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Brief Report

Enhancing 'Whole-of-Government' Response to Biological Events in Korea: Able Response 2014

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ABSTRACT

Since 2011, the Republic of Korea (ROK) and United States (U.S.) have been collaborating to conduct inter- and intra-governmental exercises to jointly respond to biological events in Korea. These exercises highlight U.S. interest in increasing its global biosurveillance capability and the ROK's interest in improving cooperation among ministries to respond to crises. With Able Response (AR) exercises, the ROK and U.S. have improved coordination among US and ROK government and defense agencies responding to potential bio-threats and identified additional areas on which to apply refinements in policies and practices. In 2014, the AR exercise employed a Biosurveillance Portal (BSP) to facilitate more effective communication among participating agencies and countries including Australia. In the present paper, we seek to provide a comprehensive assessment of the AR 2014 (AR14) exercise and make recommendations for future improvements. Incorporating a more realistic response in future scenarios by integrating a tactical response episode in the exercise is recommended.

Introduction

An outbreak in one country can threaten the health of people in other nations thousands of miles away. Recent outbreaks of infectious disease such as Ebola Virus Disease and Middle East Respiratory Syndrome (MERS) demonstrated the need for effective collaboration among countries responding to stop rapid transmission of such diseases [1, 2]. There are several mechanisms and initiatives to facilitate international cooperation to address such crises. The International Health Regulations (IHR), which entered into force in 2007 and are led by the World Health Organization (WHO), requires countries to report certain disease outbreaks and public health events to WHO. These reporting requirements help the international community prevent and respond to public health emergencies that have the potential to cross borders and threaten people worldwide [3]. The U.S. is also leading an international effort to integrate its biodefense strategy for preempting an outbreak and has committed to partner with other countries in order to achieve the Global Health Security Agenda (GHSA) goal of preventing, detecting, and responding to infectious disease threats [4].

Since 2011, the ROK and U.S. have collaborated to enhance biological defense capabilities required for the early detection, identification, and response to naturally occurring and intentional biological events in the Republic of Korea. Referred to as the "Able Response (AR) Initiative"; AR promotes a 'whole-of–government' approach that leverages findings and outcomes identified in a series of scripted tabletop and functional exercises. An AR Biological Defense Task Force (BDTF) was established in 2012 to prioritize, track, and implement approved recommendations captured in After Action Reports from each AR exercise. In the past several years, the AR Initiative has increased awareness and improved

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coordination activities between the U.S. and ROK and, more importantly, across the ROK government and defense agencies. Key outcomes identified the need for additional refinements in policies, practices, and biosurveillance tools.

Bilateral AR exercises between the U.S. and ROK were held to enhance preparedness for and response to biological events in the Korean Peninsula. The AR exercises have grown considerably in sophistication and size and become a model for international exercises on biological events involving inter-ministerial and inter-agency cooperation [5]. During August 2014, military and civilian government officials, and the staff of a number of agencies from both ROK and U.S. participated in the AR14. The present article provides a critical review of AR14 exercise, with a focus on communication and coordination among nations and governmental agencies, which includes recommendations to improve for future exercises.

Excise overview

Responding to a bio-crisis has many similar attributes of responding to any "mass casualty" crisis, whether it be a natural disaster or an influx of patients seeking medical care from a largescale terrorist attack or industrial chemical accident, for example. The AR exercises provide an opportunity to examine issues related to existing policies and plans and multilateral cooperation during a bio-crisis. The mission of the AR exercise series is to improve the combined ROK-U.S. ability to prepare for and respond to a naturally occurring or intentional bio-event through a 'whole-of-government' approach. Eliciting responses from ROK and U.S. military, civilian, and interagency partners from both countries, the AR14 exercise, was conducted on August 11-14, 2014, and simulated approximately 15 days in the exercise scenario involving multiple events. A pre-scripted master scenario events list (MSEL) was used to prompt exercise players to react to each scenario event using their existing agency response procedures in a manner similar to an actual incident. The scenario and MSEL were used to facilitate identifying strengths and limitations in addressing the participating agencies mission. Most exercise players participated from their normal work sites via the Biosurveillance Portal (BSP).

1. Exercise aims

Specific aims of the AR14 were to, 1) improve ROK-U.S. bilateral government and interagency bio-crisis coordination and response; 2) identify detailed procedures for notification regarding mutual support to address insufficient resources between ROK-U.S. governments; 3) conduct strategic communications; 4) develop coordination measures to enhance ROK-U.S. bilateral response capability and share information about ROK-U.S. capabilities; 5) refine the policy for managing, controlling, and/or quarantining of local/foreign citizens during a bio-crisis; and 6) develop coordination measures with foreign partners and international organizations.

2.Scenario

The scenario depicted a total of 15 days of two separate disease outbreaks resulting with civilian and military patients. The first incident was an undetected enclosed release at a salad bar in downtown City A in South Korea and was discovered through public health surveillance reports of patients with symptoms at local hospitals. Initial information provided to players did not specify whether the initial incident was accidental or intentional. The second incident was an open-air release at a Convention Center in City B in South Korea. The incidents occurred eight days apart and resulted in numerous ROK, U.S. and foreign citizen casualties and deaths. The number of patients from both attacks reached over 600, resulting in about 35 fatalities. The scenario triggered a large coordinated response, with particular emphasis on public messaging, information sharing and resource request processes. The situation evolved into a serious crisis for parts of the country with resource constraints and general unrest, arising from the public's concerns about public health prevailing throughout both cities.

3. Participating organizations

There were over 200 participants in AR14 from a total of 39 agencies from both ROK and U.S. major players from the ROK included Ministry of National Defense (MND), Ministry of Health and Welfare (MOHW), and Korea Centers for Disease Control and Prevention (KCDC). U.S. organizations participating in the exercise included the U.S. Embassy, United States Forces Korea (USFK), and U.S. Department of Defense (DOD) as well as Department of Health and Human Services (DHHS). In addition, Australia participated in the exercise as an observer but later independently stood up the National Crisis Action Response Center for AR14.

4. Exercise communication

For AR14, all exercise players used the current developmental version of the BSP to track, integrate and facilitate the analysis of exercise biological threat data and information. As the primary means of communication for receiving exercise-related information and communicating with other players, the BSP provided exercise events and enabled exchanging and sharing information with groups of other players throughout the exercise.

During the two days of exercise, the 39 ROK and U.S. agencies used 63 BSP terminals, which resulted in 165 discussion forums, 1,294 chat messages, and 77 Request for Information (RFIs) for information exchange (Figure 1).

5. Exercise evaluation

A brief data collection form was distributed to players to collect information on communication and coordination for each exercise event. The players were asked about the kind of information/topic that initiated their agency to act and how the response was carried out. An online survey was also administered to collect feedback from the participants. The data was used as discussion points on the ROK's preparedness for biological events, which led to recommendations for future improvement.

Major accomplishments

AR14 demonstrated the substantial improvement in ROK preparedness and cooperation with the U.S. in responding to biological events. AR14 provided participating agencies a realistic operational environment to practice their procedures for coordination and communication. In addition, the process of preparing the exercise enhanced mutual understanding of how ROK and U.S. operational protocols differ, which will later help validate each nation's existing policies and procedures for sharing information and coordinating a 'whole-of-government' response

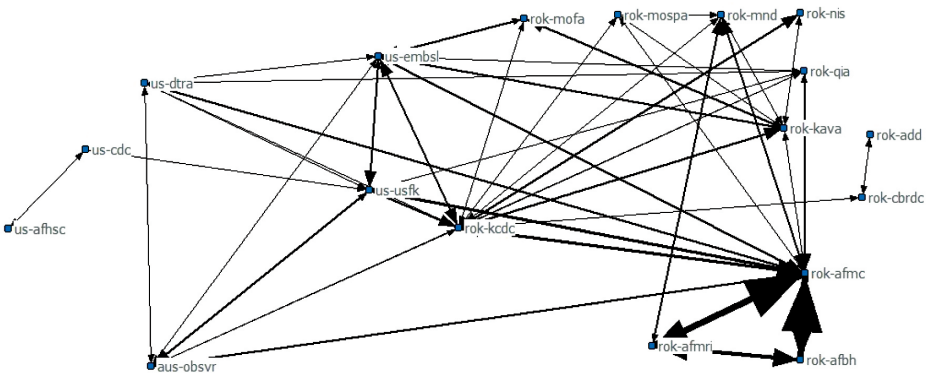

Figure 1. Illustration of an information network analysis during the exercise [6].

*Note; This network analysis reflects all communications through BSP and does not include phone calls and text messages exchanged during the exercise. Thickness of the lines represents the frequency of communication. There were no paper messages exchanged during the exercise.

to complex biological crises.

Although ROK governmental agencies often collaborate with KCDC in controlling a biological event, they were less accustomed to working closely with U.S. agencies and U.S. Forces Korea (USFK). The exercise helped agencies in both nations to understand and improve their working relationships with other governments and agencies in the context of international coordination for a biological event.

AR14 demonstrated the value of the still-maturing BSP capability, which helped exercise participants share information and collaborate to develop appropriate responses to the crisis. Much time which could have been spent in consultations to decide proper courses of action throughout the exercise was saved because participants were able to join the discussion via BSP. Decision-making was made much more efficient by the BSP, which allowed each agency to remain in its own command center while representation from all players was assured. Successfully demonstrating its critical value as a communication tool, the BSP has shown that timely information exchange between ROK and U.S. civilian and military agencies ensures a more coordinated effective response and proper situational awareness for both nations.

Discussion

Although the AR exercise series has enhanced biodefense coordination capacity for both nations remarkably, there remain a few challenges identified during the exercise needing be addressed in the future. Recommendations for future improvement were derived from the exercise evaluation and observations. These recommendations are intended to help ensure effective implementation of the 'whole-of-government' response.

International coordination is of the utmost importance to effectively assist affected nations with mitigating the impact of a large biological event. In addition, collaborative development of vaccines and antibiotics for potential biological hazards would be more beneficial if coordinated and implemented at the international level [7].

On day 2 of the exercise, a media briefing was given to the public. However, the public message was not well coordinated between involved agencies. Effective risk communication during a biological event can have profound effects. A basic goal of public health communication is to provide accurate, accessible information so that a bond of trust can be established between the responding agency and those potentially affected by the event [8]. This trust may be affected by perception on the competence, objectivity, fairness, and consistency of the responding agency and highly depend on the general belief in the good will of the agency [9]. Risk communication during a biological event should closely involve the affected community through clear messaging. Individualized approaches are needed to ensure that the customized messages are delivered appropriately to diverse populations [10, 11]. In an era when the public has far-reaching access to social media mostly via smart phones, governments will be challenged to provide accurate, timely information to the public before inaccurate information and rumors become widespread. To implement more effective risk communication, government crisis message planning and preparation should take place well before an event.

Another important element is the coordination of public messages among nations and agencies within each nation. The timely release of accurate information will help maintain the public trust and also promote effective international coordination, later minimizing the social disruption due to the event. Of note, the importance of traditional epidemiologic characterization should not be neglected when the response to a biological event requires international and inter-agency coordination. Accurate information about epidemiologic risk should be communicated to promote an effective multilateral response to emerging biological events [12].

Lines of authority were unclear when quarantine issues arose regarding U.S. citizens affected by the event in Korea. ROK policies define which agency has lead responsibilities for specific types of emergencies. The responsible agency for a biological event is decided by the nature of the event[13]. The complex nature of a biological event makes application of these policies difficult. Usually an agency's response manual only reflects the lines of

authority within the agency. Often, the processes and procedures for collaborating with other nations or organizations are not well-defined. The result of network analysis (Figure 1) showed that communication between the ROK defense agencies and other civilian agencies was marginal while numerous exchanges of information took place within the ROK defense agencies.

We observe that frequent information exchange across the government agencies would ensure a more effective 'whole-of-government' approach. Collaborated response to a biological event should be preceded by streamlined procedures and protocols from the responsible agencies. Collaboration between multiple agencies promotes better outcomes at the population level and improves emergency response capacity over time [14, 15]. Emphasis should be on practices that enhance close partnerships among different agencies and coordinate activities, share resources, and formulate consistent public messaging.

In the modern world, mass casualty incidents can take a variety of forms [16]. Although not all biological events incur mass casualties, outbreaks of disease often carry potential to quickly overtake the capacity of local health care facilities to respond and contain the threat [17]. Tabletop exercises may be inadequate to understand operational and logistic gaps in public health emergency response [18]. Full-scale functional exercise with a large-scale mass casualty event incorporated into the scenario could help better prepare for future crisis response and management, examining existing procedures and protocols regarding the sufficiency and allocation of medical resources. For example, participants could actually be given a task to investigate and review mock medical records. Depending on an agency's duties, participating organizations would perform analysis of laboratory specimens, interview patients, conduct meetings to assess surveillance data and decide on the next steps, draft public health and executive orders, make written requests to other agencies for specific assistance or information, participate in news conferences, and distribute mock antibiotics or vaccines at a public health clinic.

Conclusion

The GHSA recognizes prevention, detection and response to biological events as key to protecting citizens of all nations regardless of the origin of an outbreak or pandemic [19]. The ROK-U.S. bilateral exercise AR14 confirmed that 'whole-of-government' response to complex biological events could only be achieved when there is continuing, multilateral coordination and cooperation in all of the processes of prevention, detection, and response. Enhancing the current biosurveillance capabilities of both countries can best be achieved by incorporating a more realistic response in future scenarios by integrating a tactical response episode in the exercise. Practical benefits gained through AR14 will further equip both countries with essential capacities in 'whole-of-government' response to biological events.

Conflicts of Interest

The authors disclose no conflicts of interest.

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