20.142 Evaluation of ProMED-mail global surveillance capability

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Purpose: A series of research questions were examined: 1) What temporal trends exist in ProMED-mail's aggregate reporting delay? 2) Which countries are mentioned most/least frequently per capita? 3) Which ProMED feeds are most active?

Methods & Materials: Software was used to analyze posts that appeared on the primary and regional ProMED-mail feeds since ProMED's inception in 1994 through May 2016. Using heuristics based on ProMED formatting conventions, meta-data like publication dates and source names were extracted from posts and articles were isolated. NLP techniques (e.g., toponym resolution, named entity extraction) were applied to article bodies to identify organizations and places mentioned. Finally, a summary statistics were gathered from the extracted data, and confidence intervals computed from Poisson regression and bootstrap resampling were used to assess statistical significance.

Results: 1. There is evidence of a long term upward trend in the delay between source article publication and the corresponding ProMED reports ("reporting delay"). Before 2005, the median reporting delay was 33 hours (95% CI [32,34] computed with bootstrap resampling) compared to 44 hours (95% CI [43,44]) after 2005. Articles in multi-article posts had a median reporting delay of 52 hours while those posted individually had a median delay of 31 hours.

2. Countries in South America, Asia, and Africa are mentioned less frequently in proportion to their populations than those in North America, Europe, and Australia. Uzbekistan has the least number of mentions per capita for an existing country with a population of over ten million.

3. The primary ProMED feed has a post rate almost as high as all the regional feeds combined. The next three most active feeds are the South Asia feed, the Middle East/North Africa feed, and the Portuguese feed. The mean posts rates for these feeds differed by a statistically significant amount.

Conclusion: Various trends within the ProMED-mail dataset were identified. With further investigation, they may reveal opportunities for improving the breadth and timeliness of reports on ProMED-mail. Due to ProMED-mail's position as a prominent datasource in multiple biosurveillance systems, improvements to it could have a multiplicative effect on the field of disease surveillance at large.

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Active syndromic surveillance program of arboviruses in Rio de Janeiro, Brazil

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Purpose: Recently, new arbovirus such as Zika virus (ZIKV) and Chikungunya virus (CHIKV) were introduced in Brazil. Despite the clinical relevance, to date there is no syndromic surveillance system focused in arbovirosis in Brazil. Here, we present the initial results of active syndromic surveillance system for arbovirus infections in Rio de Janeiro, Brazil.

Methods & Materials: This is a hospital-based prospective multicenter transversal study. Inclusion criteria were: Presence of fever AND/OR exanthema, with maximal duration of 7 days; PLUS: 2 or more nonspecific symptoms OR a clinical suspicion of arbovirus infection. Patients who met inclusion criteria had blood and urine tested for ZIKV, CHIKV and DENV by RT-PCR. Clinical data were collected using REDCap standardized form.

Results: From March 14th to May 31th of 2016 (epidemiological weeks 11 to 22) 269 patients were included in the study. Patients were predominantly female (57.7%), with mean age of 41.9 years old. One hundred ninety patients (71.1%) were PCR-positive for at least one of the arbovirus tested, 4 patients were infected simultaneously by 2 arbovirus (3 ZIKV/CHIKV and 1 ZIKV/DENV4 co-infection); 79 patients (29.4%) were PCR-negative.

Among PCR-positive samples, 146 (54.3%) were confirmed for CHIKV, 36 (13.4%) were confirmed for ZIKV and 8 (3.0%) were confirmed for DENV (1 DENV3 and 7 DENV4). Over time, dengue cases were distributed between EW 11 to 13, most ZIKA cases (63.9%) between EW 12 to 15 and CHIKV cases were almost evenly distributed along the time study interval.

Median time (days) between symptoms onset and PCR confirming diagnosis were 2.0 (IQR 2.0 – 4.25), 2.0 (IQR 1.5 – 3.0) and 4.5 (IQR 3.0 – 6.5), for ZIKV, CHIKV and DENV, respectively. Fever and arthralgia were the most frequent symptoms among CHIKV (90% and 89%) and ZIKV cases (78% and 75%); fever (88%) and headache (88%) were the most frequent symptoms among DENV.

Conclusion: Co-circulation of dengue, Zika and CHIK has been observed Rio de Janeiro with direct impact on surveillance, diagnostic and management of the cases. Establishing an active syndromic surveillance system focused in arboviruses is paramount for a fast and precise public health response to these new arbovirus infections.