
Global health security, with special emphasis on MERS-CoV and A(H5N1)

Executive summary

1. The emergence of Middle East respiratory syndrome coronavirus (MERS-CoV) in the Middle East and its continuing transmission since 2012, and the recent surge of human infection from the highly pathogenic avian influenza A(H5N1) virus in Egypt since the virus was first identified in the country in 2006 currently pose two of the biggest threats to global health security since the outbreak of Ebola virus disease (EVD) in west Africa. Notwithstanding these threats, the WHO Eastern Mediterranean Region has already witnessed a number of other emerging zoonoses with epidemic potential. As the Region becomes ever more interconnected, so the risk of international spread of diseases from the Region increases.
2. The recent example of the international spread of MERS-CoV is a stark reminder that there is urgent need to monitor the evolution of transmission risk of the MERS-CoV and A(H5N1) virus, both of which have pandemic risk potential. In response, the countries currently affected by these two global health threats need to put greater efforts into containing the transmission and ensuring that another global health emergency is averted. The current situation also calls for all other countries in the Region to build, strengthen and maintain their public health systems for prevention, detection and response to any emerging health threats, as part of their shared responsibility and collective accountability to protect global health in accordance with the International Health Regulations (2005). The present situation needs continuing vigilance, as well as accelerated national, regional and international efforts, to avoid and mitigate any potential global public health crisis that might be looming from the Region.
3. The Regional Committee is invited to consider the proposed recommendations in order to strengthen the capacity of Member States and the Region as a whole, to protect national, regional and global health security.

Introduction

4. A number of WHO regions are currently facing substantial health risks from infectious disease epidemics which pose a grave threat to global health security. The outbreaks of MERS-CoV and the recent surge of avian influenza A(H5N1) infections in the WHO Eastern Mediterranean Region, avian influenza A(H7N9) infection in the Western Pacific Region and the Ebola virus disease outbreak in the African Region are some examples of these threats to global health. The world is much more interconnected than in the past, and the accelerating pace of globalization amplifies the risk of international spread of these diseases. These threats are also security challenges as infectious diseases have the potential to cause social unrest, political instability and economic setbacks through lives lost, economic impact and varying abilities of countries to recover. In addition, the potentially catastrophic threat posed by antimicrobial resistance poses another grave concern that requires attention from governments as a priority. In the face of all these potential health threats, the need to accelerate international efforts to avoid future global public health crises is increasingly urgent.
5. There are three key elements of national health security: prevention wherever possible, early detection, and timely and effective response. The risk to national health security in any country exists along a broad spectrum. The greater burden of global health risk is generally considered to be due to common public health problems prevailing in a country. These include the burden deriving from water, sanitation and hygiene, noncommunicable diseases and communicable diseases, as well as maternal, neonatal and nutritional causes. However, public health emergencies, such as epidemics, can lead to illness, death and migration on a large scale in a short period of time. This can quickly cause

social and economic disruption, and may challenge the long-term health and other development goals of a country, particularly when there is limited capacity.

6. Over the past decade, the WHO Eastern Mediterranean Region has faced repeated outbreaks from emerging infectious diseases that have potential to cause a global health emergency. These include Rift Valley fever, Crimean-Congo haemorrhagic fever, yellow fever, plague, dengue and chikungunya fever. At least 11 of the 22 countries in the Region have reported epidemics from emerging infectious disease over the past 10 years with the potential for global spread. These epidemic threats remain potentially devastating to development in the Region, through decreased productivity, avoidable medical costs, loss of revenues from tourism and travel, negative incentive for investment, and loss of economic opportunities for people. International travel to and from the Region, whether for tourism, business or religious reasons, and the varying levels of capacity to early detect and diagnose an unknown pathogen, remain significant risk factors for rapid international spread once such infections or diseases emerge in the Region. As pathogens can spread quickly in today's interconnected world, presenting a threat to all countries, the need to prevent, detect and respond to any infectious disease that poses a persistent threat to global health security remains a national, regional and international priority.

7. Political instability and civil conflict are posing newer threats to global health security, rolling back the progress made in health and providing opportunities for emerging health threats to evolve, without heed to national borders. A number of countries in the Region are in a state of protracted humanitarian crisis, complex emergencies or recovering from conflict. The epidemic threats are often exacerbated in emergencies, owing to fragile public health systems, and weakened or fragmented surveillance and threat detection capacities, leaving room for rapid spread of diseases within and beyond borders.

8. The ongoing transmission of Middle East respiratory syndrome coronavirus (MERS-CoV), a novel respiratory virus that was first detected in 2012 in the Region, and the recent surge of human infections in Egypt from highly pathogenic avian influenza A(H5N1), another novel influenza virus with pandemic potential, currently pose two of the biggest threats to global health security since the outbreak of EVD in west Africa started to wane. The recent outbreak of MERS-CoV in the Republic of Korea represents the largest cluster of cases outside the Middle East to date, with the index patient having travel links to the countries in the Middle East. This underlines, yet again, how crucial it is that the world remains prepared for any emerging health threats it faces before they spiral out of control. It is also a stark reminder of what could happen if such events were to occur in countries with much more fragile and overstretched health systems than those currently concerned.

9. In the face of these two threats to global health security – Middle East respiratory syndrome coronavirus (MERS-CoV) in the Region and avian influenza A(H5N1) infection in Egypt, this paper re-emphasizes the need for Member States to accelerate the building of their national core capacities to prevent, detect and respond to these, as well as other infectious disease threats, within the global framework of the International Health Regulations (2005). Such accelerated efforts will protect the health of the people of these countries, as well as enhance global health security.

Current situation

10. Middle East respiratory syndrome coronavirus (MERS-CoV) was first detected in 2012 in a patient in Saudi Arabia. Following its identification, cases have continued to increase over the past three years and hundreds of human infections have been reported globally, of which approximately 35% were fatal. The majority of cases (over 85%) reported to date have been from the countries of the Middle East, notably from Saudi Arabia (more than 95% of the cases), Jordan, Kuwait, Oman, Qatar and the United Arab Emirates. Laboratory-confirmed human infections with history of travel to one of these countries have also been reported from some other countries in the Region (Egypt, Islamic Republic of Iran, Lebanon, Tunisia and Yemen) bringing the total number reporting laboratory-

confirmed cases of MERS-CoV to 11 out of 22. In addition, a number of cases associated with travel to the countries of Middle East have also been exported to countries outside the Region, including several in the European Region (Austria, France, Germany, Greece, Italy, the Netherlands, Turkey and the United Kingdom) as well as the rest of the world (Algeria, China, Malaysia, Philippines, Republic of Korea, Thailand and United States of America).

11. In most of the countries where cases have been exported from the countries of the Middle East, there has been limited, non-sustained transmission among patients who had not been to the Middle East, but had been in close contact with the imported cases. However, in 2015, cases have been reported beyond the fourth and fifth generation in the Republic of Korea, mostly in health care settings, but all linked to a single person with a recent history of travel to the Middle East.

12. Since the emergence of MERS-CoV in 2012, human infections that are primarily acquired in the community have continued to increase. In addition, a significant number of cases are also being reported as a result of secondary transmissions in health care settings that are associated with breach in the systematic and consistent application of infection control measures. Affected countries in the Region have made significant efforts to strengthen public health through enhanced surveillance and infection prevention and control measures. These efforts have resulted in containing transmission since the last major spike observed in April-May 2014. However, cases continue to appear sporadically across the affected countries and health care-associated transmission continues to occur, although in small clusters.

13. Between November 2014 and February 2015, Egypt saw a major rise in the number of human cases of avian influenza A(H5N1) infection. The number of cases occurring in this period exceeded the number of cases ever found in any country since the re-emergence of this virus in 2004. Of the total human infections reported so far globally from this highly pathogenic avian influenza, Egypt represents 30% of all cases. Reports indicate that A(H5N1) virus is circulating in all sectors of poultry production and in all parts of Egypt. Despite the unprecedented surge in human cases in Egypt, it does not appear that the risk of an A(H5N1) pandemic has changed appreciably. The transmission pattern of influenza A(H5N1) in Egypt appears to remain predominantly the same despite the upsurge.

14. Being novel respiratory viruses and of zoonotic origin and with the ability to cause severe diseases in humans, both MERS-CoV and A(H5N1) virus continue to evoke global concern and remain a serious threat to health security. On the one hand, there are still important knowledge gaps regarding the transmission patterns of MERS-CoV. The absence of such crucial information has made it difficult to develop effective public health control measures and intervention strategies to reduce the risk of disease transmission and prevent spread. Importantly, the natural history, risk factors, pathogenesis, viral virulence, viral kinetics, duration of infectiousness, protective immune response and prognostic factors remain unknown. This information is required for the development and evaluation of new drugs, adjunct therapies and vaccines. On the other hand, the recent surge in human infections from highly pathogenic avian influenza in Egypt cannot be explained by the increase in poultry outbreaks from A(H5N1) infection, which seems to be entrenched in the country. There are, currently, no vaccines or specific treatments available for A(H5N1) infections in humans. In the absence of such treatment options, prevention remains the only choice to prevent any future surge.

15. In the absence of any specific control measures, the current limited transmission of MERS-CoV and A(H5N1) virus following the surges seen in April–May 2014 and November 2014–March 2015, respectively, provides no assurance for the future. If national, regional and global efforts fail to stop the transmission of the viruses in places where they are circulating, the ability of MERS-CoV and A(H5N1) virus to produce a global public health emergency should not be underestimated.

Current response

16. Since the emergence of MERS-CoV, WHO has worked hand in hand with the affected Member States in the Region in three main areas: improving public health preparedness; outbreak response; and addressing critical knowledge gaps to better understand the epidemiology and transmission patterns of the disease caused by the virus.

17. In the area of preparedness, WHO has been working with the affected countries and other international health partners to share key information on the epidemiological, clinical and virological characteristics of the virus and to improve surveillance for early detection and rapid response in order to limit transmission. In order to improve detection and response capacity for this novel virus, surveillance efforts were rapidly intensified across all countries in the Region through appropriate training of front-line health care workers on surveillance, field investigation, infection prevention and control and laboratory diagnostics, as well as through sharing of best practice guidance. Such efforts greatly enhanced the readiness of all the countries to prevent, early detect and respond to any possible international spread of the virus. As a result, following the introduction associated with international travel of the virus in many countries in the Region, secondary transmission resulting from the index case-patient was averted.

18. Mass gatherings, such as the hajj and umrah, present opportunities for rapid international spread of diseases. Saudi Arabia, which hosts these religious events, and WHO have worked closely to improve preparedness, promote health security and prevent the risk of global spread of the disease. Appropriate and culture-sensitive public awareness and risk communication materials were also disseminated targeting pilgrims, international travellers and other high-risk groups, such as health care workers, and demonstrating simple preventive measures to avoid infection.

19. Being a new virus, any outbreak caused by MERS-CoV has raised fear and concern over the past three years. WHO led missions to several countries (Islamic Republic of Iran, Jordan, Qatar, Saudi Arabia, Tunisia, United Arab Emirates) reporting cases, whether indigenous or travel-associated, to conduct field investigation and also to advise on appropriate public health measures. These technical missions helped in global risk assessment, as well as in understanding the epidemiological situation and gaps in public health response measures, and thus in containing the outbreak and preventing further international spread. Particular focus was placed during these missions on improving coordination and collaboration for outbreak operational response. It was during one of these outbreak response missions of WHO that the investigation of the source of infection led to the detection of the virus in dromedary camels. This remains an important scientific finding in the search to identify the origin and source of this virus.

20. In the area of addressing critical knowledge gaps, WHO has convened four international scientific meetings on MERS-CoV so far. These meetings have contributed immensely to improving global understanding of the virus, particularly its evolution and the risk factors for transmission, providing better guidance for effective global public health response. These scientific meetings have also shaped the public health research agenda for MERS-CoV significantly by identifying critical information and knowledge gaps. WHO, the Food and Agriculture Organization of the United Nations (FAO) and the World Organisation for Animal Health (OIE) as well as other international health agencies collaborated to come up with an appropriate research agenda for both animal and human health to bridge these critical knowledge and information gaps. In part as a result of these global scientific efforts led by WHO, evidence has accumulated that dromedary camels are the source and possible reservoirs of MERS-CoV and that they play an important role in the transmission of this virus to humans. A special supplement of the Eastern Mediterranean Health Journal was published in May 2013 on this novel virus which represented, at that point in time, the most up-to-date scientific knowledge on the epidemiological, clinical and virological characteristics of the virus.

21. In view of the high number of highly pathogenic avian influenza cases reported from Egypt, WHO conducted two high-level technical missions in Egypt, in 2009 and again in March 2015, along with FAO and OIE. The purpose of these missions was to assess the pandemic risk associated with the surge, understand the change, if any, in the transmission patterns of the virus and advise the country on effective control measures, in the short, medium and long term. The outcomes of these missions were useful in allaying global fears of any impending pandemic threat, as well as in controlling the surge.

22. In view of the threat of importation of EVD, the Regional Committee (resolution EM/RC61/R.2) urged Member States to undertake a comprehensive assessment of their capacity to deal with a potential importation, in order to identify and address the main gaps. At the request of Member States, WHO conducted an assessment in 20 countries and a 90 day action plan was drawn up and implemented between March to May 2015 to address the critical gaps identified in the countries in prevention, detection and response to the threat of EVD importation. As a result, the levels of preparedness and readiness for preventing and early detecting any threat of importation of EVD in the Region were significantly enhanced.

Challenges

23. When a new virus emerges, the health care system of any country faces major challenges. During the initial days, when much information regarding the epidemiology and transmission characteristics of the virus remain unknown, viruses can emerge rapidly, spread widely and pose a substantial immediate threat to public health. Despite ongoing global efforts, knowledge on the transmission patterns of MERS-CoV remains limited more than three years into the outbreak. Global concerns regarding the probability that the virus may become easily transmissible in humans in the future remain unaddressed. The pathogenesis and transmission patterns of the new variant of avian influenza A(H5N1) virus that might be responsible for the dramatic surge in human infections in Egypt also remain poorly understood. The exact type of exposure that has resulted in such a high number of human infections from A(H5N1) in such a short period of time also remains undefined.

24. The implementation of effective interventions and preventive measures to contain the local and international spread of these two viruses has been hampered by the limitations in knowledge of the measures that can stop transmission or guide effective global health response. In some instances, critical research has yet to be started by the countries. In others, studies have been initiated, or partly completed but results have not been communicated to WHO and other international health agencies involved in the global response to these outbreaks in a timely manner. In some instances, countries have been seen to give preference to publishing new information on the virus in peer-reviewed journals instead of rapidly communicating it with WHO, and in contradiction of the standard set under the International Health Regulations (2005). Such practice has stymied and, in some cases, paralysed effective global response to the two viruses, potentially compromising public health.

25. The Region has been fortunate that, unlike the EVD outbreak in west Africa, both MERS-CoV and A(H5N1) virus do not yet appear to be easily transmissible in humans. Up till now, infections have been largely restricted to those who have been directly exposed to infected animals. In the case of MERS-CoV, infections have also been reported among close contacts of laboratory-confirmed cases in households and in over-crowded emergency rooms in hospitals, mostly older patients and those with underlying medical conditions. This does not mean there is no concern. What is common to both MERS-CoV and A(H5N1) infections is that they are both caused by novel respiratory viruses that have primarily emerged from animal sources, can cause severe infection and can become easily transmissible if the virus changes and attains efficient transmission patterns. The lessons of the present time are that novel respiratory viruses which emerge from animal sources are unpredictable in their behaviour and can rapidly cause a global health emergency when they become easily transmissible. This was seen with severe acute respiratory syndrome (SARS) in 2003 and pandemic influenza in 2009. With major gaps in understanding of these infections and no vaccines or proven

treatments available, there is a need to remain prepared for the MERS-CoV and A(H5N1) virus to transcend into global health emergencies. The sporadic transmission of these two viruses currently seen should be regarded as an opportunity to improve preparedness for responding to these potential health threats should the virus change, and not as an excuse for inaction.

Priority actions for consideration

26. With the goal of accelerating progress in building and sustaining a resilient public health system for prevention, detection and response to acute health threats, a set of strategic priorities is outlined for consideration by the Member States.

a) Detect threats early. Rapid and accurate identification of the pandemic potential of the currently circulating MERS-CoV and A(H5N1) virus, as well as any other novel emerging respiratory viruses, will require enhancement of proactive surveillance for severe acute respiratory infections (SARI) in all countries in the Region using a standardized, uniform and consistent approach. As the ability to detect any change in virus transmission patterns early, to identify any new pathogen rapidly and to predict its evolution and spread will primarily rest on having the necessary laboratory diagnostic capacity, it is important that countries either attain this capacity and apply this knowledge or establish a collaborative arrangement with a reference laboratory in order to track and monitor evolution of the virus on a continuing basis and predict any pandemic threats early. Any noticeable change in the epidemiological and clinical patterns of the disease so far observed from the transmission of MERS-CoV and A(H5N1) virus in the affected countries, or transmission without any apparent epidemiological link, as well as prolonged or atypical nosocomial transmission in health care settings, should trigger a rapid and appropriate response for investigation, including using genetic sequencing to detect any change in virus evolution. Such information, coming out of integrated epidemiological and laboratory investigation, will be key to maintaining global alert and understanding the potential global risk.

b) Respond to emerging threats rapidly. The public health capacities of the field investigation teams need to be rapidly enhanced, both for contact tracing and case investigation of primary cases, either through establishing trained national and subnational rapid response teams or through involving field epidemiology training programme fellows where available. Rapid containment of threats from MERS-CoV or A(H5N1) virus, or any other health security threat, through a proper field investigation and appropriate control measures is the only way to prevent international spread should the containment measures fail to stop the transmission at the source.

c) Prevent hospital outbreaks. In view of the repeated instances of nosocomial transmission of MERS-CoV and other emerging zoonoses, infection prevention and control (IPC) measures need to be further scaled up and applied universally and systematically, for all suspected patients in any health care setting. This should be achieved through a combination of leadership, administrative and environmental controls and creation of a culture in which application of strict IPC measures is considered important. These measures will have benefits that go beyond MERS-CoV and A(H5N1) infection, to many other emerging zoonotic infectious diseases threats with the potential for nosocomial infection.

d) Address and share critical knowledge gaps early. Addressing key research and knowledge gaps in MERS-CoV transmission in humans is a priority as current knowledge on specific transmission and exposure risk factors in household and health care settings, the extent of infection in human and camel populations, the role of silent or asymptomatic cases in transmitting infections, and natural immune response to the virus remain fairly limited. Similarly, it is important to study the evolution of A(H5N1) virus, particularly if the changes in the antigenic characteristics of the virus, seen during the recent surge in Egypt, represent any early sign of this virus becoming easily transmissible and attaining pandemic risk. The specific exposure risk factors leading to recent human infections from highly pathogenic avian influenza in poultry represent another area where current

knowledge remains limited. The current relatively low levels of transmission of these two viruses provide a window of opportunity to bridge these important knowledge gaps as quickly as possible and support the global efforts to contain the threats and prevent each from becoming a global health emergency. Such information remains critical to establishing appropriate preventive strategies, as well as improving preparedness for MERS-CoV and A(H5N1) infections across all countries that are potentially at risk. The earliest possible sharing of such critical information, including the preliminary results of research, with WHO and other global agencies involved in international response to these disease threats is essential, as such information may guide effective public health response to the event.

e) Engage the community in prevention strategies. As long as no specific treatment options exist for MERS-CoV and A(H5N1) infections, prevention of exposure through avoiding risky behaviour in susceptible populations will remain the cornerstone of current strategies to stop transmission of these two viruses. The strategy for risk communication and community engagement and associated public health action should be consistent and evidence-informed. It should appropriately target and engage all concerned population groups, including the general public, media, farmers, poultry and camel workers, health care workers and trade officials. The strategy also needs to be coordinated and harmonized between all sectors, especially the animal health and human health sectors so as to avoid a fragmented approach.

f) Strengthen intersectoral coordination and collaboration. One of the important lessons for effective control of MERS-CoV and A(H5N1) infections is that both the animal and human health sector need to work together in joint surveillance and response activities, including joint field investigation and rapid information exchange. This will help in better understanding the transmission dynamics, as well as in better predicting emergence of novel zoonotic pathogens at the animal–human interface. Being zoonotic infections, the focus of preparedness for early detection of threats from both MERS-CoV and A(H5N1) should include upstream prevention through improved surveillance and information sharing between the human and animal health sectors. In order to contain the current spread of both MERS-CoV and A(H5N1) infections, effective coordination and collaboration between the Ministry of Health and other ministries and sectors, especially the Ministry of Agriculture, veterinary services and wildlife services, should be strengthened through the creation of a multisectoral coordination committee with an operational platform. The platform should direct and guide the operational response, based on review and monitoring of the investigations surrounding reported cases and interpretation of the findings to ensure a systematic risk assessment.

Way forward

27. The current priority is to continue to assess the global risk and mitigate the health threats associated with transmission and spread of both MERS-CoV and A(H5N1) infections in the Region. Public health vigilance must be maintained through better preparedness, surveillance and readiness measures to detect early any signal that either of these two viruses has become more efficient in spreading from person to person and could thus cause a global epidemic. Both national and international efforts should be intensified urgently in order to fill the current gaps in knowledge, so as to improve the public health response and contain the threats associated with these viruses. In the interim period, an effective strategy for social mobilization and nationwide risk communication should be put in place or intensified in order to prevent and detect early any human infection from MERS-CoV and A(H5N1) virus among susceptible populations. Urgent measures should be directed at preventing secondary transmission in households and nosocomial outbreaks in hospitals.

28. The current situation in the Region should also trigger a clear and articulated need to build, in all countries, the capacities required for prevention, detection and response to any emerging zoonosis threat with epidemic potential, as well as to better understand the emergence, epidemiology and prediction of animal pathogens that may cross the species barrier by working closely and collaboratively with the animal health and wild life sectors.

29. Containing the threats to global health security posed by both MERs-CoV and A(H5N1) virus will remain a collective and shared responsibility between the countries, WHO and other international health agencies. These health threats are not the first, nor will they be the last, to emerge. It remains a moral imperative for each and every country in the Region to have public health systems in place that can identify early, stop and prevent any threats to the health of their populations and their national security.

Conclusion and recommendations

30. As part of collective and shared responsibilities to protect global health, all countries need to accelerate their ongoing efforts to build, maintain and sustain a public health system that is able to effectively prevent, detect and rapidly respond to any health threat before it becomes an international emergency. Countries currently experiencing transmission of MERS-CoV and A(H5N1) virus need to step up efforts to fill the current gaps in knowledge associated with these two viruses through greater international cooperation and collaboration. Protecting the health of the people from these potential threats is everybody's responsibility.

31. Global health security is fundamental to a safer world. Building and strengthening countries' capacity for adequate levels of preparedness, readiness and response to, as well as optimal recovery from, acute public health threats will be critical to protecting global health security. The International Health Regulations (2005) remain the key driver in national and international efforts to strengthen national and global health security and provide opportunity to each WHO Member State to improve their capacity to prevent, detect in a timely manner and respond effectively to any local health threats that have the potential to become global. The Regulations provide incentives to Member States to build the capacities needed to adequately address threats to national health security, and also demand accountability from them.

32. The WHO Eastern Mediterranean Region is already a hotspot for emerging zoonotic infections. It will remain a focus of global health concern until the Member States in the Region display solidarity in building and sustaining a vision for a robust public health system that is capable of preventing, detecting and responding effectively to the threats of both avian influenza A(H5N1) ; and MERS-CoV infection.

33. The following recommendations are proposed for Member States:

1. As requested by the Regional Committee in resolution EM/RC61/R.2, commit to meeting the target of June 2016 for building, maintaining and sustaining the core capacities required under the International Health Regulations, including enhancing epidemiological and virological surveillance at the animal–human interface to monitor, detect and mitigate acute zoonotic health threats, and building laboratory diagnostic capacities as priority.

2. As requested by the Regional Committee in resolutions EM/RC53/R.3 and EM/RC57/R.6, establish/strengthen a national programme for infection prevention and control, particularly in health care settings, using all the core components as recommended by WHO.

3. Leveraging the support of the Pandemic Influenza Preparedness Framework as well as other international efforts, establish sentinel-based surveillance systems for severe acute respiratory infection (SARI) with real-time early warning systems by integrating clinical, laboratory and epidemiological data with a view to rapidly monitoring, identifying and detecting emerging health threats with pandemic potential.

4. Urgently bridge the remaining critical gaps in knowledge about the MERS-CoV and A(H5N1) virus through regional and international collaborative research support from WHO and other global health agencies.

5. Institutionalize the use of the national rapid response teams who were trained by WHO under the 90 day action plan for Ebola virus disease by organizing a cascade of subnational training courses, and engage these teams in field investigation and rapid containment measures for any new and emerging health threats in the country.

6. Ensure effective intersectoral collaboration and coordination with the animal health and veterinary sector for joint investigation and risk assessment under the framework of collective responsibility and accountability to protect human health, as well as facilitate rapid information exchange for coordinated control efforts to reduce the risk of transmission of MERS-CoV and A(H5N1) virus.

7. Operationalize a strategy for emergency risk communications and community engagement by establishing the required structure, for both media and crisis communications, providing national and subnational staff with adequate training, developing communications response plans and testing those plans with operational exercises.

34. In view of these two ongoing health security threats in the Region, WHO will continue to support Member States in their efforts to improve their public health systems in the areas of prevention, detection and response. The lessons learned during the assessment of preparedness and readiness measures for EVD can be used to map and identify areas where improvement is needed through collaborative technical support, particularly in the areas of surveillance, infection control, risk communication and rapid response.