

Evaluation of Syndromic Surveillance for Influenza-Like Illness

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Objectives

- Compare syndromic classifications for patients definitively diagnosed with influenza by the EIP
- Determine the predictive value of ILI syndrome
- Describe the potential trade-off between timeliness and the sensitivity at different stages care

CDC Emerging Infections Program Collaboration with Georgia

- 20-county metro Atlanta region
- Active, population-based surveillance for patients hospitalized with laboratory-confirmed:
 - Infection of normally sterile sites due to
 - *Niesseria meningitides*
 - *Heamophilus influenzae*
 - Group B streptococcus
 - Group A streptococcus
 - *Streptococcus pneumoniae*
 - Influenza

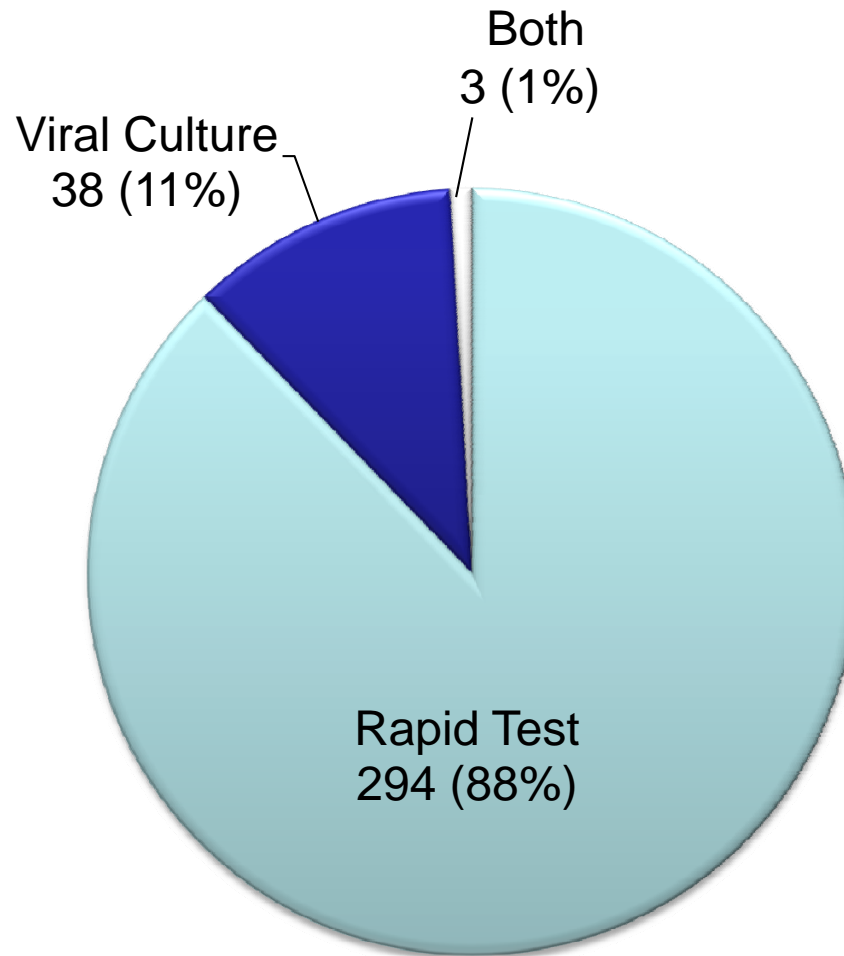
Supplemental EIP Record Abstraction

- Was hospitalization preceded by ED visit?
- Outpatient visit prior to ED visit?
- ED chief complaint
- Diagnostic tests done in ED
- ED discharge diagnosis
- Hospital admission diagnosis
- Hospital discharge diagnosis

EIP Supplement

- May 2007 – April 2008
 - 1138 eligible ABC and Influenza patients
 - 1131 (99%) supplemental forms completed
 - 1129 (99%) patients total
 - 794 (70%) ABC
 - 333 (30%) Influenza
 - 2 (0.2%) ABC and Influenza co-infection, each with an ABC and Influenza form

Hospitalized Influenza Patients Laboratory Confirmation (N=335)



Proportion of Patients seen in ED before Hospital Admission

- 293 (88%) Influenza
- 716 (91%) ABC

Frequency of Select CDC Syndromes and Sub-syndromes based on ED Chief Complaint, Influenza Patients (N=293)

CDC Syndrome	N	Percent
Respiratory	172	(58.7%)
Fever	119	(40.6%)
Gastrointestinal	33	(11.3%)

CDC Sub-Syndrome	N	Percent
Fever	119	(40.6%)
Cough	85	(29.0%)
Dyspnea	60	(20.5%)
Malaise and fatigue	39	(13.3%)
Nausea and vomiting	27	(9.2%)
Upper respiratory infection	19	(6.5%)
Influenza-like illness (2008)	20	(6.8%)
Influenza-like illness (2009)	59	(20.1%)

Frequency of Select GDPH Syndromes based on ED Chief Complaint, Influenza Patients (N=293)

GDPH Syndromes	N	Percent
Fever & Flu	122	(41.6%)
Fever	119	(40.6%)
Respiratory	91	(31.1%)
Influenza-like Illness	57	(19.5%)
Asthma	56	(19.1%)
Gastrointestinal	31	(10.6%)
Nausea/vomiting	28	(9.6%)
Heat-Cold Exposed	19	(6.5%)
Cold/Upper Respiratory Infection	19	(6.5%)

Frequency of Select CDC Syndromes and Sub-syndromes based on ED Chief Complaint, ABC Patients (N=716)

CDC Syndrome	N	Percent
Respiratory	266	(37.2%)
Fever	177	(24.7%)
Gastrointestinal	128	(17.9%)

CDC Sub-Syndrome	N	Percent
Fever	172	(24.0%)
Dyspnea	138	(19.3%)
Cough	87	(12.2%)
Nausea and vomiting	69	(9.6%)
Alteration of consciousness	67	(9.4%)
Malaise and fatigue	57	(8.0%)
Upper respiratory infections	14	(2.0%)
Influenza-like illness (2008)	4	(0.6%)
Influenza-like illness (2009)	40	(5.6%)

Frequency of GDPH Syndromes based on Emergency Department Chief Complaint, ABC Patients (N=716)

GDPH Syndromes	N	Percent
Fever	173	(24.2%)
Fever & Flu	172	(24.0%)
Respiratory	111	(15.5%)
Asthma	107	(14.9%)
Gastrointestinal	80	(11.2%)
Nausea/vomiting	69	(9.6%)
Influenza-like Illness	38	(5.3%)

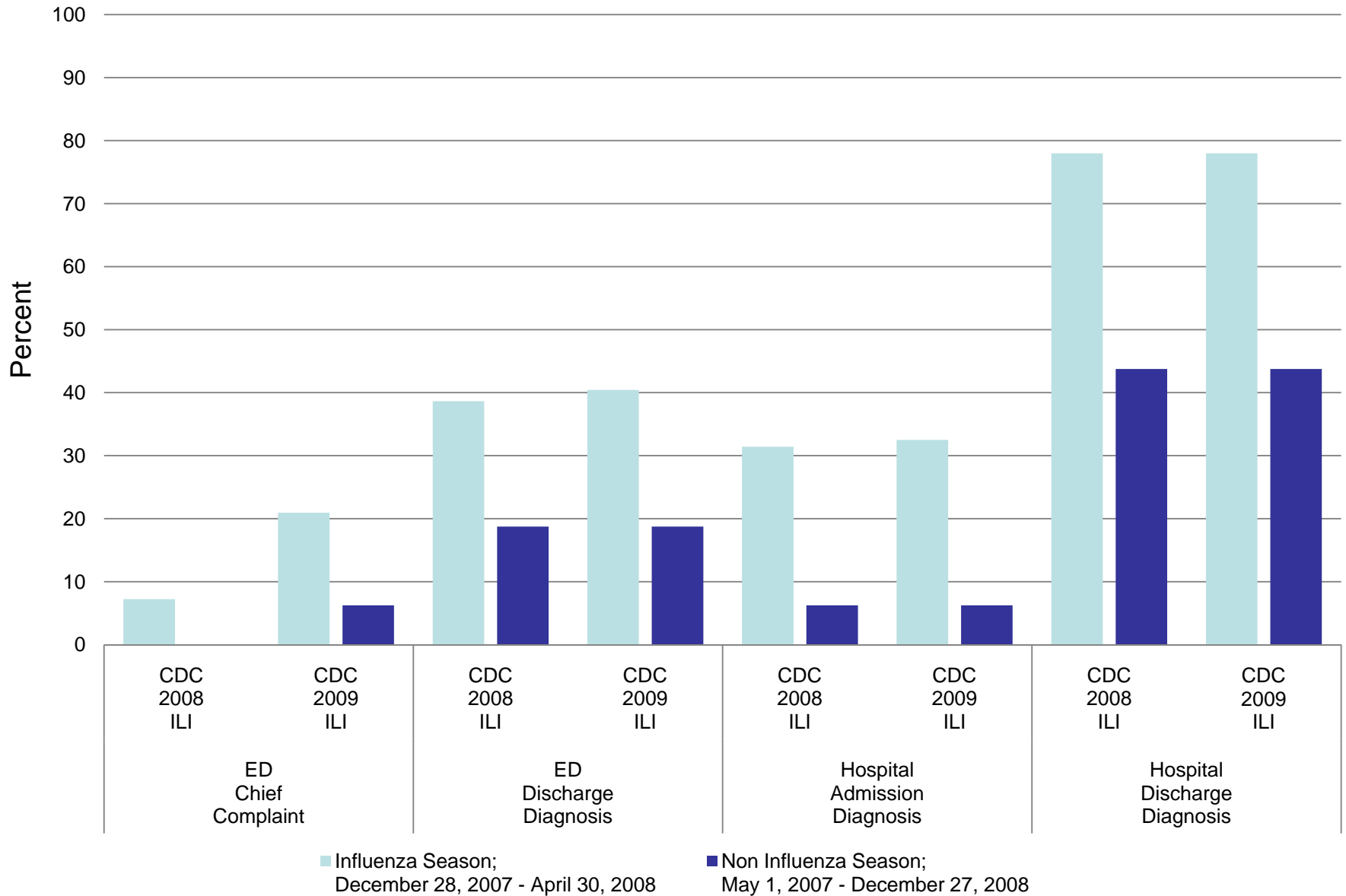
Sensitivity, Specificity, PPV of ILI During Influenza Season

ED Chief Complaint	Sensitivity	Specificity	PPV	PVN
GDPH ILI	20.2%	92.3%	73.7%	52.1%
CDC ILI 2008	7.2%	99.2%	90.9%	50.2%
CDC ILI 2009	20.9%	92.3%	74.4%	52.4%

Sensitivity, Specificity, PPV of ILI Outside of Influenza Season

ED Chief Complaint	Sensitivity	Specificity	PPV	PVN
GDPH ILI	6.3%	96.5%	7.1%	96.0%
CDC ILI 2008	0.0%	99.7%	0.0%	95.8%
CDC ILI 2009	6.3%	96.2%	6.7%	96.0%

Sensitivity of Influenza-like Illness Syndrome during the 2007-2008 Influenza and Non-Influenza Seasons at Various Points during Hospitalization



Conclusions

- ~90% with ED visit before admission
- GDPH ILI is statistically different from the CDC ILI 2008 definition
- CDC ILI 2008 and 2009 syndromes are statistically different
- “ILI” low sensitivity: Improves over course of care
- Sensitivity ILI during the influenza season may reflect either patients’ or providers’ expectations in shaping how chief complaints are expressed or recorded.
- PVP would undoubtedly be lower in a population that includes patients with less severe illness

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