Topic: Consumer and medical establishment contributions to public health surveillance

Samaan G, Patel M, Olowokure B, Roces MC, Oshitani H; World Health Organization Outbreak Response Team. Rumor surveillance and avian influenza H5N1.Emerg Infect Dis. 2005 Mar;11(3):463-6. PMID: 15757567. Available free online

Eysenbach G. SARS and population health technology. J Med Internet Res. 2003 Apr-Jun;5(2):e14. PMID: 12857670. Available free online

Larkin, Marilynn. Blogs: new way to communicate about infectious diseases, The Lancet Infectious Diseases, Volume 5, Issue 12, , December 2005, Page 748. Available online.

Mati Rahu. Health effects of the Chernobyl accident: fears, rumours and the truth, European Journal of Cancer, 2003 Feb;39(3):295-299. http://dx.doi.org.libproxy.lib.unc.edu/10.1016/S0959-8049(02)00764-5

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The three articles read for discussion, and the one presented in class (Raho, 2003) present different facets of consumer and medical establishment public health surveillance and public health event rumors. Samaan, Patell, Olowokure, Roces and Oshitani review the effectiveness of WHO's enhanced rumor surveillance system used during the avian influenza H5N1 outbreak in 2004. WHO rumor surveillance involves monitoring:

- Media reports (including through GPHIN and regionally, though with language constraints)
- Professional groups (e.g. monitoring email-based public health discussion)
- The public
- WHO network affiliates

Overall, the service was determined to be effective. In this instance, 40 rumors were identified within four weeks of the outbreak and 9 verified to be true. True rumors required less time to be verified, an average of 2.7 days (range: 1-5 days), while false rumors were found to be so in an average of 9.3 days (range: 1-26 days). The importance of rumor surveillance and investigation is underscored with reference to Allport and Postman's basic law of rumor. According to the basic law of rumor, if uncertainty is reduced, the amount of rumor will be reduced:

$$R \sim i \cdot a$$

where: *R* = the *amount* of rumor in circulation,
i = the *importance* of the rumor to the person who hears or reads it,
a = the level of *ambiguity* or *uncertainty* surrounding the rumor.

Larkin (2005) discusses blogs in public health and medicine and briefly presents six blogs that provide a glimpse of the variety of healthcare-related blogs. Blogs discussed include: (1) A credible avian flu blog, (2) a sensational – but informational – avian flu blog, (3) a listing of HIV/AIDS bloggers, (4) a diary of a Hepatitis C patient, (5) a blog by a microbiologist, (6) and biopeer, “the global life sciences research community blog”.

Eysenbach (2003) writes about the use and impact of three important types of information and communication technology applications used during the SARS outbreak in Canada in 2003 “to detect and fight a global epidemic.” During the SARS outbreak, researchers, clinicians and public health officials adeptly made use of technology that facilitated distributed collaboration, research and information exchange. At the same time, public information and communication media quickly became filled with SARS information. WHO’s Global Public Health Intelligence Network (GPHIN) was both successful in collecting early alerts to the outbreak in China and stretched to its capacity during the outbreak.

Public health technologies (PHT), applications that “have a population focus and the potential to improve public health” were also very visible during the outbreak. PHTs are technologies such as the internet, mobile phones and smart appliances that are linked to monitoring and surveillance systems. These systems include centralized data-mining systems that can be used to detect emerging epidemics and disease outbreaks. Though ethical and privacy concerns are associated with many of these systems, they are potentially effective. One such system that Eysenbach tested during the SARS outbreak involved monitoring search requests people entered into search engines. The application of this method, however, was not effective during the SARS outbreak.

At least some of the PHTs that were used during the SARS outbreak were more focused on the “epidemic of fear” rather than the biological disease. These applications, which included a mobile phone-based service that subscribers could use to receive alerts about buildings associated with SARS infections in their immediate vicinity, and the thermal imaging scanners set up in the airports. While these technologies may placate the public by assuring them that "something is being done", they also run the risk of promoting behaviors that are potentially harmful. For example, during the SARS outbreak, many people postponed scheduled hospital visits or otherwise avoided hospitals treating SARS cases. One researcher estimated that in Ontario, the death toll of people who died due to lack of medical attention for SARS-related factors would be four times as great as deaths due to the disease itself. Epidemics of fear are important for at least two reasons. First, because of the negative impacts they can have on the public, and second because they promote the detection of false positives by surveillance and detection systems.

The final article, "Health effects of the Chernobyl accident: fears, rumours and the truth" (Rahu, 2003), illustrated the power of rumors and the complications caused by factors such as the political nature of public health, the lack of a strong public health infrastructure, and the simultaneous occurrence of multiple social and health phenomena. The Chernobyl article was particularly interesting because it presents health data that seem to be at odds with common perceptions of the impact of the Chernobyl incident, which, it is indicated were minimal when compared to these common perceptions of the incident – let alone the rumors. The author did, however, acknowledge that some consider the UNESCO document that summarized Chernobyl-related health problems to have been politically charged. We also noted that evidence of the incorrectness of rumors – of rumors implied to be false in the article - was not given. Further research after our discussion provided evidence that at least some of these rumors had been dispelled.

The articles read and presented for our discussion provided an entry point to talk about new and future possibilities for public health technologies and disease surveillance and detection. We developed a list of a wide range of data sources that could contribute to monitoring and surveillance systems. We also discussed the potential shortcomings related to use of the different types of data sources listed. We briefly discussed ethical and privacy concerns and approaches that could be used to limit risks to privacy.