



Utilizing syndromic surveillance data from ambulatory care settings in NYC

ISDS Syndromic Surveillance for Meaningful Use Webinar Series



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Agenda

- Describe New York City experience of utilizing syndromic surveillance data from ambulatory care settings:
 - ❖ Type of data available from an ambulatory EHR
 - ❖ Electronic case definition for influenza-like illness
 - ❖ Impact and variability of workflows and the quality of data received
 - ❖ Limitations, benefits and challenges existing when utilizing aggregate data
 - ❖ Methods for data acquisition
 - ❖ Potential benefits of data from these settings

Primary Care Information Project

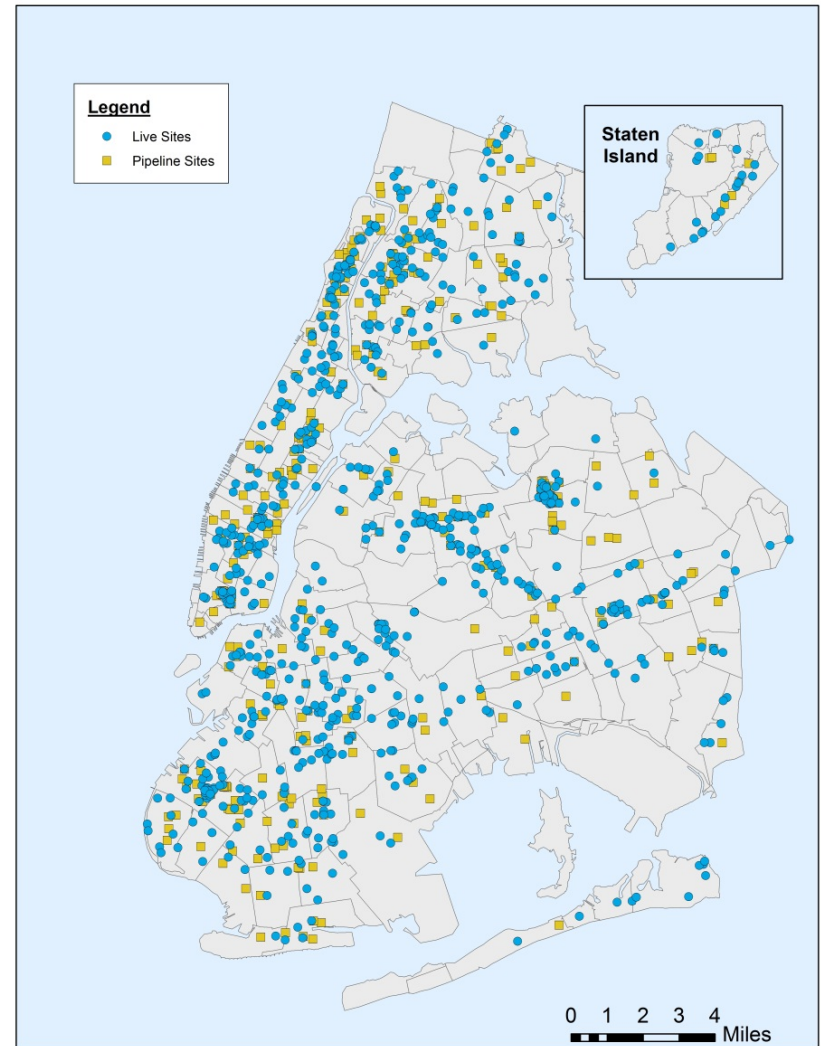
PCIP, a bureau of NYC DOHMH, established in 2005

Mission

- Improve the quality of care in medically underserved areas through health information technology (HIT)

Success

- Over **6,200** providers receiving EHR and Meaningful Use assistance
 - ❖ 915 small practices, 23 large practices
 - ❖ 50 community health centers
 - ❖ 54 hospitals & outpatient clinics



Ambulatory Syndromic Surveillance at DOHMH

- Syndromic surveillance from ambulatory settings is one of many surveillance sources used at NYCDOHMH
 - ❖ Why monitor ambulatory syndromic surveillance?
 - Opportunity to monitor population in a different setting (AC vs. ED)
 - May not always track each other
 - ❖ Part of meaningful use requirements



Type of data available from an ambulatory EHR

Type of data available from an EHR

54 Sunshine Rd
New York, NY 12345
H: 222-222-2222
DOB: 01/01/1936
beatupbeaty@gmail.com

Allergies
Billing Alert

Wt: 03/16/11: 169 lbs.
Appt(L): 03/15/12(SW)
PCP: Jones,
Language: Spanish
Translator: Yes

Ins: Medicare
Acc Bal: \$469.23
Guar: Beatrice
Gr Bal: \$307.23
Ref: Jones,
Ren: Jones,

CLICK TO EDIT

SECURE NOTES

ADV DIRECTIVE

Medical Summary | OB Summary | CDSS | Alerts | Labs | DI | Procedures | Growth Chart | Immunization | Encounters | Patient Docs | Flowsheets | Notes

SF

Subjective:

Chief Complaint(s):

Fever

HPI:

Current Medication:

Lipitor 20 MG Tablet 1 tablet Onc
Seal Cut Closure Miscellaneous as directed

Medical History:

hypertension, type II diabetes, a

Allergies/Intolerance:

Gyn History:

OB History:

Surgical History:

Hospitalization:

Family History:

Social History:

ROS:

Objective:

Vitals: 100.5 F

Past Results:

Examination:

Physical Examination:

Assessment:

Assessment: 079.99

Plan:

Treatment:

Procedures:

Immunizations:

Diagnostic Imaging:

Lab Reports:

Preventive Medicine:

Next Appointment:

Billing Information:

Visit Code: 9920.3

Procedure Codes:

Care Plan:

Problems:

HPI Notes

Free-form Structured

Options for Symptoms (Common) Delimiter [v] Dictate B U C Reset Font Clear Spell chk

Fever
Cough
Sore Throat
Rhinorrhea
Myalgia
Coryza
Ear ache
Anorexia
Chills
Malaise/Fatigue
Vomiting
Diarrhea
Abdominal pain

Cough, Fever

Duration [v] Days Weeks Months Years

Location/Radiation Onset Severity
[v] [v] [v]

Nature Aggravated by Relieved by
[v] [v] [v]

Associated Symptoms
[v]

Custom OK Cancel

Electronic case definition for influenza-like illness

Electronic case definition for influenza-like illness

- Ambulatory clinic ILI definition:
 - ❖ Fever (ICD9 / Chief complaint / Elevated measured temperature)
&
 - ❖ Cough and/or Sore Throat (ICD9 / Chief complaint)



Impact and variability of workflows and the quality of data received

Impact and variability of workflow and the quality of data received

- In general, using an EHR as intended:
 - ❖ May result in a more complete/detailed encounter record
- Practice impact of using an EHR for syndromic surveillance
 - ❖ Reduces task burden (system transmits data passively)
- More data
 - ❖ Since data transmission is passive more providers likely to agree to send data
 - ❖ Data is received in electronic files so data can be more efficiently processed

Impact and variability of workflow and the quality of data received

- Quality of the data received
 - ❖ Depends on use of EHR system (field completeness may affect sensitivity)
 - Partial documentation (e.g. fever only) in chief complaint field with subsequent full documentation in HPI template (e.g. fever, cough, etc..)
 - ❖ When are they documenting? (during visit or transcribed at a few days later?)
 - ❖ Billing codes for denominator (if billing outside of system, we may not get all encounters)
- Data transmissions can fail
 - ❖ Breaks in data stream for individual/multiple practices can occasionally occur and sometimes affect timeliness of reporting or data loss

Limitations, benefits and challenges when utilizing aggregate data

Limitations, benefits and challenges when utilizing aggregate data

The aggregate data format is preferred at PCIP because....

- Data output is specific to the query
 - ❖ Since data is de-identified, it is easier to establish and maintain data sharing with providers
 - ❖ Ensures privacy and security of patients
 - ❖ Data is organized and requires little to no data manipulation
 - ❖ Greatly reduces data file burden
 - ❖ Easy to interpret and maintain for reporting

Syndromic data acquisition from an EHR system

- EHR systems not designed with syndromic surveillance in mind
 - ❖ State and public health agencies need to adapt around infrastructure and develop relationships with clinical providers (no syndromic data button)
 - ❖ Vendors sometimes have a knowledge gap as to syndromic surveillance potential
 - ❖ Data may not properly translate a case definition into a query

Line list vs. aggregate data

- Line list data
 - ❖ Very detailed (+)
 - ❖ Useful for QC and enhanced statistical analyses (+)
 - ❖ File size burden (-)
 - ❖ Time / Manpower to filter through data (-)
 - ❖ Provider trust (not as easy to establish partnerships) (-)
- De-identified aggregate data
 - ❖ Privacy (+)
 - ❖ More targeted output / streamlined analysis (+)
 - ❖ Requires a separate query for each question (-)
 - ❖ Data comes from a black box (-)



Syndromic surveillance study using ambulatory EHRs

- Underlying EHR data track well with other flu surveillance systems
 - ❖ Study by Hripcsak et al, JAMIA Vol. 16 No. 3 May/June 2009 demonstrated the feasibility of using syndromic surveillance using ambulatory electronic health records for ILI and GIID data

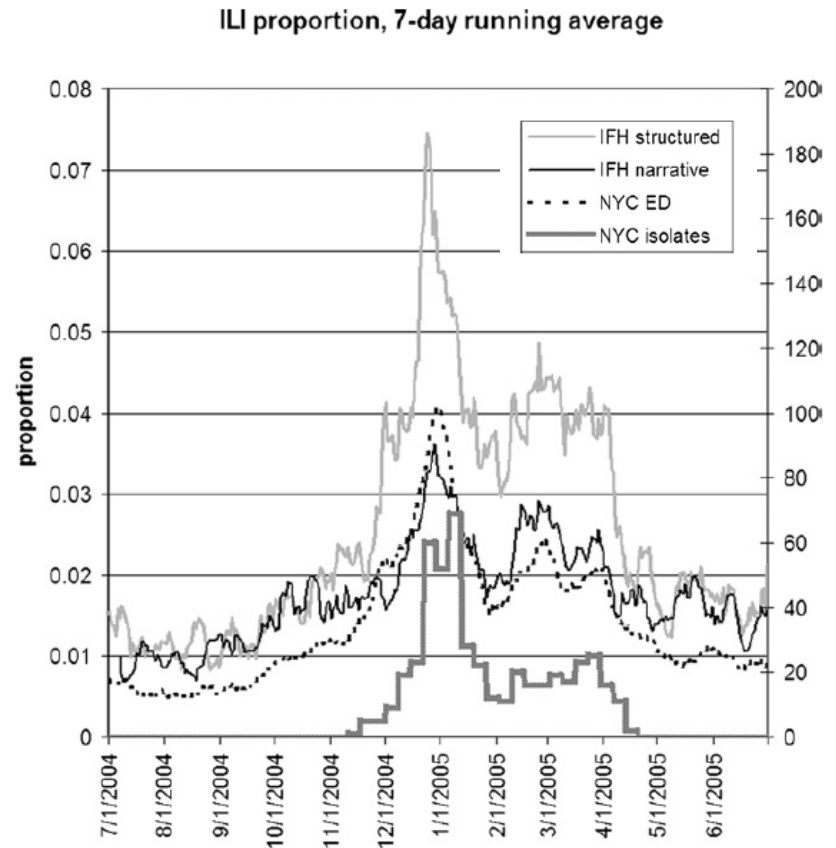


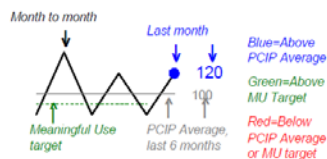
Figure 1. Seven-day running average of the proportion of visits (IFH structured data), proportion of notes (IFH narrative data), and proportion of chief complaints (NYC emergency department data) that were positive for influenza-like illness. The NYC isolates shows the total number of influenza A and B isolates (right axis) that were obtained in New York City. IFH = Institute for Family Health; NYC = New York City.

Practice performance and selection

- Practice performance and selection
 - ❖ Salesforce database
 - ❖ Based on EHR use and quality measures
 - ❖ Practice type

Practice: [REDACTED]

Legend (Sample Graph)



Click the link at the end of the page to learn more

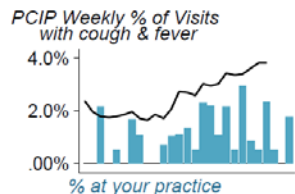
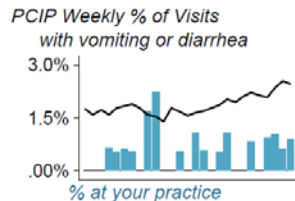
Recommendations:

Based on this report and the impact of each measure on patient health, two measures to target for improvement in the future are

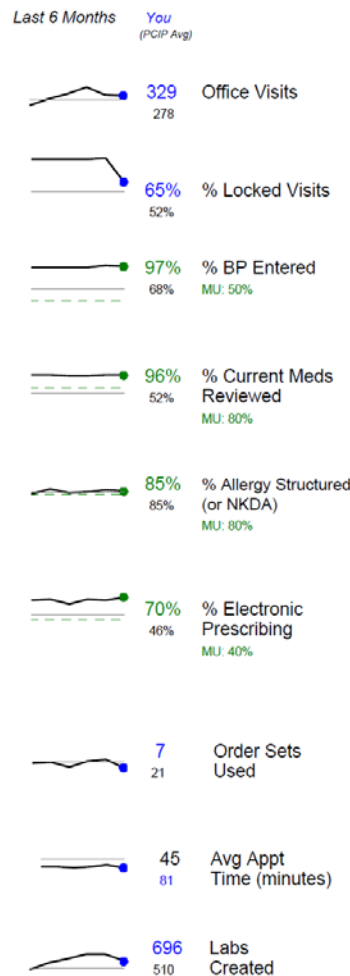
Meaningful Use:
None this month. Great work!

Quality Measures:
% Smoking Status Taken

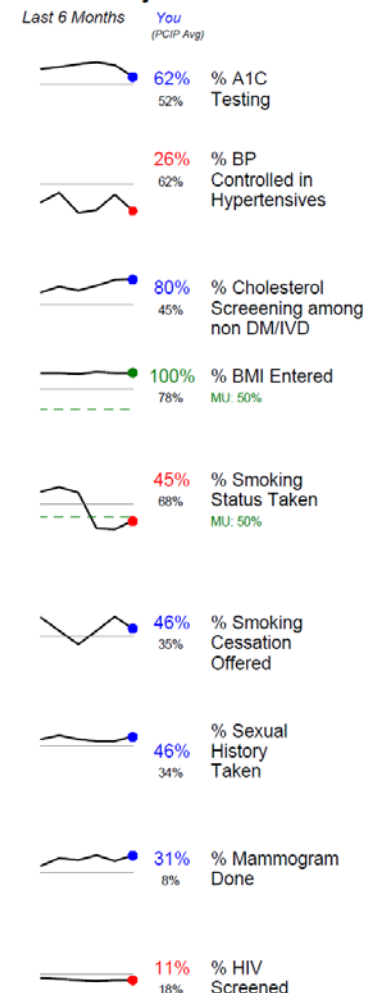
Syndromic Surveillance, Last 6 Months



EHR Use Measures



Quality Measures



Recruiting new practices

- Practices reporting
 - ❖ As syndromic dataset has matured....
 - ❖ Selected practices verified for reporting completeness in the previous 6-12 months
 - ❖ Weekly reports for 71 practices to date
 - ❖ As more practices “go live”, practices will continue to be added

```

-/**Pulls syndromic counts - Be sure to update the ReportDateTime fields in order
SELECT
    num.FacilityID,
    num.AgeGroup,
    num.Syndromic_Counts_Weekly,
    num.Syndromic_Den_Weekly,
    den.Denominator_Counts_Weekly,
    num.Start_Date as Num_Start_Date,
    num.End_Date as Num_End_Date,
    den.Start_Date as Den_Start_Date,
    den.End_Date as Den_End_Date
FROM
    (SELECT
        FacilityID as FacilityID,
        MeasureID as Measure_ID,
        AgeGroup,
        SUM(CT_NUM) as Syndromic_Counts_Weekly,
        SUM(CT_Den) as Syndromic_Den_Weekly,
        MIN(ReportDateTime) as Start_Date,
        MAX(ReportDateTime) as End_Date
    FROM HQIN_STG.dbo.HQ_SY_HoldSurveillanceMeasure
    WHERE
        ReportDateTime >= @StartReportDate and

```

	FacilityID	AgeGroup	Syndromic_Counts_Weekly	Syndromic_Den_Weekly	Denominator_Counts_Weekly
1	3559	a_0to1years	17	74	74
2	3559	b_2to4years	26	82	82
3	3559	c_5to11years	27	117	117
4	3559	d_12to18years	8	43	43
5	3559	e_19to24years	0	33	33
6	3559	f_25to49years	1	74	74
7	3559	g_50to64years	0	44	44
8	3559	h_65toPlusyears	0	17	17
9	3559	i_AllAges	79	484	484
10	3590	e_19to24years	0	3	3
11	3590	f_25to49years	0	41	41
12	3590	g_50to64years	1	29	29
13	3590	h_65toPlusyears	1	18	18
14	3590	i_AllAges	2	91	91

How do we process the data?

- Locally run queries (SAS / SQL)
 - ❖ Data exported and reported to our Bureau of Communicable Diseases (BCD)
 - ❖ BCD reports to internal/external recipients

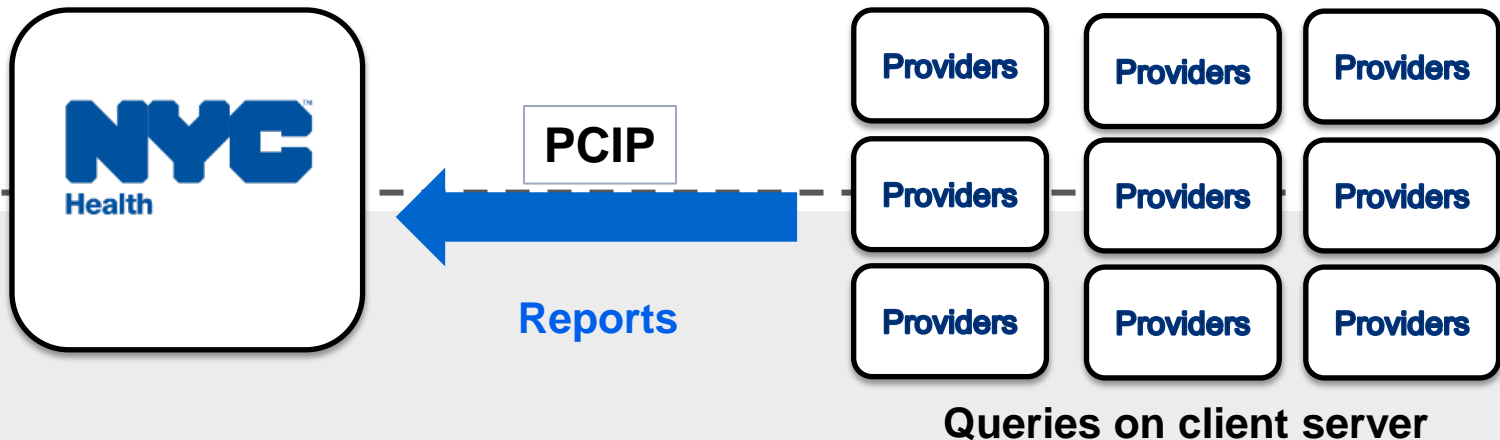
- Ambulatory syndromic surveillance data at DOHMH
 - ❖ De-identified aggregate data
 - By practice
 - By age group
 - Numerator – Denominator
 - Etc...

Week Beginning:	Week Ending:	Clinic	Age Group	ILI Cases/Age Group	Total Patient Visits
03/04/12	03/10/12		0-4	0	4
03/04/12	03/10/12		5-24	0	28
03/04/12	03/10/12		25-49	0	40
03/04/12	03/10/12		50-64	0	30
03/04/12	03/10/12		65+	0	34
03/04/12	03/10/12		All Ages	0	136
03/04/12	03/10/12		0-4	1	4
03/04/12	03/10/12		5-24	2	10
03/04/12	03/10/12		25-49	0	44
03/04/12	03/10/12		50-64	0	21
03/04/12	03/10/12		65+	0	12
03/04/12	03/10/12		All Ages	3	91
03/04/12	03/10/12		5-24	0	39
03/04/12	03/10/12		25-49	0	55
03/04/12	03/10/12		50-64	0	103
03/04/12	03/10/12		65+	0	23
03/04/12	03/10/12		All Ages	0	220

Methods for Data Acquisition

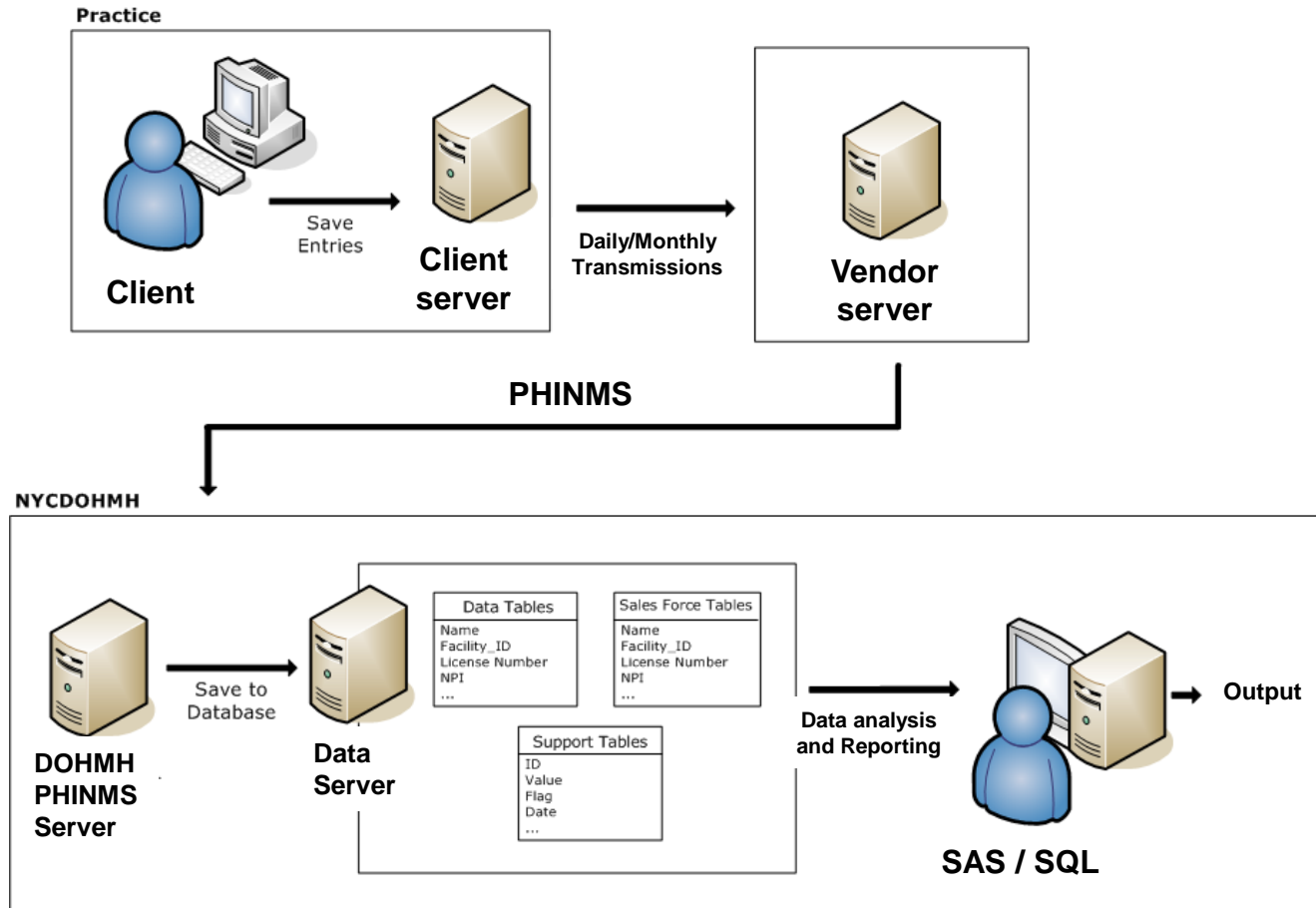
PCIP role in data delivery of ambulatory care syndromic data

- Daily & monthly data transmissions
 - ❖ Quality Measures
 - ❖ Utilization Measures
 - ❖ Syndromic Surveillance Measures
 - ❖ Meaningful Use Measures

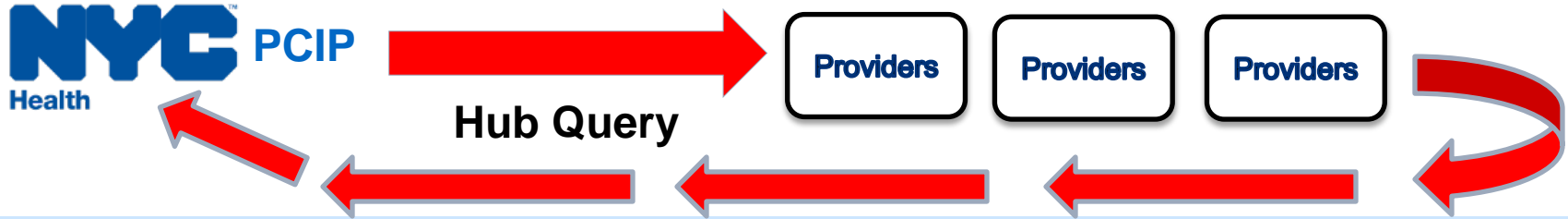


- PCIPs role in data delivery is the conduit that builds infrastructure to get data from practices to other DOHMH agencies which analyze and report data (i.e., syndromic surveillance to CDC ILINet)

Data acquisition



Ad-hoc query surveillance



Note: Please do not use semicolon (;) for writing multiple queries or use any comments in the query

Report Name * DOH Metronidazole 1 20101213 to 20110113

Report Description Query for aggregate number of patients seen in defined period who are taking metronidazole. Email: Hub@health.nyc.gov with questions.

Note: Custom query must have report start and end date in below format if it is present in the query otherwise policy report start and end date will be ignored.

<< ReportStartDt >> and << ReportEndDt >>

Report Query * `SELECT DISTINCT enc.patientid FROM encounters enc INNER JOIN medications rx ON enc.encounter = rx.encounter WHERE enc.date >= '2010-12-13' AND enc.date <= '2011-01-13' AND rx.medicationname IN('Metronidazole')`

CDSS Enabled: Yes No

OrderSet Id

Update

Reset

Ad-hoc query surveillance

3. Reviewed results.

Report Name	Run Date	Report StartDate	Report EndDate	Count
DOH Metronidazole 1 20101213 to 20110113	01/13/2011	12/01/2010	01/01/2011	1
DOH Metronidazole 2 20101013 to 20101212	01/13/2011	12/01/2010	01/01/2011	1
DOH Metronidazole 3 20100713 to 20101012	01/13/2011	12/01/2010	01/01/2011	3
DOH Metronidazole 4 20100413 to 20100712	01/13/2011	12/01/2010	01/01/2011	2
DOH Metronidazole 5 20100113 to 20100412	01/13/2011	12/01/2010	01/01/2011	2
DOH Metronidazole 1 20101213 to 20110113	01/13/2011	12/01/2010	01/01/2011	7
DOH Metronidazole 2 20101013 to 20101212	01/13/2011	12/01/2010	01/01/2011	16
DOH Metronidazole 3 20100713 to 20101012	01/13/2011	12/01/2010	01/01/2011	23
DOH Metronidazole 4 20100413 to 20100712	01/13/2011	12/01/2010	01/01/2011	8
DOH Metronidazole 5 20100113 to 20100412	01/13/2011	12/01/2010	01/01/2011	9

Message Subject:
Recall of Metronidazole Tablets

Message:

Arial 12 B I U

Dear Provider,

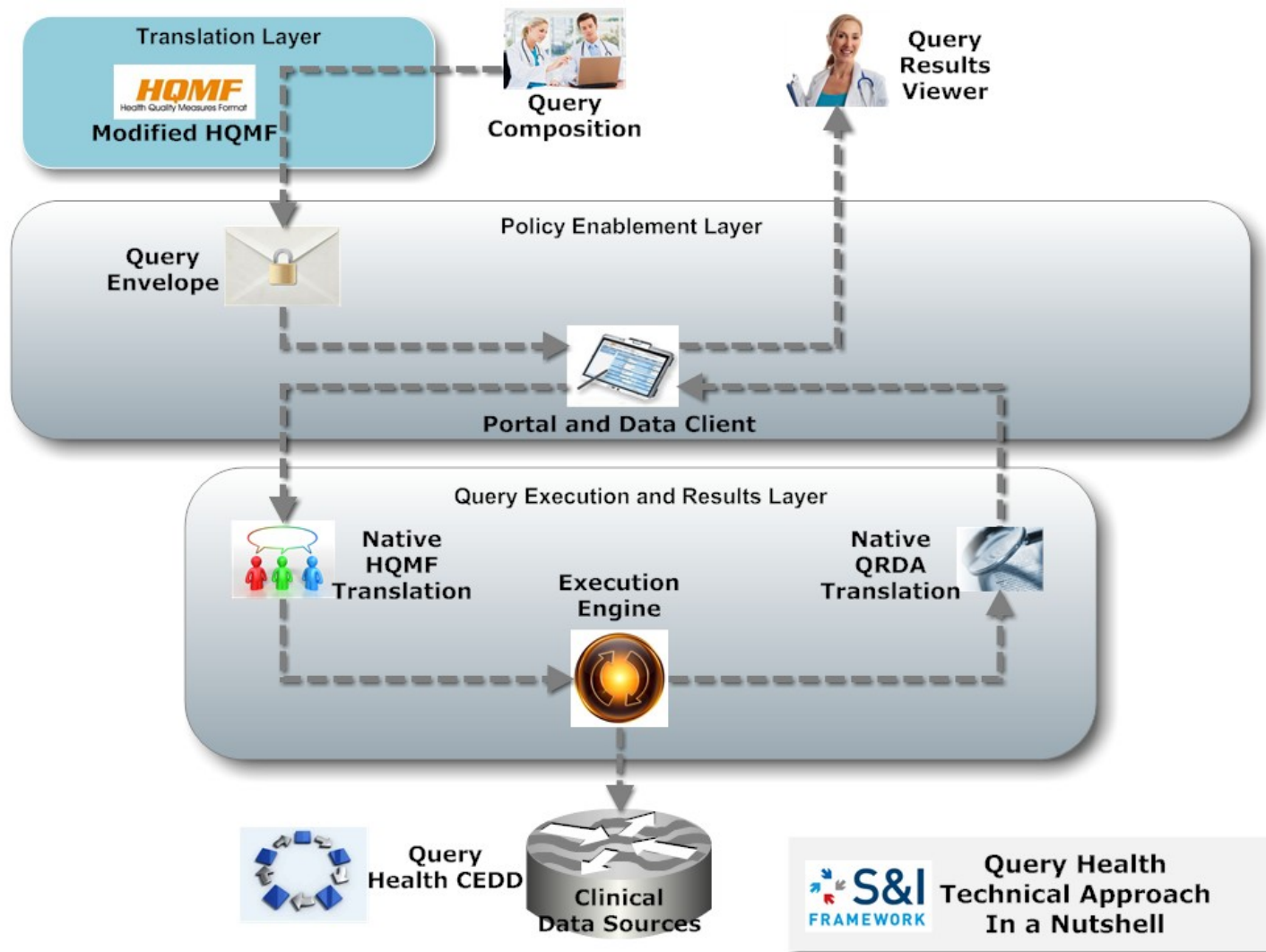
On January 12, 2011, the FDA notified healthcare professionals of a recall of [redacted] were recalled because they were found to be underweight. Underweight tablets may be treated to worsen or recur. The details of the recall can be found here:
<http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm239312.htm>.

We are detailing instructions below using the registry function in your EMR so that you can identify patients that were prescribed metronidazole and contact them if you deem medically necessary. This email is simply for your convenience.

Steps for identifying patients prescribed metronidazole or Flagyl in the past 30 days from the recall date of January 13, 2011 follow.

4. Distributed message with instructions to identify patients for practice follow-up.

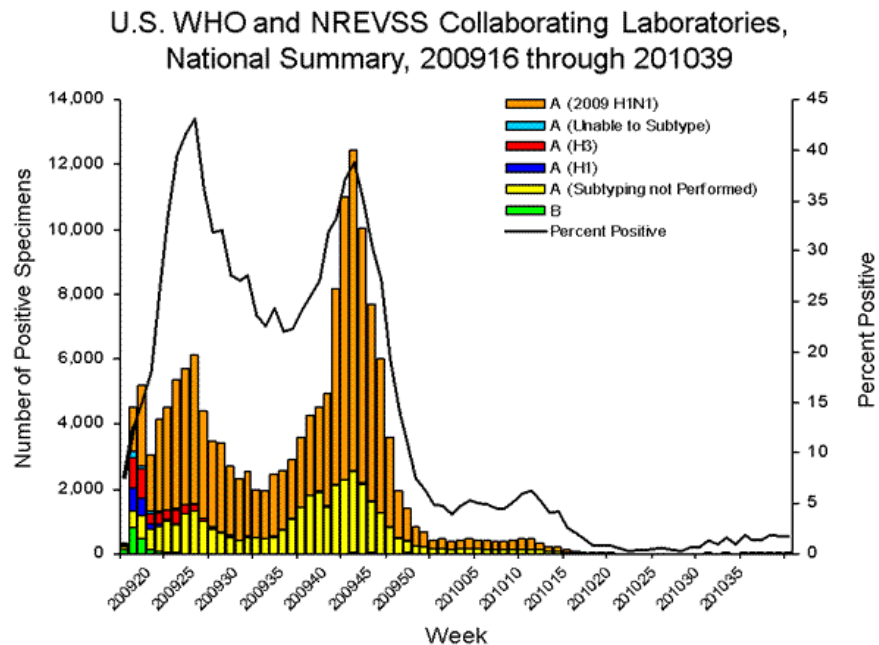
Query Health – How it works together



Potential benefits of data from these settings

Potential benefits of data from these ambulatory care settings

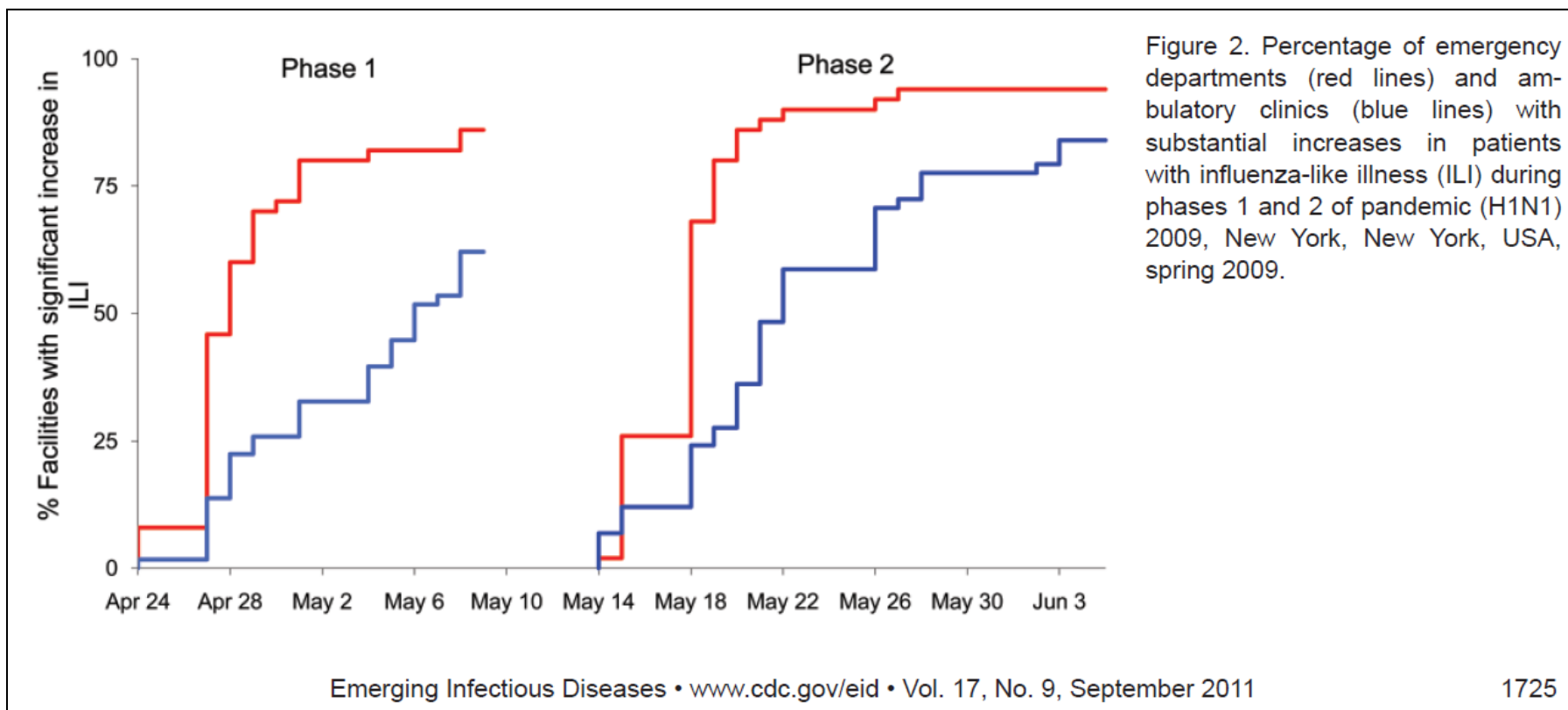
- Facilitates participation in public health activities
 - ❖ Influenza-like illness Network (ILINet)
 - ❖ Passive data transmission favors greater participation
- Additional data source to consult
 - ❖ Situational awareness (knowledge of complete picture in an emergency situation)
 - ❖ Though generally correlated, we cannot assume ED and AC setting data same all the time
 - ❖ Historically, ED and AC trends similarly, but not for initial H1N1 outbreak in NYC



Potential benefits of data from these ambulatory care settings

- 2009 pandemic H1N1 outbreak example in ambulatory care population in NYC

“EDs experienced increases in influenza like-illness significantly earlier than ambulatory care facilities



Acknowledgements

- PCIP HIT Team
 - ❖ Michael Buck
 - ❖ Claudia Pulgarin
 - ❖ Praveen Katepally
 - ❖ Sreenivas Koonadi
 - ❖ Natalya Malamud
- Participating practices

Thank you for your time and attention!

Questions?

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