

Efficient use of social media during the avian influenza A(H7N9) emergency response

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During the 2013 outbreak of human infections of avian influenza A(H7N9), the Centers for Disease Control and Prevention (CDC) used official data released by the World Health Organization (WHO) and the Chinese government to keep United States public health officials informed of updates of the outbreak.¹ The Chinese central government released official avian influenza A(H7N9) data via its web sites (e.g. National Health and Family Planning Commission²), their official news agency (Xinhua News Agency) and their official newspapers (e.g. *People's Daily*, Beijing). In addition, official avian influenza A(H7N9) information was released by Chinese provincial and municipal governments such as Shanghai Municipal Bureau of Health,³ Jiangsu Department of Health⁴ and Zhejiang Department of Health.⁵ Prior studies have discussed the role of social media in the early detection of disease outbreaks⁶⁻⁹ and the facilitation of community-level discussion.¹⁰ In this perspective, we focus on the use of social media by public health agencies to disseminate and obtain official outbreak information during a public health emergency response.

Weibo (literally, microblog) is a category of Chinese microblogging sites that are similar to Twitter. Both Twitter and *weibo* are social media that allow users to post a 140-character long message online. *Weibo* has become popular in China since August 2009 when Twitter became unavailable to users in mainland China. As of December 2012, 309 million people were reported to be *weibo* users in China as compared to the global 500 million registered Twitter users as of July 2012. There are several different providers of *weibo*, including *Sina Weibo*, *Tencent (QQ) Weibo*, *Sohu*

Weibo, *Baidu Weibo*, *ifeng Weibo*, *NetEase Weibo* and others. Most *weibo* users live in China; a random sample of users of *Sina Weibo* found that 1.6% of users were from countries other than China.¹¹

Social media platforms provide a new channel through which public health agencies release official information, either by posting new outbreak information directly or by guiding people to official web sites. The 2013 H7N9 outbreak was the first time that WHO used Twitter for initial release of official outbreak information.¹² Likewise, the Chinese central government, some of its provincial and municipal governments and the Chinese official news agency released some official outbreak information via *weibo* nearly simultaneously with their web site press releases (the exact time of information release is known for *weibo* but often not for web sites; **Table 1**). An official list of Chinese provincial and municipal health authorities' *weibo* accounts can be found at the web site of the National Health and Family Planning Commission.¹³ Social media, like Twitter and *weibo*, are used by WHO and the Chinese authorities to direct attention of online communities towards their official web site press releases (**Table 1**). *Weibo* users can also post text longer than 140 characters as an image attached to their *weibo* post, which is known as a long *weibo*. The Chinese government used this function to post press releases on *weibo*. An example of a long *weibo* post containing a whole press release by the Shanghai Municipal Government¹⁴ can be found in **Table 1**.

Social media platforms can help CDC epidemiologists obtain official information more efficiently because

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Table 1. Examples of outbreak information released online and through social media by the World Health Organization and the Chinese national, provincial and municipal health authorities

Organization	Social media/web site	Title and content (web site address)	Date/time (if available)	Language
World Health Organization (WHO)	@WHO	China has notified WHO of three human cases infected with #influenza A(#H7N9) http://goo.gl/Wf7Fy #Flufighter (https://twitter.com/WHO/status/318764531029516288)	1 April 2013 16:39:21 GMT	English
	http://www.who.int/	Human infection with influenza A(H7N9) virus in China. Global Alert and Response – Press release (http://www.who.int/csr/don/2013_04_01/en/index.html)	1 April 2013*	English
Chinese central government – National Health and Family Planning Commission	http://e.weibo.com/u/2834480301 (健康中国)	卫生和计划生育委员会就上海、安徽3例患者感染H7N9禽流感展开疫情问答 http://t.cn/zTwy8Jw 确诊患者的所有密切接触者目前均未发现类似病例。 [Translated: The National Health and Family Planning Commission provides a Q&A session on epidemiologic information regarding the three patients infected with H7N9 avian influenza in Shanghai and Anhui (http://t.cn/zTwy8Jw) up to the present; there are no similar cases found among all the close contacts of the confirmed cases (http://e.weibo.com/2834480301/zq0QvBVsl)]	31 March 2013 11:38 GMT	Chinese
	http://www.moh.gov.cn/	上海、安徽发生3例人感染H7N9禽流感确诊病例 [Translated: three confirmed cases of human infections of H7N9 avian influenza in Shanghai and Anhui – Press release] (http://www.moh.gov.cn/mohwsyjbgbs/s3578/201303/44f25bd6bed14cf082512d8b6258fb3d.shtml)	31 March 2013*	Chinese
Chinese provincial/municipal government – e.g. Shanghai Municipal Government	http://e.weibo.com/shanghai (上海发布)	【上海两例人感染H7N9禽流感病例密切接触者未发现异常情况】#要闻#经国家卫生和计划生育委员会组织专家确诊并依法向社会公布，上海市发现2例人感染H7N9禽流感病例。截至目前，所有密切接触者均未发现类似症状和发病情况。今年以来上海流感、肺炎发病率与近三年同期相比并无明显上升。详见长微博。 [Translated: (Two cases of human infection of H7N9 avian influenza in Shanghai. Abnormal situation has not been observed among close contacts.) #Headline# The National Health and Family Planning Commission has organized experts to confirm and has followed the law to report to the society, that two cases of human infection of avian influenza have been discovered in Shanghai. Up to the present, there has not been any similar symptoms or disease onset observed among all close contacts. Since the beginning of this year, the clinical attack rates of influenza and pneumonia in Shanghai are similar to the same period in the past three years and no obvious increase has been observed. For details, see long <i>weibo</i> post.] (http://e.weibo.com/2539961154/zq0AU9VVMR)	31 March 2013 11:00 GMT	Chinese
	http://wsj.sh.gov.cn/ http://www.smhb.gov.cn/	上海、安徽发生3例人感染H7N9禽流感确诊病例 [Translated: three confirmed cases of human infections of H7N9 avian influenza in Shanghai and Anhui – Press release] (http://wsj.sh.gov.cn/website/b/103667.shtml)	31 March 2013*	Chinese

* The precise release time for the official press releases was not available as the webpages did not carry a stamp of their release time. Nonetheless, based on our experience, the online press releases and the social media posts were released by WHO and the Chinese authorities nearly simultaneously.

information from multiple sources can be obtained from a central access point. During the avian influenza A(H7N9) outbreak, a team at CDC followed the social media accounts of multiple official sources so that new outbreak information from WHO and the Chinese health authorities would automatically come to the team's attention. When new case data were released by WHO or the Chinese government at its national,

provincial or municipal level via Twitter and/or *weibo*, the event was re-tweeted by social media users; thus even a message originating on a Chinese-language web site of a provincial health department would be rapidly noticed worldwide and quickly rise to the team's attention. While these social media posts might include information that was already available elsewhere, they did alert epidemiologists to the release of new

information through official sources, allowing the team to gather additional information from official web sites if available (Table 1) and obviating the need for constant monitoring of multiple news sources and web sites, such as individual web sites of the many local Chinese health departments.

The use of Chinese social media, like *weibo*, coupled with the necessary Chinese language and cultural knowledge, enabled CDC epidemiologists to gather the Chinese official data so that it could be translated, contextualized and interpreted in an efficient manner during the A(H7N9) emergency response. To ensure timely and complete understanding of an outbreak situation, it may be helpful for epidemiologists to track social media, including Twitter and *weibo*, in addition to traditional methods of communication.⁷ Our experiences in the 2013 avian influenza A(H7N9) outbreak could be relevant to other outbreaks in other countries and to public health agencies of other nations.

Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the CDC.

Conflicts of interest

None declared.

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