

## Global Health Security for Collaborative Countering of Bio-threat Agents and Infectious Diseases

**Dr. Y. Ashok Babu**

*The author is a Scientist, DRDE, DRDO, at Gwalior, India.*

### Summary

In the post globalisation era, countries around the globe have teamed up to cooperate on various issues which include issues related to environment security to maritime security. However there have been very very few steps develop global health security. Most of the national support to this issue is limited only to contributing miniscule amount of money to WHO by developed and developing countries and handling it as a part counter-insurgency strategy. As a result, health security has been limited to a national issue.

Biological weapons are termed as “Poor man’s nuclear bomb” as they require less sophistication when compared to that of nuclear weapons making it easier and cheaper to produce and use. Biological weapons’ self propagating and persisting property makes them highly lethal. At the same time, due to development in advanced medical technologies in diagnosis and treatment of many pathological agents and associated risk of using biological agents for own population has made the poor man’s bomb ineffective and minimal to use it in a war scenario. However, since the threat perception itself has enormous impact on the population and the financial stability of a country, the threat of use of biological agents by terrorist organisations and other non-state players has emerged. Thus, Biological agents can be renamed as “Rogue man’s nuclear bomb”.

### Why Global Health Security?

Recent cases of emerging diseases such as SARS, H1N1, and outbreak of dangerous viral hemorrhagic fever in African countries have adversely impacted many nations including India. The rapidity and virulence of these pathogens fanned them to spread across the globe with ease and the national healthcare system of many developed countries failed to contain repeated outbreaks of these pathogens. One of the important causes of the repeated outbreaks of such infectious diseases is the lack of good healthcare infrastructure in the countries where the diseases originated. Thus, it is no longer a problem of a single country and all the nations in vicinity need to be involved to prevent and contain the spread of infections.

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but very few steps were taken to develop global health security and most of the national support to this issue is limited only to contributing miniscule amount of money to WHO by developed and developing countries and handling it as a part counter-insurgency strategy. Nevertheless, health security has been limited to a national issue. However, in 2001 an alliance was formed between G7 nations to form Global Health Security Initiative (GHSI) to collaborate in the area of health security ranging from talking pandemic outbreak of infections to surveillance and protection against chemical, biological, radiological and nuclear (CBRN) threats, but the cooperation is mostly limited to surveillance against CBRN threats and has not developed any infrastructure in the poor and developing countries for helping them come out of the frequent pandemics of infectious diseases including Class –A bio-threat agents in these regions.

Due to rapid globalisation and climatic changes, some of the these infections reemerged in developing countries too for example XDR, MDR tuberculosis, recent outbreak of H1N1, SARS, and increased activity of extremist elements across the world has increased possibility of use of biological agents by sovereign countries. Let us discuss the positive aspects of the global health security and constraints for implementing it and how it helps protection from bio-threat agents; first and foremost, the global health security involves sharing of infrastructure and collaborative R&D between countries for prevention and protection from potential health risks, proactive and direct involvement of different countries in the WHO programs by establishing international research and development infrastructure and unconditional sharing of information with other participant nations. Collaborative disease surveillance and intelligence sharing are the first step for the promotion of global

health security; this would ensure early warning of the possible outbreak of any infectious disease or bio-terrorism and effective implementation and dissemination of preventive measures to contain the spread of disease.

Genetic engineering and advanced medical biotechnology has helped in combating diseases advanced recombinant vaccines by manipulating genes of pathogens but at the same time, the possible risk of using these techniques for making more virulent and more drug resistance pathogens has emerged. For example, virus causing H1N1 is a mutant of less virulent animal flu and avian flu viruses and has developed naturally in a spontaneous manner over the years. However, development of these mutant pathogens in laboratory condition using recombinant DNA technologies is much easier and quick. Given the fact that the development of bio-threat agents require less sophistication and less costly equipment compared to that of other WMD, there is an immense possibility of non-state players using biotechnological tools to initiate bio-terrorism. Exploitation of such resources under a weak or rogue regime or by the non-state players poses serious threat to the mankind. Global health security initiative will help in tackling such emerging threats by sharing infrastructure and health and security intelligence for effective mitigation of bio-threats.

For any country, the development of health infrastructure involves investment of huge amount of financial and human resources, which is a difficult task for poor and developing countries. The WHO is working with funding from developed and some of the developing nations to improve health sector in these areas but due to constraints of funds and frequent geo-political disturbances, the efforts of WHO is limited to primary support during outbreak and as an advisory

organisation in routine situations. The crucial issues of strengthening the R&D infrastructure, disease surveillance and intelligence related to bio-threat agents remained un-attended in the majority of poor and developing countries. Direct participatory contribution of different countries in the specific areas of development of infrastructure to combat infectious disease and classified bio-threat agents will ensure protection of mankind from natural or manmade biological disaster in a realistic manner.

To summarize the key points of Global Health Security, cooperation of member countries in the following areas can go a long way in helping improving security from epidemics and bio-threats;

- 1) Sharing the cost of developing R&D infrastructure,
- 2) Collaborative surveillance of infectious diseases and bio-threat agents,
- 3) Collective countermeasures in the event of natural, accidental and manmade biological disasters,
- 4) Supporting poor and developing (Participating and Non participating countries) to develop healthcare infrastructure to make them self-sustaining to prevent spread of infectious diseases,
- 5) Unconditional sharing of intelligence related to Bio-threat agents,
- 6) Surveillance and safe guarding the advanced life science technologies from misuse by rogue elements and non state players.

## **Current Trends on International co-operation to counter Bio-Threats:**

Post pandemic attack of Avian Flu, the G7 countries and European Union formed an alliance named Global Security Initiative to monitor and prevent infectious diseases and surveillance against use of biological weapons and preparedness in the event of their use. National strategy for countering biological threats by USA has included global health security programme in a prominent way to protect the citizens from exotic pathogens, and to monitor and prevent misuse of life-science revolution by non-state players. European Union has also adopted similar resolution to counter CBRN threats in close cooperation with GHSI member countries. As mentioned earlier, the activities of GHSI remained a collaboration between the G7 nations with most of the financial resources spent on development of national resources to counter the bio-threats. However, the scope of GHSI to expand to more nations including poor and developing countries will be more effective and realistic in ensuring global health security.

Indian subcontinent remains hotspot for many of infectious diseases with highest mortality rate reported due to infectious disease after Africa. This is attributed to poor healthcare infrastructure and high population in these regions. High density population in Asia makes the region most vulnerable to the spread of infectious diseases when compared to the less populated western countries. India needs to play major role in forming a similar alliance with other Asian countries to develop health security infrastructure and collaborative surveillance for countering biological threats

in this region. As the threat of using biological agents by non state actors is immense in the Indian subcontinent, collaborative surveillance and cooperation with neighboring countries and teaming with GHSI could ensure national health security against infectious diseases.

## **References**

1. National Strategy for countering Biological Threats, National security council, USA, Nov 23, 2009
2. Global health Security Initiative web page <http://www.ghsi.ca/english/background.asp>
3. Are Hemorrhagic Fever Viruses Practical Agents for Bioterrorism? C.J Peters Emerging Infections 4, ASM press.