Chapter 4.9 Real-time syndromic surveillance

Authors: Elliot AJ, Hughes HE, Harcourt SE, Morbey RA, Smith S, Smith GE.

Further reading

1. Conway M, Dowling JN, Chapman WW. Using chief complaints for syndromic surveillance: a review of chief complaint based classifiers in North America. Journal of Biomedical Informatics; 2013: 46: 734-43.

   Summary of this document: Syndromic surveillance is the near real-time collection, analysis, interpretation and dissemination of health-related data to help decision-makers with the early identification of the impact (or absence of impact) of potential health threats. This reading provides a real-life example of syndromic work.

   In this short article, the authors review 15 North American syndromic surveillance systems that use natural language processing to organize chief complaints. It describes how chief complaints are submitted and organized, and then describes how natural language processing can aggregate submitted complaints. The paper briefly outlines the advantages and disadvantages of using chief complaints, evaluating each of the 15 syndromic surveillance systems. The authors conclude that keyword-based syndromic surveillance is rigorous and flexible, though design oversights may lead to some reported symptoms being improperly mapped or neglected.

2. Josseran L, Fouillet A, Caillere N, Brun-Ney D, Ilef D, Brucker G, et al. Assessment of a syndromic surveillance system based on morbidity data: results from the Oscour network during a heat wave. PLoS One;2010: 5:e11984.

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   In this short article, the authors describe Oscour, a heatwave syndromic surveillance system based on emergency departments' (ED) morbidity rates related to the health effects of heat waves that occurred in France in the summer of 2006. Data recorded from 15 EDs in Paris and surrounding areas from June to August 2006 indicated an increase in common symptoms such as hyperthermia and malaise. The authors conclude that the system could detect the health impacts of heatwaves with a high degree of accuracy and that syndromic surveillance can be a useful tool for health impact assessments.

3. Smith GE, Elliot AJ, Ibbotson S, Morbey R, Edeghere O, Hawker J, et al. Novel public health risk assessment process developed to support syndromic surveillance for the 2012 Olympic and Paralympic Games. Journal of Public Health;2017: 39: e111-e7.

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identification of the impact (or absence of impact) of potential health threats. This reading provides a real-life example of syndromic work.

In this short article, the authors describe a novel public health risk assessment process piloted during the 2012 Olympics and Paralympics. It describes how syndromic surveillance was used to raise statistical "alarms" in the event of unusual health trends of public health significance. It then describes how these "alarms" were translated into investigations and alerts that trigger public health action. Using the 2012 Olympics as a testbed, the authors describe how this process led to the timely communication of public health alerts to organizers. The authors conclude that their process enabled the interpretation of many statistical alarms in a manageable way during a sustained mass gathering.

4. Triple-S: Syndromic Surveillance Systems in Europe. Guidelines for designing and implementing a syndromic surveillance system. 2013. https://webgate.ec.europa.eu/chafea_pdb/assets/files/pdb/20091112/20091112_d08_giss_en_ps.pdf (accessed 22 February 2022).

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   In this guidance document, the authors describe syndromic surveillance and its public health significance. It provides a practical description of how to set up a system, which data sources to use, how to analyze the data, and how to report findings. This guideline also provides evidence-based practical recommendations and suggestions for designing, implementing, and evaluating syndromic surveillance systems. Each chapter includes examples of past and ongoing initiatives from several European countries.

5. Yoon PW, Ising AI, Gunn JE, editors. Syndromic surveillance: the value of real-time data for public health action. Public Health Reports; 2017: 132:1S-126S.

   Summary of this document: Syndromic surveillance is the near real-time collection, analysis, interpretation and dissemination of health-related data to help decision-makers with the early identification of the impact (or absence of impact) of potential health threats. This reading provides a good oversight of syndromic work.

   In this article, the authors describe the use of syndromic surveillance for event identification, situational awareness, and enhanced response to diseases, conditions, and activities of public health significance. It describes topics relating to the management, use, and enhancement of surveillance systems, such as monitoring mass gatherings. The articles also describe the challenges and advantages of real-time data collection methods common to syndromic surveillance. The editors conclude that investing in syndromic surveillance tools and improving methodology can allow public health professionals to more effectively synthesize electronic health record data.