



**New York City Department of Health  
& Mental Hygiene**

**Population Health Registry  
Influenza-Like-Illness Submissions  
Use Case and Functional Requirements**

Version 2.0

November 2, 2016



## VERSION HISTORY

Version #	Implemented By	Revision Date	Description
1.0	PCIP	6/29/2011	Initial Release
1.1	PCIP	7/21/11	Updated link to CDC PHIN-MS website
1.2	PCIP	12/1/2013	Stage 2 registration / transmission instructions added.
2.0	PCIP	3/22/2016	Changed registry information from Syndromic Surveillance to Population Health to reflect new registry functions. Added additional stakeholders and UPHN-lite information, clarified formatting, updated sample files, replace workflow with improved document and graphics

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## 1. INTRODUCTION

Population Health Data Submission is used to improve population health by supporting timely and effective prevention and response. Electronic health data transactions and large public health databases can be used for epidemiological analyses leading to accurate monitoring and the mitigation of public health threats. The use of aggregate data and statistical tools enables public health authorities to provide timely assessments of population health that assist with determining and assessing the implementation of public health action. This is particularly useful for event detection, situation awareness, and response management. Each practice's contribution to the Population Health Registry has a direct effect on public health at the national and state levels.

As part of the Electronic Health Record (EHR) Incentive Program, an Eligible Professional (EP) practicing in the five boroughs of New York City may be able to report Influenza-Like-Illness (ILI) data to the NYC Department of Health and Mental Hygiene (DOHMH). The initial focus of this data exchange for Meaningful Use will be on the exchange of aggregate count data for use in DOHMH ILI surveillance and in subsequent reporting to the Centers for Disease Control and Prevention's ILI Net Program.

## 2. PURPOSE

The purpose of this document is to guide development of electronic health record (EHR) functionality to enable Eligible Professional (EP) reporting of Influenza-Like-Illness (ILI) data for the EHR Incentive Program via the New York City Department of Health and Mental Hygiene (DOHMH)'s Population Health Registry. This document is solely focused on EPs in ambulatory outpatient clinics.

To accomplish this task, we have created the following use case that describes the processes and interactions that each primary stakeholder will invoke in the capture, discovery, and transmission of relevant data. The use case also allows us to focus on the different activities, and will lead to specific functional requirements.

This document describes specific functionality (the inputs, behavior, and outputs) related to the submission of Influenza-Like-Illness data from outpatient providers in New York City to the DOHMH.

All Eligible Professionals planning to meet the Modified Stage 2 Public Health Reporting Objective and the Specialized Registry Reporting Measure through ILI surveillance must register their intent to submit data to the NYC Department of Health and Mental Hygiene. Review the [MU Public Health Reporting website](#) for more information and resources on registering intent.

## 2.1 BACKGROUND

As part of the EHR Incentive Program administered through the Centers for Medicare and Medicaid Services (CMS), Eligible Professionals (EPs) in New York City may report ILI data to the DOHMH to satisfy the Specialized Registry Reporting Measure under the Meaningful Use Modified Stage 2 Public Health Reporting Objective. The initial focus of this data exchange for Meaningful Use will focus on the exchange of aggregate count data for influenza-like-illness (ILI), for use in DOHMH ILI surveillance and subsequent reporting to the Centers for Disease Control and Prevention's ILI Net Program.

**\*IMPORTANT NOTE\*: The Population Health Registry DOES NOT accept PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient and Ambulatory Care Settings, Release 2.0 (April, 2015). If you would prefer to send data for your Public Health Option using PHINS, contact [nycsyndromic@health.nyc.gov](mailto:nycsyndromic@health.nyc.gov).**

## 2.2 PROJECT GOALS AND SCOPE

PCIP has defined specific goals it intends to accomplish related to the EHR implementation of Influenza-Like-Illness to DOHMH. These are:

1. Enable EPs to provide aggregate Influenza-Like-Illness data for ILI
2. Incorporate this Influenza-Like-Illness data into local ILI surveillance efforts
3. Share data with CDC ILINet (national influenza surveillance) <http://www.cdc.gov/flu/weekly/overview.htm>

## 2.3 STAKEHOLDERS

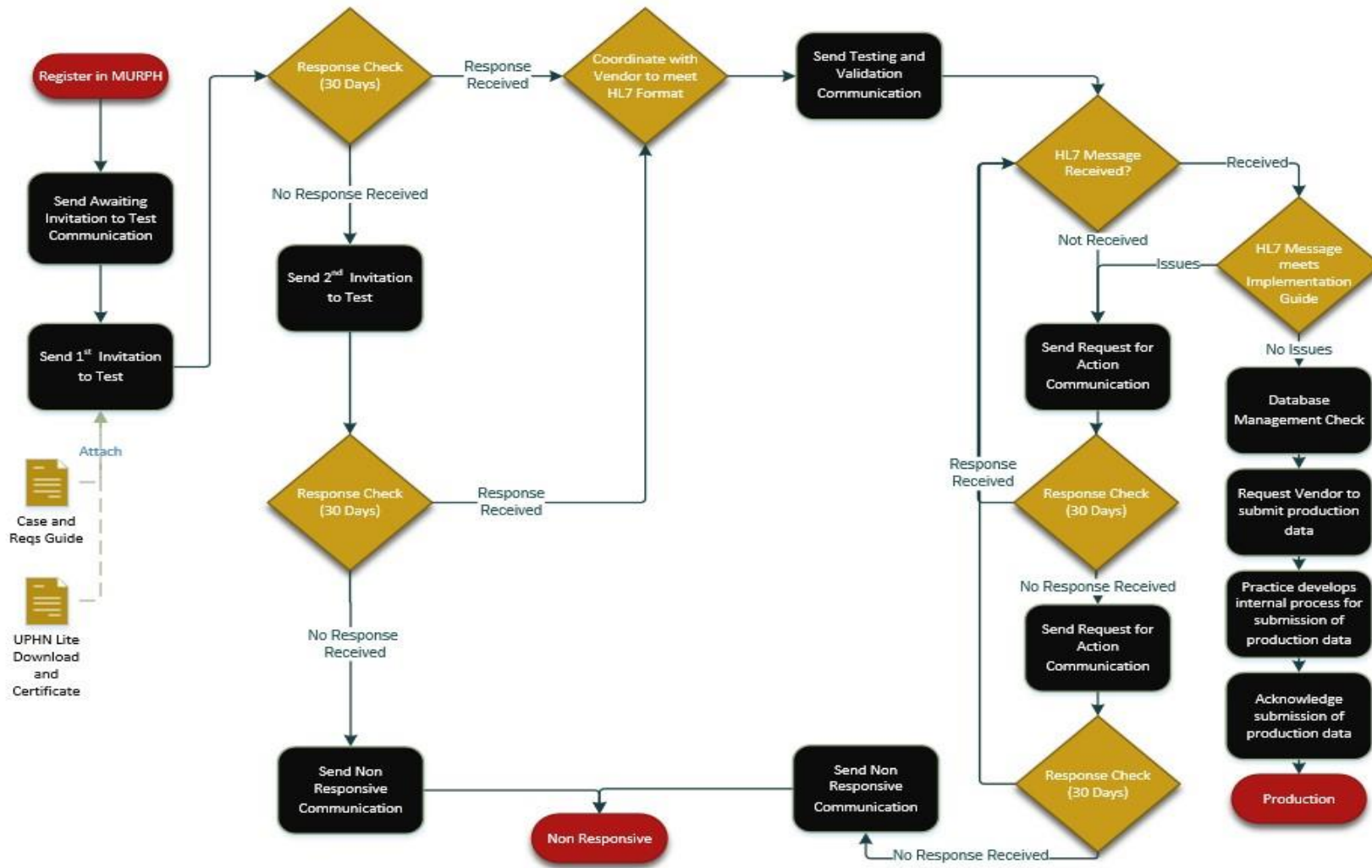
The following stakeholders have been identified for the purposes of the use cases.

1. **Patient:** In the context of this scenario, the patient presents to the provider for care. The provider evaluates the patient, provides care, and the documents the encounter in his/her EHR system. The patient may or may not have symptoms consistent with ILI.
2. **Clinician:** Certified health practitioner responsible for care provided to patient in outpatient clinics.
3. **Support Staff:** Staff at practice that assist in care of patient and may be assigned to handle completion of all case reports
4. **New York City Department of Health and Mental Hygiene** (NYC DOHMH)
5. **Electronic Health Record (EHR) Vendor:** Any participating EHR vendor
6. **Meaningful Use Coordinators** Any practice staff associated with coordinating processes and data in order for providers to meet all requirements to receive Meaningful Use Incentives (may be known by other titles)
7. **Information Technology Staff:** Practice IT staff that is responsible for querying the EHR for the required data and configuring it for transmission, not necessarily working with EHR vendor.



### 3. WORKFLOW

#### 3.1 WORKFLOW DIAGRAM



## 3.2 WORKFLOW DESCRIPTION

1. Provider evaluates all patients, provides care, and documents all encounters in the EHR system
2. At a scheduled time at the end of each day or week, system performs query of all encounters seen and recalculates for each of the past seven (7) days: (1) the total number of outpatient encounters seen, (2) the total number of encounters consistent with the CDC influenza-like-illness (ILI) case definition, and (3) stratifies these counts by: (a) CDC ILI Net-defined age groups and (b) date
3. System creates Population Health report from query data according to specified DOHMH format (See Appendix A)
4. System transmits Population Health report to DOHMH
5. System is able to record the following fields in separate, distinct fields within the database:
  - a. Chief Complaint (Reason for Visit)
  - b. Encounter Diagnoses
  - c. Measured Temperature (physical exam)
  - d. System records Encounter Diagnoses using ICD- 10 coding system
  - e. System records Measured Temperature as a numeric data
  - f. System is able to distinguish between an office care visit and other types of encounters that may be documented in the provider schedule (e.g., phone encounter, lab draw only, etc.). This is necessary as syndromic surveillance queries should be applied only on office care visits
  - g. System is able to distinguish between office care visits that actually occurred versus those scheduled office care visits where the patient either: cancelled, rescheduled, or did not show up.
6. System shall stratify the counts from all queries performed above by:
  - a. CDC ILI Net-defined age groups:
    - b. 0-4 years
    - c. 5-24 years
    - d. 25-49 years
    - e. 50-64 years

f. >64 years

7. System shall include the current day in the seven (7) day reporting period if the queries are scheduled to run in the evening (close of business to midnight). Otherwise, for queries scheduled to run after midnight (12:00am) and before office opening (7:00am), the queries should not include the current day in the seven (7) day reporting period. The preferred reporting week for ILI Net is Sunday to Saturday.
8. System shall produce an ILI report even if queries produce zero counts for data output. The reports created should reflect these zero counts and be transmitted as usual.
9. System shall produce an ILI report based on the output from these queries and format them
10. Each ILI report produced shall be accompanied by the following required metadata
  - a. Provider ID
  - b. Provider Name
  - c. Message Date/Time (this is a timestamp, including the complete date and time to the second, when the report was run)
11. Must be able to see formatting in Notepad. Each line of data must contain line feeds and carriage returns for formatting to be considered correct.

## 4. SPECIFICATIONS FOR TRANSMISSION

### 4.1 UPHN LITE

UPHN-Lite is a transport protocol developed specifically for the simple, direct and secure transmission of medical data. Additionally it is complementary to the UPHN implementation and part of the SHIN-NY architecture.

- UPHN-Lite uses Simple Object Access Protocol (SOAP) to exchange data between its peers
- Security is accomplished by encrypting the communication channels between peers at the transport layer using either *Transport Layer Security (TLS)* or *Secure Socket Layer (SSL)*
- If a practice or EHR vendor has an installation of UPHN Lite, they are not required to install a second instance in order to transmit to NYC DOHMH. Instead you will install a new Route and a new Back-end Application

System Prerequisites:

- UPHN-Lite supports Windows 2003, 2008, 2012, Vista (32 or 64-bit), 7 (32 or 64-bit), 8 or 10. Apple OS, Unix or Linux platforms are not supported at this time
- 1 GB minimum memory; 2 GB or more recommended
- 8 GB minimum hard disk space; 20 GB recommended.

Email [NYC\\_UPHN@health.nyc.gov](mailto:NYC_UPHN@health.nyc.gov) to obtain a secure link to download the executable and the security certificate.

## 4.2 READINESS

1. An NYCMED account is required for transmission of data to the NYC DOHMH
2. If vendor is submitting on behalf of practice, the vendor must have a NYCMED account
3. **Only one NYCMED account is required**

When registration and installation is complete, send an email to [NYC\\_UPHN@health.nyc.gov](mailto:NYC_UPHN@health.nyc.gov) & [PCIPdata@health.nyc.gov](mailto:PCIPdata@health.nyc.gov) include:

- a. Your NYCMED User ID
- b. Your Practice Name
- c. Name of Contact at site, Phone number & email address
- d. Indicate you are an Eligible Professional wishing to transmit ILI surveillance data for Meaningful Use
- e. You will receive an email indicating NYCDOHMH is ready to receive your files and you are invited to begin regular submissions.

## 5. APPENDICES

### 5.1 APPENDIX A: ACCEPTABLE HL7 MESSAGE CRITERIA

Please see below for the correct formatting of each HL7 message. Each message must contain **85** rows of data for each provider for a span of 7 days. Each line of data should be followed by a carriage return and a line feed.

- A. 1 MSH record/row per provider **A**
- B. 12 records per day for 7 days
- C. 2 OBR records: one for encounters and one for total encounters per day **B**
- D. 10 OBX records for 5 age groups per day
- E. 2 rows for each age group: Encounters and total Encounters per day **C**

#### Partial Sample File Found Below

```
MSH|^~\&||RubyJemison,MD^1861632994^N|||20150304120553||ORU^R01^ORU_R01|20150304120553689|P|2.5.1
OBR|1|||010^ILI^NYCDOHMH_Syndromic_Ambulatory|||20150228000001|20150228235959
OBX|1|NM|001^AG1^NYCDOHMH_Syndromic_Ambulatory||0|||F
OBX|2|NM|002^AG2^NYCDOHMH_Syndromic_Ambulatory||0|||F
OBX|3|NM|003^AG3^NYCDOHMH_Syndromic_Ambulatory||0|||F
OBX|4|NM|004^AG4^NYCDOHMH_Syndromic_Ambulatory||0|||F
OBX|5|NM|005^AG5^NYCDOHMH_Syndromic_Ambulatory||0|||F
OBR|2|||020^Totalencounters^NYCDOHMH_Syndromic_Ambulatory|||20150228000001|20150228235959
OBX|1|NM|001^AG1^NYCDOHMH_Syndromic_Ambulatory||0|||F
OBX|2|NM|002^AG2^NYCDOHMH_Syndromic_Ambulatory||0|||F
OBX|3|NM|003^AG3^NYCDOHMH_Syndromic_Ambulatory||0|||F
OBX|4|NM|004^AG4^NYCDOHMH_Syndromic_Ambulatory||0|||F
OBX|5|NM|005^AG5^NYCDOHMH_Syndromic_Ambulatory||0|||F
```

**Guide to HEX/DEC**

DEC	Hex	Description
<10>	0A	Linefeed (New Line)
<11>	0B	Vertical Tab
<13>	0D	Carriage Return

**Normal HL7 File:**

```
<11>MSH|^~\&|x|x,x^x^N|||20150720102631||ORU^R01^ORU_R01|2920613473|T|2.5.1<13>
OBR|1|||010^ILI^NYCDOHMH_Syndromic_Ambulatory|||20150714000001|20150714235959<13>
OBX|1|NM|001^AG1^NYCDOHMH_Syndromic_Ambulatory||0|||F<13>
OBX|2|NM|002^AG2^NYCDOHMH_Syndromic_Ambulatory||0|||F<13>
OBX|3|NM|003^AG3^NYCDOHMH_Syndromic_Ambulatory||0|||F<13>
<28><13>
```

**NYC Required HL7 File:**

```
<11>MSH|^~\&|x|x,x^x^N|||20150720102631||ORU^R01^ORU_R01|2920613473|T|2.5.1<13><10>
OBR|1|||010^ILI^NYCDOHMH_Syndromic_Ambulatory|||20150714000001|20150714235959<13><10>
OBX|1|NM|001^AG1^NYCDOHMH_Syndromic_Ambulatory||0|||F<13><10>
OBX|2|NM|002^AG2^NYCDOHMH_Syndromic_Ambulatory||0|||F<13><10>
OBX|3|NM|003^AG3^NYCDOHMH_Syndromic_Ambulatory||0|||F<13><10>
<28><13>
```

**1. Fever**

The presence of fever is defined by presence of either:

- a. Complaint of "Fever" documented in the chief complaint (reason for visit) field and/or
- b. Measured temperature at the encounter of >100°F [37.8°C]

**2. Respiratory symptom**

The presence of a respiratory symptom is defined by presence of either:

- a. Complaint of "Cough" or "Flu" or "Sore Throat" in the chief complaint (reason for visit) field and/or
- b. Encounter Diagnosis of at least one of the following ICD-10 diagnoses: B97.89, J02.9, J20.9, J21.0, J21.8, J06.9, J11.00, J12.9, J10.1, J11.1, J11.2, J11.81, J11.89, H66.009, R05



## 5.4 APPENDIX D: SQL FREE TEXT SAMPLE FOR CHIEF COMPLAINT FIELD

*/\*Fever Chief Complaint\*/*

```
((UCASE(chiefComplaint) LIKE ('%FEV%') OR
UCASE(chiefComplaint) LIKE ('%TEMP%') OR
UCASE(chiefComplaint) LIKE ('%ELEVATED TEMP%') OR
UCASE(chiefComplaint) LIKE ('%HI TEMP%') OR
UCASE(chiefComplaint) LIKE ('%HIGH TEMP%') OR
UCASE(chiefComplaint) LIKE ('%TEMP10%') OR
UCASE(chiefComplaint) LIKE ('%TEMP 10%') OR
UCASE(chiefComplaint) LIKE ('%FEELING HOT%') OR
UCASE(chiefComplaint) LIKE ('%FEELS HOT%') OR
UCASE(chiefComplaint) LIKE ('%FEEL HOT%') OR
UCASE(chiefComplaint) LIKE ('%FUO%') OR
UCASE(chiefComplaint) LIKE ('%FEB%'))
AND
(UCASE(chiefComplaint) NOT LIKE ('%DENIES FEV%') AND
UCASE(chiefComplaint) NOT LIKE ('%SHOT%'))))
```

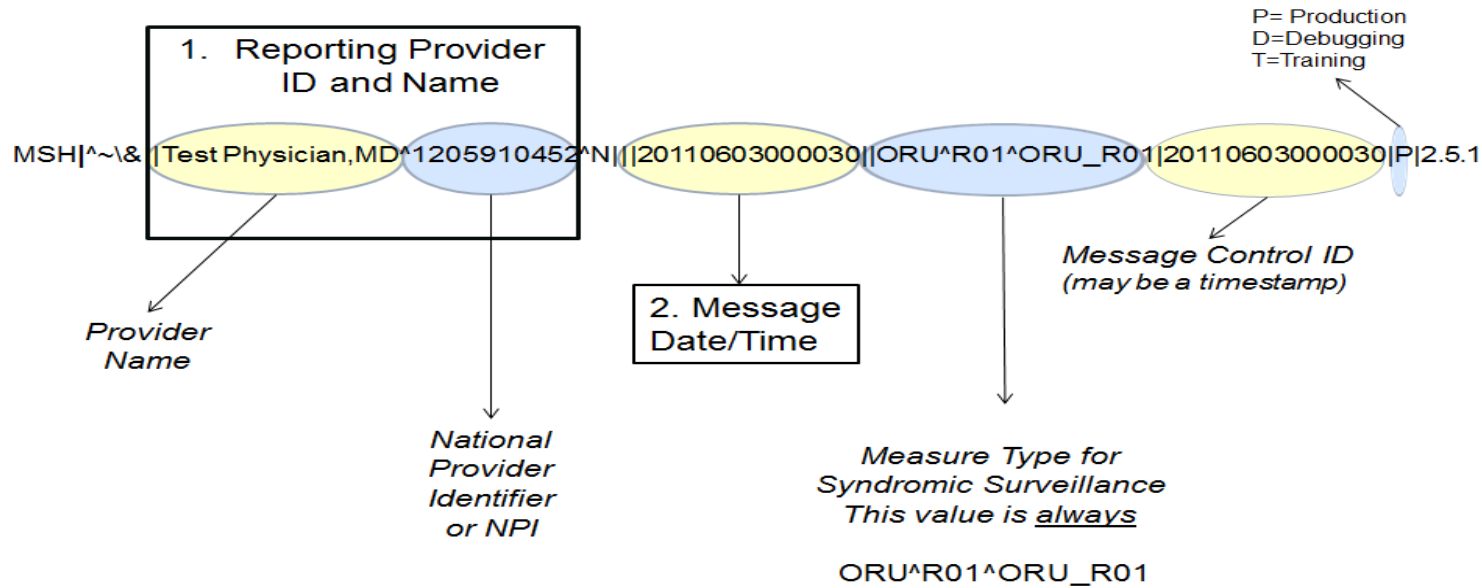
*/\*Cough Chief complaint\*/*

```
((UCASE(chiefComplaint) LIKE ('%COUGH%') OR
UCASE(chiefComplaint) LIKE ('%COUG%') OR
UCASE(chiefComplaint) LIKE ('%COUH%') OR
UCASE(chiefComplaint) LIKE ('%CROUP%') OR
AND
(UCASE(chiefComplaint) NOT LIKE ('%CAUGHT%') AND
UCASE(chiefComplaint) NOT LIKE ('%CAUGH%'))))
```

*/\*Sore Throat Chief complaint\*/*

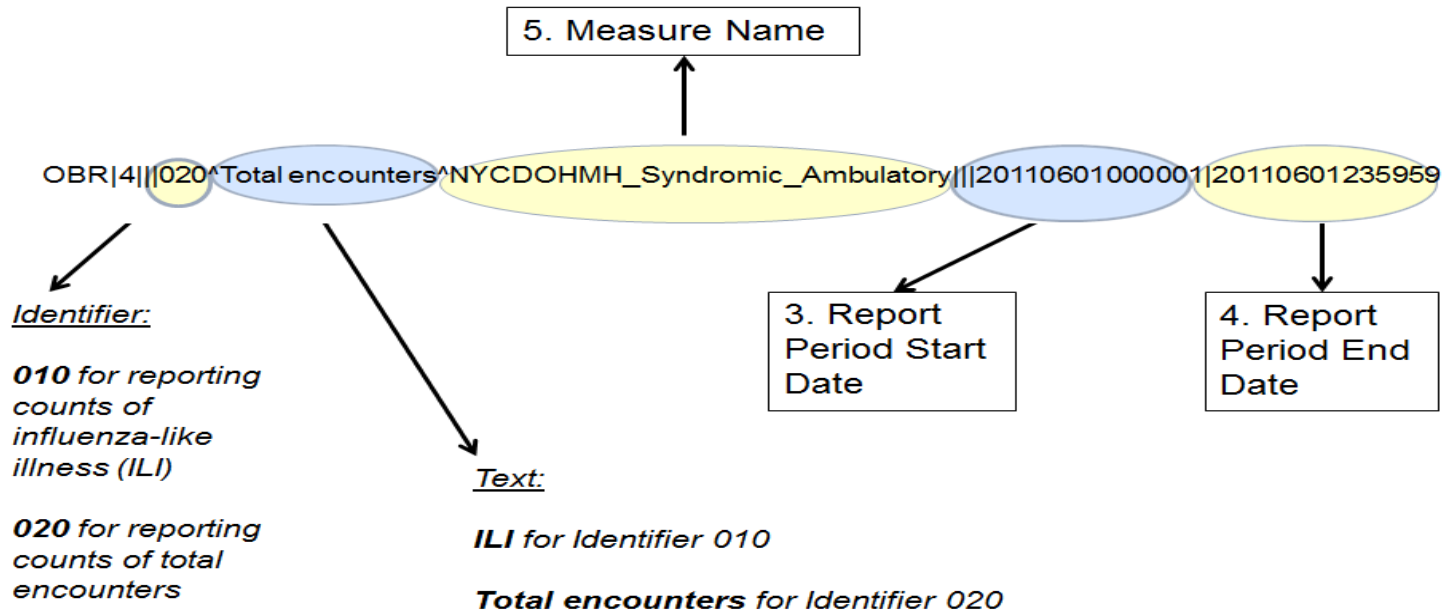
```
((UCASE(chiefComplaint) LIKE ('%THROAT%') OR
UCASE(chiefComplaint) LIKE ('%SORET%') OR
```

#	Data Element Name	HL7 Message Segment and Field	HL7 Message Field Name	Notes
1	Reporting Provider ID and Name	MSH.4	Sending Provider	
2	Message Date/Time	MSH.7	Date/Time of Message	
3	Report Period Start Date	OBR.7	Observation Start Date/Time	
4	Report Period End Date	OBR.8	Observation End Date/Time	
5	Measure Name	OBR.4	Universal Service Identifier	See OBR message section for specific values to use
6	Age Group	OBX.3	Observation Identifier	See OBX message section for specific values to use
7	Measure Count	OBX.5	Observation Value	

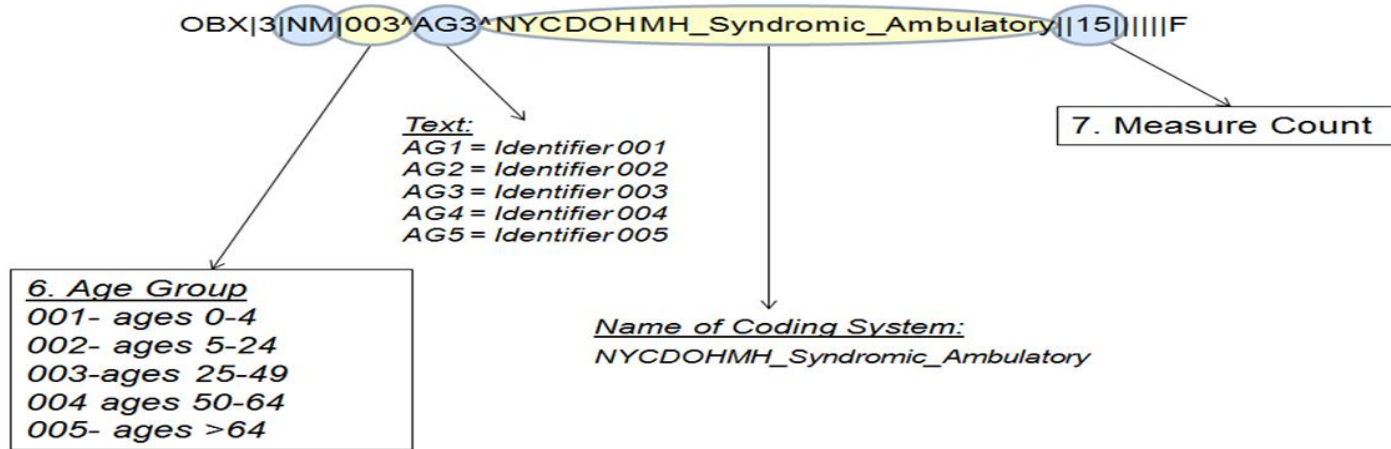


Seq	Len	DT	Usage	Cardinality	Value Set	HL7 Element name	Description/Comments
1	1	ST	R	[1..1]		Field Separator	Character to be used as the field separator for the rest of the message. The supported value is  , ASCII (124).
2	4	ST	R	[1..1]		Encoding Characters	Field that always contains the following four characters, in the same order:  ^~\& .
3	227	HD	O	[0..1]		Sending Application	
4	227	HD	R	[1..1]		Sending Provider	Unique identifier of the provider that sends the message.
Seq	Len	DT	Usage	Cardinality	Value Set	HL7 Element name	Description/Comments

4.1	20	IS	O	[0..1]		Namespace ID	Provider short name; may be included for readability.
4.2	199	ST	R	[1..1]		Universal ID	NPI (provider)
4.3	6	ID	R	[1..1]		Universal ID Type	Literal value: N
5	227	HD	O	[0..1]		Receiving Application	
6	227	HD	O	[0..1]		Receiving Facility	
7	24	TS	R	[1..1]		Date/Time of Message	Date/time the sending system created the message – use the following format: YYYYMMDDHHMMSS. The time zone is understood to be the local time zone of the sender.
8			X	[0..0]		Security	Not supported.
9	15	MSG	R	[1..1]		Message Type	Field containing the message type, trigger event, and message structure ID for the message. For Influenza-Like-Illness message, the value in this field will always be 'ORU^R01^ORU_R01'.
9.1	3	ID	R	[1..1]		Message Code	Literal value: 'ORU'.
9.2	3	ID	R	[1..1]		Trigger Event	Literal value: 'R01'.
9.3	7	ID	R	[1..1]		Message Structure	Literal value: 'ORU_R01'.
10	199	ST	R	[1..1]		Message Control ID	String that uniquely identifies the message instance from the sending application. (This may be a timestamp)
11	3	PT	R	[1..1]	0103	Processing ID	Field that indicates the intent for processing the message, such as 'Training,' 'Debugging,' or 'Production.' Literal values: "P" for Production, "D" for Debugging, "T" for Training
12	5	VID	R	[1..1]	0104	Version ID	HL7 version number used to interpret format and content of the message.
13-20			X	[0..0]			Not supported.
21	411	EI	O	[0..1]		Message Profile Identifier	Field used to reference or assert adherence to a message profile. Message profiles contain detailed explanations of grammar, syntax, and usage for a particular message or set of messages.



Seq	Len	DT	Usage	Cardinality	Value Set	HL7 Element name	Description/Comments
1	4	SI	R	[1..n]		<b>Set ID - OBR</b>	Sequence number of one of multiple OBRs that may be in a message. For the first measure transmitted, the set ID is   1   ; for the second measure, it is   2   ; etc.
2			X	[0..0]		Placer Order Number	Not supported.
3			X	[0..0]		Filler Order Number	Not supported.
4	420	CNE	R	[1..1]		Universal Service Identifier	Code that indicates the type of data carried in the OBX segments corresponding to the OBR segment.
4.1	20	ST	R	[1..1]		Identifier	Options for ambulatory syndromic reporting are: '010' for reporting counts of influenza like illness (ILI) '020' for reporting counts of total encounters
4.2	199	ST	R	[1..1]		Text	Options for ambulatory syndromic reporting are: 'ILI' for Identifier '010' 'Total encounters' for Identifier '020'
4.3	199	ST	R	[1..1]		Name of Coding System	Literal value ' NYCDOHMH Syndromic _Ambulatory '
5-6			X	[0..0]			Not supported.
7	24	TS	R	[1..1]		Observation Start Date/Time	Field required to be populated when the OBR is transmitted as part of a report message. This field corresponds to the <u>start</u> of the reporting period. Utilize the following format: YYYYMMDDHHMMSS.
8	24	TS	R	[1..1]		Observation End Date/Time	Field required to be populated when the OBR is transmitted as part of a report message. This field corresponds to the <u>end</u> of the reporting period. Utilize the following format: YYYYMMDDHHMMSS.



Seq	Len	DT	Usage	Cardinality	Value Set	HL7 Element name	Description/Comments
1	4	SI	R	[1..n]		<b>Set ID - OBX</b>	Sequence number of the OBX, which increments up by one for each observation segment in the group.
2	2	ID	R	[1..1]	HL7 Table 0125	Value Type	Format of the observation value expressed in OBX-5. Value Type is required for this message. The expected value types are ' <b>NM</b> ' to indicate Numeric.
3	420	CE	R	[1..1]		Observation Identifier	Unique identifier of the specific observation being passed in this segment (OBX.5). The identifier represents the age group that corresponds to the measure defined in the corresponding OBR segment.
Seq	Len	DT	Usage	Cardinality	Value Set	HL7 Element name	Description/Comments
3.1	20	ST	R	[1..1]		Identifier	Options for ambulatory syndromic reporting are:

							'001' for reporting counts of ages 0-4 '002' for reporting counts of ages 5-24 '003' for reporting counts of ages 25-49 '004' for reporting counts of ages 50-64 '005' for reporting counts of ages greater than 64
3.2	199	ST	R	[1..1]		Text	Options for ambulatory syndromic reporting are: 'AG1' for identifier '001' 'AG2' for identifier '002' 'AG3' for identifier '003' 'AG4' for identifier '004' 'AG5' for identifier '005'
3.3	199	ST	R	[1..1]		Name of Coding System	Literal value 'NYCDOHMH_Syndromic _Ambulatory'
4			X	[0..0]			Not supported.
5	8	SN	R	[1..1]		Observation Value	Actual numeric result for the measure specified in OBR.4 and OBX.3. The data type in OBX-2 Value Type indicates the format of the observation.
6-10			X	[0..0]			Not supported.
11	1	ID	O	[0..1]	HL7 Table 0085	Observation Result Status	