

Progress in public health risk communication in China: lessons learned from SARS to H7N9

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Abstract

Background: Following the SARS outbreak, the World Health Organization revised the International Health Regulations to include risk communication as one of the core capacity areas. In 2006, the U.S. Centers for Disease Control and Prevention's Global Disease Detection [GDD] program began collaborating with China to enhance China's risk communication capacity to address gaps in the SARS communication response. This article describes tangible improvements in China's public health emergency risk communication capacity between the SARS and H7N9 outbreaks; documents U.S. CDC GDD cooperative technical assistance during 2006–2017; and shares lessons learnt to benefit other countries and contribute to enhance global health security.

Method: A questionnaire based on the WHO Joint External Evaluation tool [Risk Communication section] was developed. A key communications official from the China National Health Commission [NHC] completed the questionnaire retrospectively to reflect China's capacity to manage communication response before, during and after the outbreaks of SARS in 2003, influenza H1N1 in 2009, and influenza H7N9 in 2013. A literature search was also conducted in English and Chinese to further substantiate the results of the questionnaire completed by NHC.

Results: China demonstrated significantly improved risk communication capacities of pre-event, during event and post event responses to H7N9 when compared to the SARS response. China NHC improved its response through preparedness, availability of dedicated staff and resources for risk communication, internal clearance mechanisms, standard operating procedures with national response parties external to NHC, rumor management, communication with international agencies and consistent messaging with healthcare and private sectors. Correspondingly, the perceived level of trust that the public had in the NHC following outbreaks rose between the SARS and H7N9 response.

Conclusion: Risk communication capacities in China have increased during the ten years between the SARS outbreak of 2003 and the H7N9 outbreak of 2013. Long-term risk communication capacity building efforts in bilateral collaborations are uncommon. The U.S. CDC GDD project was one of the first such collaborations worldwide. The lessons learned from this project may benefit lower and middle-income countries as they build their national emergency risk communication capacity.

Keywords: Global health security, Risk communications, China, International health regulations, Global disease detection, SARS, H7N9

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Background

In 2003, the world was struck by the epidemic of a new viral disease, transmitted by direct contact and respiratory droplets. The Severe Acute Respiratory Syndrome (SARS) resulted in 8096 cases and 774 deaths reported to the World Health Organization (WHO). In addition to the enormous human costs of SARS, it extracted an estimated \$ 40–54 billion USD from the global economy [1]. Of over 25 affected countries, China experienced the greatest burden, with 5327 cases and 349 deaths [2].

The WHO referenced a list seven lessons learned from SARS. Among the lessons was that global health security relies on the capacity of all countries to rapidly detect and contain public health threats at their source. Another lesson learned regarded the importance and challenge of risk communication [3] during a public health emergency. Following the SARS outbreak, WHO revised the International Health Regulations [IHR]. Among the revised IHR, risk communication was included as one of the core capacity areas [4]. WHO defines risk communication as

"... the real-time exchange of information, advice and opinions between experts or officials and people who face a threat [hazard] to their survival, health or economic or social well-being. Its ultimate purpose is that everyone at risk is able to take informed decisions to mitigate the effects of the threat [hazard] such as a disease outbreak and take protective and preventive action.

Risk communication uses many communications techniques ranging from media and social media communications to mass communications and stakeholder and community engagement. It requires the understanding of stakeholder perceptions, concerns and beliefs, as well as their knowledge and practices. Effective risk communication must also identify early on and subsequently manage rumours, misinformation and other communications challenges" [5].

In 2006, a bilateral ministerial level Memorandum of Understanding (MOU) was jointly signed by the Minister of Health of China and the U.S. Secretary of Health and Human Services (HHS). Under the framework of this MOU, the Emerging and Re-emerging Infectious Disease Collaborative (EID) program was officially launched, which marked the initiation of U.S. Centers for Disease Control and Prevention's (U.S. CDC) Global Disease Detection (GDD) program's collaboration with China. This is a comprehensive collaboration between the U.S. and China, including multiple projects focusing on various subject areas. A health communication capacity building project was initiated with the goal to

enhance China's public health risk communication capacities in an effort to address some of the challenges identified during the SARS outbreak. U.S. CDC has provided cooperative technical assistance for risk communi-

Affected Communities and 5) Dynamic Listening and Rumour Management.

Questions were selected from each of the five JEE risk communication domains as well as globally accepted risk communication principles of trust, timeliness, transparency, listening to audiences, and planning [7]. The questions were adapted and asked of a NHC key communication official to retrospectively determine China's capacity to manage communication response before (pre-event), during (event) and after (post-event) the outbreaks of SARS in 2003, influenza H1N1 in 2009, and influenza H7N9 in 2013. The SARS and H7N9 outbreaks occurred approximately 10 years apart and serve as appropriate communication response comparisons as well as bookends to much of the risk communication capacity building efforts between U.S. CDC and China.

These binary and Likert scale questions were asked of Director Mao Qun'an, one of the few senior communications officials and spokespersons in China's NHC and its predecessor the Ministry of Health (MOH) that was directly involved in the SARS and H7N9 outbreaks and all public health emergencies in between these two events. As our key informant, Director Mao quantified capacity and provided documented and anecdotal support for his results. Following Director Mao's response, a literature search was conducted in English and Chinese to further substantiate the results of his feedback regarding China's communication response capacity. Capacity building efforts between U.S. CDC GDD and China were mapped on a timeline and reviewed for potential impact and lessons learned.

Results

The original study intended to look at response capacity change from SARS in 2003 to H1N1 in 2009 and H1N1 to H7N9 in 2013. While the greatest change in capacity occurred following SARS and in time for the H1N1 response, we chose to focus on the entire body of capacity change between SARS and H7N9 noting that no key lessons learned have been eliminated by merging these results.

potentially due to the implementation of IHR in the interim. Other proactive capacities such as audience analyses, message testing, and frequent media updates proved to be lacking capacities during the SARS outbreak but were used as part of the communications response for the H7N9 outbreak and H1N1 before that.

Rumours, misinformation, or misperceptions can plague communication response efforts. In an age where social media proliferates information rapidly, media monitoring and rumour management are necessities in any communication response effort [11]. Rumour management and shifts in communication response based on audience feedback were better utilized during outbreaks

through workshops taught with provincial and sub-provincial health bureaus and local CDCs.

By 2008, there was enough underlying capacity to begin formalizing into an emergency risk communication system. This highlighted the fact the NHC/MOH was the true mouthpiece of the health sector during a public health emergency, not China CDC. While it was valuable to teach the epidemiologic technical staff of China CDC and the Field Epidemiology Training Program (FETP) to communicate transparently, rapidly and with empathy, these principles had to be recognized and adopted at the top of the health sector. Coordination and partnership continued as the program continued to support capacity building efforts of CCHE at national and sub-national levels and included FETP and hospital responders in joint capacity building sessions.

Also, in 2008, EID supported a MOH/China CDC delegation's visit to U.S., focusing on health emergency risk communication related information and experience exchange. The delegation composed of an MOH spokesperson, representatives from health emergency response groups in both MOH and China CDC, senior epidemiologist from China CDC and key staff from the CCHE. They first visited the U.S. CDC headquarters to see its emergency communication system in operation, then visited Washington, D.C. to see how the system inter-operated with the Health and Human Services system, and lastly visited a state-based system to observe the operations at state and local levels. This event, later followed by numerous fellowship programs at U.S. CDC, resulted in recognition from the Minister of Health to institute risk communication as a critical function in China's public emergency preparedness and response efforts.

The Chinese delegation chronicled their trip in an article written for the Chinese public. The article stated, "In recent years, promoted by MOH, risk communication concepts and theories have been gradually introduced into and accepted by the Chinese health system. Relevant technical guidelines and training materials have been developed. More public health professionals and officials have realized the importance of risk communication, which is a critical component of the entire public health emergency response system. However, risk communication has also frequently been mistaken with health communication and other concepts. There is still a big gap in comprehensive and correct understanding about risk communication systems and mechanisms and detailed practices. Therefore, it's an important and urgent need for us to establish a public health emergency risk communication mechanism fitting China's situation and based upon the U.S. public health emergency risk communication mechanism and experiences. We should make risk communication a standardized institutionalized technical function,

which will help control and decrease hazards caused by public health emergencies" [15].

Public health emergency risk communication guideline and handbook

All of these activities likely contributed to China's increased risk communication strategy but the government itself claims that a few efforts particularly made a difference. The development and distribution of the Public Health Emergency Risk Communication Guideline and later a step-by-step handbook significantly increased awareness and improved risk communication skills for Chinese public health emergency response workers. The development of the Public Health Emergency Risk Communication Guideline is regarded as

lack of autonomy at provincial levels still occurred, practitioners had an awareness of risk communication practice due to training. "Findings of this assessment confirm that risk communication training efforts by the Chinese NHC/CCHE and U.S. CDC have been successful in developing awareness of risk communication principles among public health practitioners and their ability to implement those principles in practice" [18].

Communication - a more visible force in National Health Commission and China CDC

Over the course of the past ten years, communication has moved from a function that largely served as a mechanism to release boilerplate statements from the MOH to a non-investigative media with little nuanced information for audience segments, to meaningful recommendations mindful of personal barriers and empathy for affected audiences. Now, there are visible functions within China CDC and the NHC/MOH that are tasked with a spectrum of communication functions to better reach the public with timely and transparent information that citizens need to protect their health. In 2013, the Department of Communication was established when the previous MOH was reorganized into the current NHC. Working with media and releasing information on behalf of NHC are included as part of its key responsibilities. The main functions include "drafting goals, plans, policies and standards for ... public health education and health promotion, ... , news and information release" [19].

Once you've found the voice, find the eyes and ears of your audiences

that communicators are needed as part of a field response is also increasingly recognized at U.S. CDC and at WHO. In 2013, WHO initiated a global version similar to this program called the Emergency Communications Network [23].

Scaling up and across in China

China is the world's most populous country with approximately 1.374 billion people [24] in a landmass nearly the size of the U.S. To change risk communication policy, it's natural to work with national level ministries, but for practice to be well absorbed into the health response system throughout the nation it had to be adopted at provincial and sub-provincial levels.

Additionally, risk communication has to be coordinated among all response partners. Therefore, adoption of practices by just one agency wouldn't have much, if any, effect. As mentioned, whenever possible, training workshops and exercises included health response partners from a variety of agencies that should coordinate during emergencies. Sometimes this happened automatically, particularly in the latter years of the cooperation, but other times it required some guidance. For the work through U.S. CDC GDD we would often support workshops for a certain organization [China CDC or MOH]. In many of the cooperative agreement documents, we would stipulate that one organization had to reserve a certain number of seats for a partnering organization. We would also regularly meet with our counterparts at the WHO office in Beijing to ensure that we were targeting technical assistance areas in a complimentary fashion as opposed to duplicating efforts or not addressing gaps.

A picture is worth a thousand words, experience is worth a million

The impact that the 2008 senior leadership delegation visit to the U.S. had on risk communication policy in China was unexpected. Having impassioned and influen-



[Additional file 3](#): China Risk Comms Table 3 Post event results
2017.docx (DOCX 14 kb)

[Additional file 4](#): China Risk Communication capacity then and now
comparison Table 08312017.docx (DOCX 16 kb)

[Additional file 5](#): China Risk Comms Cap Building timeline
20170831.docx (DOCX 29 kb)

Abbreviations

CCHE: