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A Historical Summary of Biowarfare and Bioterrorism's Microbial Destructive Applications

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Opinion

Microbial forensics is a new and rapidly growing multidisciplinary field of study that draws on traditional fields including forensic genetics, microbiology, epidemiology, medicine, molecular biology, and evolutionary biology. Scientists working in the field of MF try to find, identify, and track down the source of a life-threatening pathogen. This field has applications in a variety of forensic casework settings, such as bioterrorism, bio-crime, fraud, disease outbreaks and transmission, or the unintentional discharge of a biological weapon or toxin. Neither pathogen outbreak monitoring nor toxicology has traditionally been considered MF subjects. Nonetheless, these two subjects are, in our perspective, critical to MF [1]. Pathogen dispersal can be either natural or unintentional. If it happens by chance, it could be done on purpose or as a result of medical negligence. As a result, the use of reliable and robust pathogen surveillance procedures would provide useful information for distinguishing between the spontaneous and harmful spread of microorganisms. Despite the variations in techniques and objectives between forensic investigations and epidemiological studies, we believe that investigations into the sources of outbreaks fall under the purview of MF due to the common goal of finding the source of the microorganisms involved [2]. As a result, distinguishing between an accidental and intentional discharge of a pathogenic material is a top priority in MF.

Healthcare workers should be on the lookout for illnesses that are odd, unexpected, or inexplicable. Several diagnostic signs may point to an infectious disease, according to the US Centers for Disease Control and Prevention. An outbreak linked to the deliberate release of a biological agent. A deliberate discharge of a biological agent might be classified as either a covert or overt action. In the case of a covert operation, the release is unexpected and undetected for days or even weeks [3]. The first indicator of infection is the appearance of well people who may be inadvertently infecting others. An infected person may seek medical help elsewhere, possibly far from the release region. In the case of overt activity, on the other hand, this release is quickly noted and possibly even announced.

In contrast, in overt activities, perpetrators easily tell public health officials, as well as healthcare and communication networks, and these systems are overloaded by requests for information and treatment. The goal of overt action is to create widespread alarm. The use of pathogenic agents as antimicrobials the purposeful use of biological agents as weapons in conflict scenarios is referred to as Biowarfare. BW agents, depending on the agent used, can be more lethal than other conventional weapon systems because even little quantities can result in widespread casualties and/or fatalities. The deliberate employment of microbes as weapons dates back almost as far as humans. There have been reports of people using poisoned darts or poisoning water springs and wells with corpses or cadavers from prehistoric and ancient Greek and Roman times. BW has evolved since its inception, and it now has the potential to be a weapon of mass devastation when combined with the right delivery system, as well as specific weapons on the battlefield and for clandestine usage. Such advancements are a direct result of the as a result of advancements in both microbiology and biotechnology [4]. As a result, from prehistory until 1900, the evolution of BW can be separated into three main periods: Except for a few well-documented cases, it is difficult to determine whether these BW attacks constituted real threats or were part of political hoaxes from 1900 to 1945, prior to the foundation of Microbiology as a science as a direct result of the studies of Louis Pasteur and Robert Koch culminating in the acceptance of the germ theory of disease. The advent of modest and rudimentary national BW programmes, as well as the employment of biological weapons in both World Wars I and II after 1945, characterise this period: the increased availability of biological agents With the advancements made in biotechnology and biochemistry allows for the democratization of BW programmes even small organisations and individuals can access it.

For microbiologists and historians, distinguishing between spontaneous epidemics and planned biological attacks can be difficult, such as the plague outbreak during the siege of Caffa, malaria outbreaks by Napoleonic troops, yellow fever, and smallpox. With the advancements made in biotechnology and biochemistry allows for the democratization of BW programmeseven small organisations and individuals can access it [5]. During this time, Because of the enhanced lethality of BW agents as a result of the For both microbiologists and historians, distinguishing between spontaneous epidemics and planned biological attacks can be difficult, such as the plague outbreak during the siege of Caffa, malaria outbreaks by Napoleonic troops, yellow fever, and smallpox.During the American Civil War, there were a number of epidemics. Biological agents are purposely released against a civilian population in a BT attack, unlike in a BW attack. This propagation is driven or justified by ideological goals (political or religious) that aim to induce panic, mass casualties, or financial damage. The biological agents can be utilised as is or genetically modified to improve their mass distribution [6]. When faced with the threat of a BT assault, it is critical to identify the agent responsible, not only to reduce panic among the public, but also to limit the morbidity and mortality linked with the agent's spread. The issues that occurred as a result of the infamous Amerithrax mailing assaults in 2001 prompted MF to focus on BT.

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