

The Use of BioSense Data for Surveillance of Gastrointestinal Illness

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Objective

To describe the potential use of BioSense chief complaint and final diagnosis data for gastrointestinal (GI) illness surveillance.

Background

The BioSense system currently receives real-time data from more than 370 hospitals, as well as national daily batched data from over 1100 Department of Defense (DoD) and Veterans Affairs (VA) medical facilities.¹ BioSense maps chief complaint and diagnosis data to 11 syndromes and 78 sub-syndromes (indicators). One of the 11 syndromes is GI illness and 6 of the sub-syndromes (abdominal pain; anorexia, diarrhea, food poisoning, intestinal infections, ill-defined; and nausea and vomiting) represent gastrointestinal concepts.

Methods

We retrospectively examined GI indicators over a one year period (May 1, 2006–May 1, 2007) for national trends among outpatient diagnoses from the VA and DoD and ED chief complaints or final diagnoses from hospital data. For hospital ED data, we examined the frequency with which GI related chief complaints (CCs) mapped to: 1) the same indicator (e.g., whether patient visits having a chief complaint of diarrhea also had a final diagnosis of diarrhea); 2) another GI related indicator; or 3) a non-GI related indicator. In addition, we determined the most common diagnoses among each indicator and the most common sub-syndromes contributing to the GI syndrome. The number of hospitals providing real-time data increased from 30 to 360 during the study period. Analyses of ED chief complaint (CC) alone were completed on 343 hospitals while analyses on visits requiring both an ED CCs and final diagnoses were completed on 102 hospitals.

Results

The national average rate for the GI syndrome was 140 per 1000 visits (range: 115-170 among facilities) for ED CC and 120 per 1000 visits (range: 80-140) for ED final diagnosis. DoD and VA GI syndrome rates were much lower (range: 5 to 10 per 1000 visits). For the GI sub-syndromes the average rates in ED CC data were: abdominal pain, 80; nausea and vomiting, 60; diarrhea, 16; anorexia, 1; food poisoning, 1; intestinal infections, ill-specified, 1. We observed seasonal increases in several GI indicators during the 2006-2007 winter season. For ED CC data, the diarrhea, intestinal infections, ill-defined, and nausea and vomiting sub-syndromes showed two winter peaks, during the weeks ending Dec. 23, 2006 and

Feb. 24 2007. The hospital final diagnosis data showed less distinct winter peaks in GI diseases. For the DoD diagnosis data, temporal trends included one winter peak for the diarrhea and nausea and vomiting sub-syndromes. In some instances, these seasonal peaks were related to known norovirus outbreaks in the community or at military facilities. For hospital ED visits with a final diagnosis assigned to the GI syndrome, 60% also had a CC assigned to the GI syndrome. However, similar figures for the sub-syndromes showed that these indicators match less often on average: nausea and vomiting, 55%; abdominal pain, 54%; diarrhea, 43%; food poisoning, 18%; anorexia, 10%; intestinal infections, ill-specified, 10%. For the 3 most common ED CC sub-syndromes (i.e., abd pain, diarrhea, nausea), ED diagnoses often reflected other GI sub-syndromes (e.g., visits with abdominal pain and diarrhea CCs were assigned to the nausea and vomiting subsyndrome based on diagnoses 65% and 62% of the time respectively). In hospital ED data, the most common GI syndrome codes were 789.00-abdominal pain, unspecified site, 787.03–vomiting alone, and 787.01-nausea with vomiting. In DoD data, the most common were 789.00-abdominal pain, unspecified site, 558.9-other and unspecified noninfectious gastroenteritis and colitis, and 787.91-diarrhea. In VA data, the most common were 789.00-abdominal pain, unspecified site 787.2-dysphagia [difficulty swallowing], and 787.91-diarrhea. For all three data sources, the abdominal pain sub-syndrome was the most common sub-syndrome, accounting for about 18% of visits mapping to the GI syndrome.

Discussion

Data reported to BioSense reflect expected seasonal patterns of GI disease in the community and at military facilities. CCs are timely indicators of GI illness but are variably concordant with indicators based on final diagnoses; this was expected because 5 of 6 GI sub-syndromes capture symptoms rather than specific diseases. Final diagnoses are more specific than CCs, but may be influenced by billing considerations. CCs and final diagnoses reported to BioSense can play an important role in providing situational awareness on the national level for GI illness.

References:¹ CDC. BioSense Site. Available from: <http://www.cdc.gov/biosense>. Accessed July 11, 2007.