

Multi-pathogen oligonucleotide microarray and Biodefense.

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Introduction

Biodefense refers to measures taken to restore biosecurity to a group of organisms that are or may be exposed to biological threats or infectious diseases. Biodefense is a military or emergency response term that is frequently used in relation to bio-warfare or bioterrorism. Non-combatant civilians and military combatants are the two distinct target populations for biodefense (troops in the field). Biodefense typically includes the safeguarding of water and food supplies [1].

Troops in the field

In 1956, the United States Army Medical Unit (USAMU) in Fort Detrick, Maryland, pioneered military biodefense in the United States. (Unlike the U.S. Army Biological Warfare Laboratories, which were also located at Fort Detrick, the USAMU's objective was to research defence measures against bio-agents rather than weapons development.) The USAMU was decommissioned in 1969, and the United States Army Medical Research Institute of Infectious Diseases took its place (USAMRIID).

Since at least 1998, the US Department of Defense (or "DoD") has prioritised the development and deployment of vaccine-based bio-defenses. Vaccines against anthrax (AVA and Next Generation), smallpox, plague, tularemia, botulinum, ricin, and equine encephalitis were listed as "DoD-critical goods" in a July 2001 assessment commissioned by the Department of Defense. It's worth noting that two [2].

Civilian role of public health and disease surveillance

It's worth noting that, with the exception of smallpox, all classical and modern biological weapons species are animal diseases. As a result, with any use of biological weapons, it is quite likely that animals will fall ill at the same time as people, if not sooner.

Indeed, in the world's largest biological weapons accident—the anthrax outbreak in Sverdlovsk (now Yekaterinburg) in the Soviet Union in 1979—sheep became ill with anthrax as far as 200 kilometres from the organism's release point from a military installation in the city's southeastern section (known as Compound 19 and still off limits to visitors today, see Sverdlovsk anthrax leak).

As a result, a sophisticated surveillance system that includes human clinicians and veterinarians may be able to detect a bioweapons attack [3].

Identification of bioweapons

Biodefense aims to bring together the activities of the national and homeland security, medical, public health, intelligence, diplomatic, and law enforcement communities. One of the first lines of defence is health care practitioners and public health authorities. To offer multilayer defences against biological weapons strikes, certain countries are augmenting and coordinating commercial, local, and provincial (state) capabilities with federal assets. The United Nations formed Task Force Scorpio, a biological and chemical response squad, during the first Gulf War to respond to any potential use of weapons of mass destruction on civilians [4].

Focused efforts to address existing and expected threats to agriculture, food, and water are strengthening the conventional strategy to preserving agriculture, food, and water: focusing on the natural or inadvertent introduction of a disease [5].

References

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