

## Call for Potential Uses of Public Health Syndromic Surveillance Preliminary Data: De-identified Stakeholder Responses

### Public Health Syndromic Surveillance USING INPATIENT EHR DATA

1. *What outcomes (i.e., health indicators or behaviors) can public health authorities routinely monitor with a syndromic surveillance approach and translate into public health action using hospital inpatient EHR data?*

<b>Response:</b>	<b>Submitted by:</b>
Two priority indicators in chronic disease prevention would be: Myocardial infarction (incident events) and stroke (incident events)	State public health official, staff or agent
Syndromic surveillance if used primarily for early event detection is not likely to be enhanced by inpatient data	Local public health official, staff or agent
ICU admission, patients on vents, vaccination status, mortality, discharge position, past history, lab testing and results	State public health official, staff or agent
The incidence and prevalence of selected conditions, both infectious and non-infectious, in order to know what conditions make the greatest impact on the health of citizens, and represent the greatest burden on the health infrastructure	State public health official, staff or agent
There are several outcomes, but due to my own time constraints, I will focus on the one that I am most knowledgeable with: inpatient readmissions.	Unknown
Severity of seasonal and other epidemics (ie, influenza—how many hospitalized vs. normal, how many in the ICU). Potential diagnoses based on laboratory orders and results, radiology orders and results and medication orders.	Federal public health official, staff or agent
Hospital admissions data can be useful for monitoring the severity of seasonal and pandemic influenza	Local public health official, staff or agent

2. *What data elements (i.e., name, description and preferred code set) are required for syndromic surveillance using hospital inpatient EHR data?*

<b>Response:</b>	<b>Submitted by:</b>
All data fields in CDC SS Implementation should be required, including “Treating Facility Identifiers”, “Patient Demographics” and “Patient Health Indicators”. In addition, “occupation” should be added.	State public health official, staff or agent
ICD10 (diagnostic and procedure codes), linkage with immunization records	State public health official, staff or agent

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Response:	Submitted by:
Age, month and year of birth, sex, month and year of admission, chief complaint and/or admitting diagnosis, procedures/surgeries during stay, laboratory tests completed during stay (and results), duration of stay (in days), discharge diagnosis	State public health official, staff or agent
NAICS: The North American Industry Classification System (NAICS) is used to classify business establishments and contributes to an accurate picture of a worker's employment situation, in conjunction with occupational information. SOC: The Standard Occupational Classification system is used to classify jobs and contributes to an accurate picture of a worker's employment situation, providing additional detail that further clarifies risk. Employer and location: information about the specific employer and job location enhance the quality and accuracy of NAICS + SOCs data.	Federal public health official, staff or agent
The minimum core data set is fine but we will be adding procedure codes to augment other programs—would make surveillance decisions on those fields.	State public health official, staff or agent
1. Facility Identifier (NPI) 2. Facility Location 3. Facility/Visit Type (e.g. Inpatient) 4. Report Date/Time 5. Unique Patient Identifier 6. Medical Record Number 7. Age 8. Age units 9. Gender 10. Zip code of residence (5 digit) 11. County of residence 12. State of residence (2 letter) 13. Race 14. Ethnicity 15. Unique Visit ID 16. Admission Date/Time 17. Chief Complaint (this is probably admitting diagnosis for inpatients) 18. Diagnosis/Cause of injury codes (including E and V codes) -- ICD9 (or ICD10) 19. Diagnosis Type (admitting, working, final) 20. Diagnosis rank 21. Discharge Disposition (at the very least released home, expired, transferring to another healthcare setting) 22. Discharge Disposition date/time 23. Pregnancy status 24. Laboratory results: • Microorganism (virus, fungus, bacteria, ova, parasites) isolation, identification or detection by any means (including culture, immunofluorescence, Ag detection, EIA, DFA, cytology, histopathology, PCR, microscopy, immunohistochemistry, blood smear, immunoblot) • Immunology/Serology (e.g. Ab titers) • Virology (viral load) • Blood lead level • Serum alanine Transaminase (ALT) • Fasting glucose • HbA1C Exclude STDs and HIV? CD4 + T4 lymphocyte? Toxicology (e.g. blood alcohol, pesticide/poisoning)? Cancer markers? 25. Severity of illness related data (e.g. ventilation status, intubation status, desaturation) 26. Vaccination status (especially influenza) -- could be self-reported 27. ICU ever? (or alternatively hospital service area) 28. Smoking status 29. Rx that is readily available and applicable	State public health official, staff or agent
Basically the same data elements as captured for ED surveillance, but with addition of: admit date and discharge date (to calculate length of stay)-admission and discharge diagnoses- markers of severity, such as intubation and ICU status.	Local public health official, staff or agent

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3. *What evidence, subjective or objective, supports your required data elements for syndromic surveillance using hospital inpatient EHR data?*

Response:	Submitted by:
The minimum data set aligns with elements included within a data system that collects inpatient hospitalization data in this jurisdiction. This system is already being used for surveillance on strokes and MIs.	State public health official, staff or agent
<a href="http://www.iom.edu/Reports/2011/Incorporating-Occupation-Information-in-Electronic-Health-Records-Letter-Report.aspx">http://www.iom.edu/Reports/2011/Incorporating-Occupation-Information-in-Electronic-Health-Records-Letter-Report.aspx</a> . This link provides the justification for adding “occupation” as a data element. There are numerous public health studies offering justification for including the disease list and ICD-9 codes provided in the previous section as key indicators for monitoring health effects related to climate change.	State public health official, staff or agent
Support traditional surveillance system	State public health official, staff or agent
A study we completed shows that lab data adds cases to invasive bacterial disease that are not described in the admitting or discharge diagnoses. Age category is needed to describe trends for various conditions.	State public health official, staff or agent
Hospital readmissions are an important outcome for any aspect of care touched by our healthcare system. For surveillance, this information is useful in distinguishing index cases from recurring cases, as one example.	Unknown
Use of inpatient disposition (ward) codes by the VA has shown an ability to determine severity of influenza seasons by ICU usage for potential influenza cases.	Federal public health official, staff or agent
See <a href="http://www.isdsjournal.org/articles/3202.pdf">http://www.isdsjournal.org/articles/3202.pdf</a>	Local public health official, staff or agent

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### Public Health Syndromic Surveillance USING AMBULATORY CLINICAL CARE EHR DATA

4. *What outcomes (i.e., health indicators or behaviors) can public health authorities routinely monitor with a syndromic surveillance approach and translate into public health action using ambulatory clinical care EHR data?*

<b>Response:</b>	<b>Submitted by:</b>
Ambulatory clinical card and syndromic could be useful however, logistically, it is difficult to manage smaller ambulatory clinics who likely do not have IT staff.	Local public health official, staff or agent
Reason for visit (chief complaint) and discharge diagnosis, number of visits for same health condition/problem, what procedures are being done in ambulatory care setting, lab values at initial (and successive) visits	State public health official, staff or agent
Indicators of localized gastrointestinal illness and influenza-like illness activity.	Federal public health official, staff or agent
Identification of notifiable conditions that are not otherwise reported to state/local public health	Local public health official, staff or agent

5. *What data elements (i.e., name, description and preferred code set) are required for syndromic surveillance using ambulatory clinical care EHR data?*

<b>Response:</b>	<b>Submitted by:</b>
All data fields in CDC SS Implementation should be required, including “Treating Facility Identifiers”, “Patient Demographics”, and “Patient Health Indicators”. In addition, “occupation should be added”.	State public health official, staff or agent
Same as for EDs	Local public health official, staff, or agent
Data obtained from ED syndromic surveillance (e.g., chief complaint)	State public health official, staff or agent
NAICS: The North American Industry Classification System (NAICS) is used to classify business establishments and contributes to an accurate picture of a worker’s employment situation, in conjunction with occupational information. SOC: The Standard Occupational Classification system is used to classify jobs and contributes to an accurate picture of a worker’s employment situation, providing additional detail that further clarifies risk. Employer and location: information about the specific employer and job location enhance the quality and accuracy of NAICS + SOC data.	Federal public health official, staff or agent

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Response:	Submitted by:
<p>1. Provider/Clinic Identifier (NPI) 2. Provider/Clinic Location 3. Practice Type (e.g. family, pediatric, urgent, specialty) 4. Report Date/Time 5. Unique Patient Identifier 6. Medical Record Number 7. Age 8. Age units 9. Gender 10. Zip code of residence (5 digit) 11. County of residence 12. State of residence (2 letter) 13. Race 14. Ethnicity 15. Unique Visit ID 16. Visit Date/Time 17. Reason for visit 18. Diagnosis/Cause of injury codes (including E and V codes) -- ICD9 (or ICD10) 19. Diagnosis Type (admitting, working, final) 20. Diagnosis rank 21. Discharge Disposition (e.g., released home, transferred to another healthcare setting) 22. Pregnancy status 23. Laboratory results: • Microorganism (virus, fungus, bacteria, ova, parasites) isolation, identification or detection by any means (including culture, immunofluorescence, Ag detection, EIA, DFA, cytology, histopathology, PCR, microscopy, immunohistochemistry, blood smear, immunoblot) • Immunology/Serology (e.g. Ab titers) • Virology (viral load) • Blood lead level • Serum alanine Transaminase (ALT) • Fasting glucose • HbA1C Exclude STDs and HIV? CD4 + T4 lymphocyte? Toxicology (e.g. blood alcohol, pesticide/poisoning)? Cancer markers? 24. Vaccination status (especially influenza) -- could be self-reported 25. Smoking status 26. Rx that is readily available and applicable 27. Visit type (e.g., preventative care, illness/injury) 28. Blood pressure 29. Height &amp; weight 30. Fever status (measured or reported) 31. Medications, immunizations, immunoglobulins, &amp; immunotherapy 32. symptoms? 33. Procedures (e.g., vaccinations administered)</p>	State public health official, staff or agent
Additional data elements would relate to co-morbid conditions which might not be picked up in inpatient data but which should be part of the ambulatory record.	State public health official, staff or agent
1. ICD-9 diagnosis codes and/or chief complaint data 2. Denominators for total number of outpatient/ED visits 3. Disposition data 4. Outpatient laboratory orders/results 5. Outpatient pharmacy orders/fills	Federal public health official, staff or agent
ICD-9 codes and ED chief complaints	Eligible healthcare professional or hospital
Same data elements as captured for ED data	Local public health official, staff or agent

## Call for Potential Uses of Public Health Syndromic Surveillance Preliminary Data: De-identified Stakeholder Responses

6. *What evidence, subjective or objective, supports your required data elements for syndromic surveillance using ambulatory clinical care EHR data?*

Response:	Submitted by:
<a href="http://www.iom.edu/Reports/2011/Incorporating-Occupational-Information-in-Electronic-Health-Records-Letter-Report.aspx">http://www.iom.edu/Reports/2011/Incorporating-Occupational-Information-in-Electronic-Health-Records-Letter-Report.aspx</a> . This link provides the justification for adding “occupation” as a data element. There are numerous public health studies offering justification for including the disease list and ICD-9 codes provided in the previous section as key indicators for monitoring health effects related to climate change.	State public health official, staff or agent
Support syndromic surveillance	State public health official, staff or agent
Cost to health infrastructure of repeat visits for a given condition, effectiveness of prescribed treatments, need for follow up visits or admission	State public health official, staff or agent
Hospital readmissions are an important outcome for any aspect of care touched by our healthcare system. For surveillance, this information is useful in distinguishing index cases from recurring cases, as one example.	Unknown
Ambulatory records would be especially important for diseases/conditions less often resulting in hospitalization, such as asthma.	State public health official, staff or agent
Long history in Department of Defense with ability to track most disease patterns with a majority of these elements. Can now use vaccination status—but we’re still trying to link it to lab results, etc. (can do, just running out of funds to do it)	Federal public health official, staff or agent

7. *What ambulatory clinical care settings collect health data that is of potential syndromic surveillance use to public health practice?*

Response:	Submitted by:
Collecting Meaningful Use data from individual providers is not useful for syndromic surveillance purposes. Also it is not logistically possible in most cases.	Local public health official, staff or agent
Federally-qualified health centers, rural health centers, migrant health clinics, urgent care clinics, physician and specialist offices/practices (DO or MD)	State public health official, staff or agent
Only walk-in sick visits will be potentially useful for syndromic surveillance use	State public health official, staff or agent

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Response:	Submitted by:
ER medical office visits (all types of practice/specialty) (all types of practitioners: MD, NP, ND, PA, DO, midwife, podiatry), dental office visits, chiropractic office visits	State public health official, staff or agent
Federally-qualified health centers, rural health centers, migrant health clinics, urgent care clinics, primary care and specialist physician offices/practices (DO or MD)	Federal public health official, staff or agent
Emergency departments, managed care organizations, community health centers, group practice ambulatory clinics	Eligible healthcare professional or hospital
For influenza-like illness and gastrointestinal illness, clinic and emergency department visits to doctors of medicine or osteopathy, physicians, nurse practitioners, and physician assistants seem the most useful.	Federal public health official, staff or agent
Our jurisdiction would be less interested in data from dentists, podiatrists, optometrists, chiropractors, etc.	Local public health official, staff or agent

### 8. Other comments:

Response:	Submitted by:
Syndromic data from outpatient settings could provide information that can currently only be obtained via expensive studies (that require IRB and review of individual records)	State public health official, staff or agent
Occupational exposures to microbial agents such as viruses, bacteria, and fungi can cause illness in a variety of workplace settings, including health care, laboratories, food services, and many others. The work place not only may be a risk factor in the causation of certain diseases, but may also be a means for transmission of disease in the community. Some diseases where occupation is an important factor in causation and/or transmission include anthrax (ref. 1-4), SARS (ref. 5), influenza (ref. 6-10), tuberculosis (ref. 11), tularemia (ref. 12-13), bloodborne pathogens (ref. 14-16), and foodborne diseases (ref. 17). The routine collection of employment information is strategically important to identify risk factors and sources of disease transmission. Routine inclusion of information about work would facilitate early event detection, rapid assessment, and timely intervention by designated authorities to emerging disease threats. Situational awareness of the incidence of disease or illness by industry and occupation can assist in identifying clusters, determining the magnitude of a problem, and targeting high risk groups for interventions to prevent and reduce disease transmission through a better understanding of environmental exposure-event relationships. The ability to capture and monitor industry, occupation, and name of employer may prove especially critical during emergency response scenarios, including pandemic influenza. It is	Federal public health official, staff or agent

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Response:	Submitted by:
<p>especially important for monitoring of workers in critical services such as health care (e.g., medical transport workers, laboratory technicians, nurses and physicians, medical waste treatment facility workers); emergency response; decontamination; postal delivery; and power, water, and transportation industries.</p> <ol style="list-style-type: none"> <li>1. CDC. Cutaneous Anthrax Associated with Drum Making Using Goat Hides from West Africa – Connecticut, 2007. <i>MMWR</i> 2008; 57 (23): 628-631.</li> <li>2. CDC. Inadvertent Laboratory Exposure to <i>Bacillus anthracis</i> --- California, 2004. <i>MMWR</i> 2005; 54(12): 301-304.</li> <li>3. CDC. Update: Investigation of Bioterrorism-Related Anthrax and Adverse Events from Antimicrobial Prophylaxis. <i>MMWR</i> 2001;50(44): 973-6</li> <li>4. CDC. Update: investigation of anthrax associated with intentional exposure and interim public health guidelines, October 2001. <i>MMWR</i> 2001;50:889--97.</li> <li>5. CDC. Cluster of Severe Acute Respiratory Syndrome Cases Among Protected Health-Care Workers --- Toronto, Canada, April 2003. <i>MMWR</i> 2003; 52(19):433-436.</li> <li>6. Koopmans MB, Wilbrink M, Conyn G, et al. Transmission of H7N7 avian influenza A virus to human beings during a large outbreak in commercial poultry farms in the Netherlands. <i>Lancet</i> 2004;363: 587--93.</li> <li>7. CDC. Interim guidance for protection of persons involved in U.S. avian influenza outbreak disease control and eradication activities. Atlanta, GA: US Department of Health and Human Services, CDC; 2006. Available at <a href="http://www.cdc.gov/flu/avian/professional/protect-guid.htm">http://www.cdc.gov/flu/avian/professional/protect-guid.htm</a>.</li> <li>8. Occupational Safety and Health Administration. OSHA guidance update on protecting employees from avian flu (avian influenza) viruses. Washington, DC: US Department of Labor, Occupational Safety and Health Administration; 2006. Available at <a href="http://www.osha.gov/OshDoc/data_AvianFlu/avian_flu_guidance_english.pdf">http://www.osha.gov/OshDoc/data_AvianFlu/avian_flu_guidance_english.pdf</a>.</li> <li>9. CDC. Prevention and Control of Influenza, Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2008. 2008 / 57(RR07);1-60</li> <li>10. Myers KP, Olsen CW, Setterquist SF, et al. Are swine workers in the United States at increased risk of infection with zoonotic influenza virus? <i>Clin Infect Dis</i> 2006;42:14--20.</li> <li>11. CDC. Guidelines for Preventing the Transmission of <i>Mycobacterium tuberculosis</i> in Health-Care Settings, 2005. <i>MMWR</i> 2005; 54(RR17):1-141</li> <li>12. Feldman KA, Lathrop SL, Ensore RE, et al. Lawnmower tularemia---Martha's Vineyard, Massachusetts, 2000. In: Program and abstract of the 50th Annual Epidemic Intelligence Service (EIS) Conference. Atlanta, GA: CDC, 2001:29</li> <li>13. Feldman KA, Ensore R, Lathrop S, et al. Outbreak of primary pneumonic tularemia on Martha's Vineyard. <i>N Engl J Med</i> 2001;345:1601—6</li> <li>14. Potential work-related exposures to bloodborne pathogens by industry and occupation in the United States Part II: A telephone interview study. Chen GX, Jenkins EL. <i>Am J Ind Med.</i> 2007 Apr 50 (4): 285-92.</li> <li>15. Potential work-related bloodborne pathogen exposures by industry and occupation in the United States Part I: An emergency department-based surveillance study. Chen GX, Jenkins EL. <i>Am J Ind Med.</i> 2007 Mar; 50 (3):</li> </ol>	

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Response:	Submitted by:
<p>183-90. 16. Hepatitis C virus infection among public safety workers. Hales T, Boal WL, Ross CS. J Occup Environ Med 2002 Mar; 44(3):221-223 [Letter] 17. CDC. Diagnosis and Management of Foodborne Illnesses: A Primer for Physicians and Other Health Care Professionals. MMWR 2004: 53(RR04):1-33</p>	
<p>I am concerned that the cart is before the horse – guidelines for collecting inpatient/outpatient data should be based on the evidence, which seems mostly lacking, particularly for the latter. ISDS should find out which jurisdictions are currently collecting inpatient and outpatient data -- not sure if these jurisdictions will necessarily answer this survey, which seems to have a narrow target audience. I'm not convinced of the merits of outlining the business processes for collecting these data -- aren't these processes going to be very similar to what's been done for ED data? Not entirely useful from a practitioner's perspective... also, in my mind, the investment should be in evaluating the usefulness of the data before we establish standards for collecting the data. Just my two cents.</p>	<p>Local public health official, staff or agent</p>