

The Threat Spectrum caused by infectious diseases

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By:
Mrs Martha Kwataine
National Coordinator
Malawi Health Equity Network
Email: mkwataine@mheb.org/mkwataine2000@yahoo.com

Introduction- The Nature of Biological and Toxic Weapons

- Nature of these weapons enables us understanding the impact on diseases
- Biological agents are disease causing organisms and materials that can damage or cause death to humans, plants and animals
- Biological and toxin weapons are devices such as aerosol sprayers or munitions designed to deliver biological agents to a target population
- Variola virus, which causes smallpox, was explored by the Japanese military as a biological weapon in China after the World War II
- The virus would make a good weapon because it is not only lethal but also because there is an effective vaccine that could be used to protect the population and troops of the user



Introduction ctd

- Fungal agents do not ordinarily cause diseases in healthy humans
- They have a devastating impact on those with deficient immune systems- e.g. those living with HIV and AIDS
- Fungi that have been developed as weapons have predominantly been those that cause diseases of plants
- Most bacterial toxins are large proteins that can be used as weapons. Most bacterial toxins are large proteins that affect either the nervous system or damage membranes
- Biological and Toxic Weapons agents are agents derived from nature



Threat caused by biological weapons

- Biological weapons might be used to cause devastating epidemics that could spread internationally e.g. the releases of organisms that cause smallpox, plague, anthrax or other diseases could be catastrophic (illnesses and deaths compounded by the panics such outbreaks generate)
- There is possibility for production of new microbial agents as a result of expertise in biotechnology and methods of genetic manipulation
- The impacts of biological attacks are great, extending to secondary and tertiary transmission of the agent, weeks or months after the epidemic
- For readily communicable infections, the consequences of a biological attack, exceed those of a chemical or even a nuclear event- an outbreak anywhere in the world could be a threat to all nations because of travel and globalization



Impact of diseases threat on health systems

- Increased number of acute illnesses happening over a short span of time would overwhelm the capacities of most health systems- much more in the developing countries
- Health systems throughout the world are already struggling to cope the demands created by HIV and AIDS, and anti-microbial resistant organisms (TB in particular)- coping over a short period of time with large numbers of desperately ill persons could overwhelm the entire health system
- The proliferation of technology and scientific progress in biotechnology provides an opportunity to create pathogens, diseases and simplified production methods of bioweapons
- There is therefore need for the creation of and adherence to a globally accepted ethos and rejection of the development and use of biological weapons



What then should be done

- One of the initiatives to reduce the potential value of chemical, biological and toxic weapons is a strong public health infrastructure . This entails increased funding in public health systems, preparedness and response capacity
- Investment in public health systems will enhance capacity to detect and contain expeditiously rare or unusual disease outbreaks
- Physicians should be alert to the occurrence of cases or clusters of unusual infectious diseases, seek help from infectious disease specialists diagnosis, and report to public health authorities promptly
- Physicians play a critical role in early detection of an outbreak and must be prepared to recognize and deal with diseases resulting from the use of biological weapons



Way Forward continued

- Researchers involved in biomedical research must have a moral and ethical obligation to consider the implications of possible malicious use of their findings
- Research for purposes of creating biological weapons should be condemned
- NGOs and professional societies must be active in developing policies and options to lower the threats
- To significantly respond to the challenges posed by biological weapons and toxic weapons, there is need for further development of the public health system
- Intensify informational public outreach programs to properly inform the public about the risks involved.

