||201102091114||ADT^A04|201102091114-0078|P|2.3.1<cr>

EVN||201102091114<cr>

PID|1||20060012168^^^^MR||~^^^^^U||F||2106-3^White^CDCREC|^ ^ ^GA^30341||||||||N^Not Hispanic^HL7139|||||N<cr>

PV1||E||E|||||1||||20110209_0064|||||||||20110217144208<cr>

PV2||913.1^ABRASION FOREARM-INFECT^I9<cr>

OBX|1|NM|21612-7^AGE PATIENT QN REPORTED^LN||67|A^YEAR^UCUM||||F|||201102091114<cr>

- The Race of the patient is “White”, the race is coded in this example.
- The Ethnicity of the patient is “Not Hispanic” ; therefore PID-22 contains “N”. Again, it is coded.
- Since this is an Emergency Department visit, PV1-44 reflects the time the patient registered in the Emergency Department.
- Since the Admit Reason (Chief Complaint) was coded, the code (913.1) in PV2-3.1 and the coding system (I9) in PV2-3.3 are populated.

A04 Emergency Department Registration followed by A08 Update

MSH|^~\&||CITY GENL HOSP^0133195934^NPI|| |20110217144317||ADT^A04|E100648329|P|2.3.1<cr>

EVN||20110217144317<cr>

PID|1||95101100001||~^^^^^U ||M||2054-5^Black or African American^CDCREC|^ ^ ^MO^65101||||||||N^Not Hispanic^HL7139|||||N<cr>

PV1||E||E|||||1||||8399193|||||||||20110217144208<cr>

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

DG1|1||**473.9**^CHRONIC SINUSITIS NOS^I9||A<cr>

- Chief complaint was not sent, but an admitting diagnosis was sent in the DG1 segment.
- Since the Diagnosis Text is coded, the code (473.9) in DG1-3.1 and coding system (I9) in DG1-3.3 are populated.

```
MSH|^~\&||CITY GENL HOSP^0133195934^NPI|||20110217145139||ADT^A08|E100648353|P|2.3.1<cr>
EVN||20110217145139<cr>
PID|1||95101100001||~^^^U||M||2054-5^Black or African American^CDCREC|^MO^65101|| ||||| N^Not Hispanic^HL7139|||||N<cr>
PV1||E|E|||||1||||8399193|||||||20110217144208<cr>
OBX|1|NM|8310-5^BODY TEMPERATURE^LN||100.1|[degF]^FARENHEIT^UCUM||A||F||20110217145139<cr>
OBX|2|NM|21612-7^AGE PATIENT QN REPORTED^LN||27|A^YEAR^UCUM||||F||20110217145139<cr>
OBX|3|NM|59408-5^SAO2% BLDA PULSEOX^LN||91|^PERCENT^UCUM||A||F||20110217145139<cr>
OBX|4|XAD|99123^Facility Location^L||2166 WELLS DR^APT D^JEFFERSON CITY^MO^65101^USA|| |||||F||20110217145139<cr>
DG1|1||473.9^CHRONIC SINUSITIS NOS^I9||A<cr>
DG1|2||041.00^STREPTOCOCCUS UNSPEC^I9||F<cr>
```

- This is an A08 update against the prior message.
- **We now have temp, age, pulse ox, and a Final Diagnosis.**
 - MSH-7 Message Date/Time and MSH-10 Control ID have been updated.
 - Note that PV1-19 Visit Number and PV1-44 Admit Date/Time have not changed.
 - Included what an OBX would look like if facility information had to transported in OBX.
-

A04 Emergency Department Registration; A01 Inpatient Admission; A08 Updates including patient death

```
MSH|^~\&| |OTHER REG MED CTR^1234567890^NPI|||201102171531||ADT^A04|201102171531956|P|2.3.1<cr>
EVN||201102171531<cr>
```

PID|1||FL01059711||~^^^U||F||2106-3^White^CDCREC|^FL^33821|||||N^Not Hispanic^HL70189<cr>

PV1||E||E|||||7||||V20220217-00274|||||201102171522<cr>

PV2|||^STOMACH ACHE<cr>

OBX|1|NM|21612-7^AGE PATIENT QN REPORTED^LN||43|A^YEAR^UCUM||||F||201102171531<cr>

MSH|^~\&||OTHER REG MED CTR^1234567890^NPI||||201102171537||ADT^A08|201102171537187|P|2.3.1<cr>

EVN||201102171537<cr>

PID|1||FL01059711||~^^^U||F||2106-3^White^CDCREC|^FL^33821|||||N^Not Hispanic^HL70189<cr>

PV1||E||E|||||7||||V20220217-00274|||||201102171522<cr>

PV2|||^STOMACH ACHE<cr>

OBX|1|NM|21612-7^AGE PATIENT QN REPORTED^LN||43|A^YEAR^UCUM||||F||201102171531<cr>

DG1|1||789.00^ABDMNAL PAIN UNSPCF SITE^I9||A<cr>

- Admitting Diagnosis has been added

MSH|^~\&||OTHER REG MED CTR^1234567890^NPI||||201102171658||ADT^A01|201102171658076|P|2.3.1<cr>

EVN||201102171658<cr>

PID|1||FL01059711||~^^^U||F||2106-3^White^CDCREC|^FL^33821|||||N^Not Hispanic^HL70189<cr>

PV1||E||||7||V20220217-00274|||||09|||||201102171656<cr>

PV2||^STOMACH ACHE<cr>

OBX|1|NM|21612-7^AGE PATIENT QN REPORTED^LN||43|A^YEAR^UCUM||||F||201102171531<cr>

OBX|2|NM|8310-5^BODY TEMPERATURE^LN||99.1|[degF]^FARENHEIT^UCUM||A||F||201102171658<cr>

OBX|3|NM|59408-5^SAO2% BLDA PULSEOX^LN||95|^PERCENT^UCUM||A||F||201102171658<cr>

DG1|1||789.00^ABDMNAL PAIN UNSPCF SITE^I9||A<cr>

DG1|2||540.9^ACUTE APPENDICITIS NOS^I9||W<cr>

- The patient from the previous message has now been admitted as an inpatient, so the Trigger Event is A01.
- We now have some clinical information and a working diagnosis.
- PV1-2 Patient Class is now "I".
- In this particular case, PV1-19 Visit Number 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.
- Note that PV1-44 Admit Date/Time has been updated with the time of admission as an inpatient.

MSH|^~\&| |OTHER REG MED CTR^1234567890^NPI||201102172334||ADT^A08|201102172334640|P|2.3.1<cr>

EVN||201102172334<cr>

PID|1||FL01059711||~^^^U||F||2106-3^White^CDCREC|^FL^33821|||||N^Not Hispanic^HL70189|||||201102172334|Y<cr>

PV1||E||||7||V20220217-00274|||||20|||||201102171656<cr>

PV2|||^^^STOMACH ACHE<cr>

OBX|1|NM|21612-7^AGE PATIENT QN REPORTED^LN||43|A^YEAR^UCUM|||||F|||201102171531<cr>

OBX|2|NM|8310-5^BODY TEMPERATURE^LN||99.1|[degF]^FARENHEIT^UCUM||A|||F|||201102171658<cr>

OBX|3|NM|59408-5^SAO2% BLDA PULSEOX^LN||95|%^PERCENT^UCUM||A|||F|||201102171658<cr>

DG1|1||789.00^ABDMNAL PAIN UNSPCF SITE^I9|||A<cr>

DG1|2||540.9^ACUTE APPENDICITIS NOS^I9|||W<cr>

DG1|3||540.0^AC APPEND W PERITONITIS^I9|||F<cr>

The patient is expired and this is indicated by the “Y” in PID-30 and the Date and Time of Death in PID-29. It is also indicated in PV1.36 (Code=20).

A01 Inpatient Admission; no Updates

MSH|^~\&| MID-CO HLTH CTR^9876543210^NPI| |201110090314||ADT^**A01**|201110090314-0017|P|2.3.1<cr>

EVN||201110090314<cr>

PID|1||MD01059711||~^U||M||2106-3^White^CDCREC|^MD^21502|||||||||N^Not Hispanic^HL70189|||||201102172334|Y<cr>

PV1|||E|||||6|||||20111009_0034|||||||||||||20111009025915<cr>

OBX|1|NM|21612-7^AGE PATIENT QN REPORTED^LN||89|A^YEAR^UCUM|||||F|||201102171531<cr>

DG1|1||E880.9^FALL ON STAIR/STEP NEC^I9|||A<cr>

Sample International Address Formats: converted to PID segments

Note:

The length of PID.11.4 (Zip or Postal Code) is 12 (in 2.5.1). It is a string element, so it would support alpha characters as well.

MEXICO

Super Manzana 3 - 403	[street name + building number - apartment number]
Puerto Juarez	[village]
77520 CANCUN, Q. ROO	[postcode + localityname, province abbreviation]
MEXICO	[country name]

PID|1||MX01059711||~^^^U||M|| |Super Manzana 3 - 403^Puerto Juarez^CANCUN^Q. ROO^77520^MEX||||||| |||||<cr>

CANADA

111 FAIRFORD STREET EAST
MOOSE JAW SK S6H 2X1
CANADA

PID|1||CA01059711||~^^^U||M|| |111 FAIRFORD STREET EAST^^MOOSE JAW^SK^S6H 2X1^CAN||||||| |||||<cr>

Appendix D: Bibliography

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3. AHIC Biosurveillance Minimum Data Set
4. National Health Information Network (NHIN), Population Workgroup, NHIN Trial Implementation, Biosurveillance Use Case Requirements Document, version 1.0, April 29, 2008
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