DOWNLOAD PDF MEDICAL MANAGEMENT OF BIOLOGICAL CASUALTIES HANDBOOK

Chapter 1 : US Army Medical Research Institute of Chemical Defense

ii medical management of biological casualties The purpose of this handbook is to serve as a concise, pocket-sized manual that can be pulled off the shelf (or from a pocket) in a crisis to.

Increased incidents and threats of domestic terrorism e. Other issues, including the disclosure of a sophisticated offensive biological warfare program in the Former Soviet Union FSU , have reinforced the need for increased training and education of health care professionals on how to prevent and treat biological warfare casualties. Numerous measures to improve preparedness for and response to biological warfare or terrorism are ongoing at local, state, and federal levels. Training efforts have increased both in the military and civilian sectors. Through this handbook and the training courses noted above, medical professionals will learn that effective medical countermeasures are available against many of the bacteria, viruses, and toxins, which might be used as biological weapons against our military forces or civilian communities. The importance of this education cannot be overemphasized and it is hoped that our physicians, nurses, and allied medical professionals will develop a solid understanding of the biological threats we face and the medical armamentarium useful in defending against these threats. The global biological warfare threat is serious, and the potential for devastating casualties is high for certain biological agents. There are at least 10 countries around the world currently that have offensive biological weapons programs. However, with appropriate use of medical countermeasures either already developed or under development, many casualties can be prevented or minimized. The purpose for this handbook is to serve as a concise pocket-sized manual that will guide medical personnel in the prophylaxis and management of biological casualties. It is designed as a quick reference and overview, and is not intended as a definitive text on the medical management of biological casualties. In , plague broke out in the Tartar army during its siege of Kaffa at present day Feodosia in Crimea. The attackers hurled the corpses of plague victims over the city walls; the plague epidemic that followed forced the defenders to surrender, and some infected people who left Kaffa may have started the Black Death pandemic, which spread throughout Europe. Russian troops may have used the same tactic against Sweden in On several occasions, smallpox was used as a biological weapon. Pizarro is said to have presented South American natives with variola-contaminated clothing in the 15th century, and the English did the same when Sir Jeffery Amherst provided Indians loyal to the French with smallpox-laden blankets during the French and Indian War of to Native Americans defending Fort Carillon sustained epidemic casualties which directly contributed to the loss of the fort to the English. In this century, there is evidence that during World War I, German agents inoculated horses and cattle with glanders in the U. In , Japan started an ambitious biological warfare program, located 40 miles south of Harbin, Manchuria, in a laboratory complex code-named "Unit ". Studies directed by Japanese General Ishii continued there until , when the complex was burned. A post World War II investigation revealed that the Japanese researched numerous organisms and used prisoners of war as research subjects. Slightly less than 1, human autopsies apparently were carried out at Unit , mostly on victims exposed to aerosolized anthrax. Many more prisoners and Chinese nationals may have died in this facility - some have estimated up to 3, human deaths. Following reported overflights by Japanese planes suspected of dropping plague-infected fleas, a plague epidemic ensued in China and Manchuria. By , the Japanese program had stockpiled kilograms of anthrax to be used in a specially designed fragmentation bomb. In , the United States began research into the use of biological agents for offensive purposes. This work was started, interestingly enough, in response to a perceived German biological warfare BW threat as opposed to a Japanese one. The United States conducted this research at Camp Detrick now Fort Detrick , which was a small National Guard airfield prior to that time, and produced agents at other sites until , when President Nixon stopped all offensive biological and toxin weapon research and production by executive order. Between May and May , all stockpiles of biological agents and munitions from the now defunct U. Over countries have since added their ratification. This treaty prohibits the stockpiling of biological agents for offensive military purposes, and also forbids research into such offensive employment of biological agents. However, despite this historic agreement among nations, biological warfare research continued to flourish in many countries hostile to the United States. Moreover, there have been several cases of suspected or actual use of biological weapons. Among the most notorious of these were the "yellow rain" incidents in Southeast Asia, the use of ricin as an assassination weapon in London in , and the accidental release of anthrax spores at Sverdlovsk in After being exposed, people and animals became disoriented and ill, and a small percentage of those stricken died. Some of these clouds were thought to be comprised of trichothecene toxins in particular, T2 mycotoxin. These attacks are grouped under the label "yellow rain". There has been a great deal of controversy about whether these clouds were truly biological warfare agents. Some have argued that the clouds were nothing more than feces produced by swarms of bees. In , a Bulgarian exile named Georgi Markov was attacked in London with a device disguised as an umbrella. The device injected a tiny pellet filled with ricin toxin into the subcutaneous tissue of his leg while he was waiting for a bus. He died several days later. On autopsy, the tiny pellet was found and determined to contain the toxin. It was later revealed that the Bulgarian secret service carried out the assassination, and the technology to commit the crime was supplied by the former Soviet Union. In April, , an incident occurred in Sverdlovsk now Yekaterinburg in the former Soviet Union which appeared to be an accidental aerosol release of Bacillus anthracis spores from a Soviet Military microbiology facility: Residents living downwind from this compound developed high fever and difficulty breathing, and a large number died. The Soviet Ministry of Health blamed the deaths on the consumption of contaminated meat, and for years controversy raged in the press over the actual cause of the outbreak. All evidence available to the United States government indicated a massive release of aerosolized B. In the summer of , U. In , Meselson and colleagues published an in-depth analysis of the Sverdlovsk incident Science They documented that all of the cases from occurred within a narrow zone extending 4 kilometers downwind in a southerly direction from Compound There were 66 fatalities of the 77 patients identified. On August 2, , representatives of the Iraqi government announced to leaders of United Nations Special Commission Team 7 that they had conducted research into the offensive use of Bacillus anthracis, botulinum toxins, and Clostridium perfringens presumably one of its toxins. This open admission of biological weapons research verified many of the concerns of the U. Iraq had extensive and redundant research facilities at Salman Pak and other sites, many of which were destroyed during the war. Iraq conducted research and development work on anthrax, botulinum toxins, Clostridium perfringens, aflatoxins, wheat cover smut, and ricin. Field trials were conducted with Bacillus subtilis a simulant for anthrax , botulinum toxin, and aflatoxin. Biological agents were tested in various delivery systems, including rockets, aerial bombs, and spray tanks. In December , the Iraqis filled R bombs with botulinum toxin, 50 with anthrax, and 16 with aflatoxin. These weapons were deployed in January to four locations. In all, Iraq produced 19, liters of concentrated botulinum toxin nearly 10, liters filled into munitions , 8, liters of concentrated anthrax 6, liters filled into munitions and 2, liters of aflatoxin 1, liters filled into munitions. The threat of biological warfare has increased in the last two decades, with a number of countries working on the offensive use of these agents. The extensive program of the former Soviet Union is now primarily under the control of Russia. Former Russian president Boris Yeltsin stated that he would put an end to further offensive biological research; however, the degree to which the program was scaled back is not known. Recent revelations from a senior BW program manager who defected from Russia in outlined a remarkably robust biological warfare program, which included active research into genetic engineering, binary biologicals and chimeras, and industrial capacity to produce agents. There is also growing concern that the smallpox virus, now stored in only two laboratories at the CDC in Atlanta and the Institute for Viral Precautions in Moscow, may be in there countries around the globe. There is intense concern in the West about the possibility of proliferation or enhancement of offensive programs in countries hostile to the western democracies, due to the potential hiring of expatriate Russian scientists. It was reported in January that Iraq had sent about a dozen scientists involved in BW research to Libya to help that country develop a biological warfare complex disguised as a medical facility in the Tripoli area. In a report issued in November , Secretary of Defense William Cohen singled out Libya, Iraq, Iran, and Syria as countries "aggressively seeking" nuclear, biological, and chemical weapons. Finally, there is an increasing amount of concern over the possibility of the terrorist use of biological agents to threaten either military or civilian populations. There have been cases of extremist groups trying to obtain microorganisms that could be used as biological weapons. Subsequent investigations revealed the organization had attempted to release botulinum toxins and anthrax on several occasions. The Department of Defense has been leading a federal effort to train the first responders in American cities to be prepared to act in case of a domestic terrorist incident involving WMD. The program will be handed over to the Department of Justice on October 1, In the past two years, first responders, public health and medical personnel, and law enforcement agencies have dealt with the exponential increase in biological weapons hoaxes around the country. Certainly the threat of biological weapons being used against U. Therefore, awareness of this potential threat and education of our leaders, medical care providers, public health officials, and law enforcement personnel on how to combat it are crucial. Therefore, health care providers must use epidemiology to detect and respond rapidly to a biological agent attack. A sound epidemiologic investigation of a disease outbreak, whether natural or human-engineered, will assist medical personnel in identifying the pathogen, as well as instituting the appropriate medical interventions. Documenting the affected population, possible routes of exposure, signs and symptoms of disease, along with rapid laboratory identification of the causative agents, will greatly increase the ability to institute an appropriate medical and public health response. Good epidemiologic information can guide the appropriate follow-up of those potentially exposed, as well as assist in risk communication and responses to the media. Many diseases caused by weaponized biological agents present with nonspecific clinical features that could be difficult to diagnose and recognize as a biological attack. The disease pattern that develops is an important factor in differentiating between a natural and a terrorist or warfare attack. Epidemiologic clues that can potentially indicate an intentional attack are listed in Table 1. While a helpful guide, it is important to remember that naturally occurring epidemics can have one or more of these characteristics and a biological attack may have none. Once a biological attack or any outbreak of disease is suspected, the epidemiologic investigation should begin. The conduct of the investigation will not differ significantly whether or not the outbreak is intentional. The first step is to confirm that a disease outbreak has occurred. A case definition should be constructed to determine the number of cases and the attack rate. The case definition allows investigators who are separated geographically to use the same criteria when evaluating the outbreak. The use of objective criteria in the development of a case definition is very important in determining an accurate case number, as additional cases may be found and some cases may be excluded, especially as the potential exists for hysteria to be confused with actual disease. The estimated rate of illness should be compared with rates during previous years to determine if the rate constitutes a deviation from the norm. Once the attack rate has been determined, the outbreak can be described by time, place, and person. These data will provide crucial information in determining the potential source of the outbreak. The epidemic curve is calculated based on cases over time. In a point-source outbreak, which is most likely in a biological attack or terrorism situation, the early parts of the epidemic curve will tend to be compressed compared with propagated outbreaks. The peak may be in a matter of days or even hours. Later phases of the curve may also help determine if the disease appears to spread from person to person, which can be extremely important for determining effective disease control measures. Well before any event, public health authorities must implement surveillance systems so they can recognize patterns of nonspecific syndromes that could indicate the early manifestations of a biological warfare attack.

Chapter 2 : USAMRIID's Medical Management of Biological Casualties Handbook, Fourth Edition

*Medical Management of Biological Casualties Handbook (USAMRIID Blue Book) [Army Medical Research Institute for Infectious Diseases, U.S. Department of Defense] on calendrierdelascience.com *FREE* shipping on qualifying offers. 7th edition.*

It is one of the toxins responsible for staphylococcal food poisoning in humans and has been produced by some countries as a biological weapon. SEB is a superantigen; it acts by stimulating cytokine release and inflammation. Transmission Staphylococcal enterotoxin B is toxic by inhalation and ingestion. In a biological attack, it could be administered in food, water or as an aerosol. Soap and water is also recommended for decontamination. Contaminated foods should be discarded. Infections in Humans Incubation Period After ingestion, the incubation period is usually 4 to 10 hours. After an aerosol exposure, the symptoms usually appear after 3 to 12 hours. Clinical Signs The clinical signs include nonspecific flu-like symptoms, including fever, chills, headache, myalgia and varying degrees of prostration. Additional symptoms are specific to the route of exposure. Ingestion results in gastrointestinal signs; nausea, vomiting and diarrhea may occur. Inhalation causes respiratory signs, including a nonproductive cough, chest pain and dyspnea. In severe cases, there may be pulmonary edema and respiratory failure. Gastrointestinal signs may also be seen after an aerosol exposure, as the toxin is swallowed during mucociliary clearance. SEB can cause toxic shock syndrome when it occurs systemically, or erythema and induration after skin contact. Communicability Toxins are not usually transmitted from person to person. Staphylococcal enterotoxin B is not dermally active. Secondary aerosols are not expected to be a hazard from infected patients. Diagnostic Tests Staphylococcal food poisoning is usually diagnosed by the clinical signs and epidemiology. Staphylococcal enterotoxin B may be found in the blood, urine, respiratory secretions or nasal swabs for a short period of time. A reverse passive latex agglutination test may be able to identify SEB rapidly in food. Polymerase chain reaction PCR assays can sometimes find Staphylococcus aureus genes in environmental samples. Serology may be useful for a retrospective diagnosis. Most patients develop significant antibody titers to SEB. Treatment and Vaccination The treatment is symptomatic; respiratory support may be necessary after aerosol exposure. Vaccines and antisera are not currently available, but have been promising in animal studies. A protective mask is currently the best method of prophylaxis. Morbidity and Mortality Staphylococcal enterotoxin B, produced naturally by Staphylococcus aureus in food, is a very common cause of food poisoning. Respiratory symptoms might differentiate a natural outbreak from a biological attack. Significant morbidity occurs after either ingestion or aerosol exposure. The clinical signs and outcome depend on the dose of toxin and route of exposure. High mortality rates are not expected to occur after ingestion; in natural cases of food poisoning, death is very rare but may be seen in infants, the elderly or those who are severely debilitated. Most treated patients are also expected to survive aerosol exposure, although deaths may occur in severe cases. After respiratory exposure, fever can persist for up to 5 days and a cough for up to 4 weeks. Infections in Animals Although Staphylococcus aureus is associated with numerous diseases in animals, there is little information about it as a source of gastroenteritis. Administration of Staphylococcal enterotoxin B in food or water would presumably result in diarrhea or other gastrointestinal signs in some species. Aerosolized SEB appears to have been studied mainly in mice and nonhuman primates. In rhesus monkeys, inhalation of toxin caused diarrhea and vomiting within 24 hours, followed by depression, dyspnea and shock. Three of 6 animals died within 3 days. Diffuse severe pulmonary edema was the most prominent postmortem lesion. Antisera and vaccines have been promising in mouse models.

Chapter 3 : Department of Agriculture | Staphylococcal Enterotoxin B

Even if providers have not read the text thoroughly, the purpose of this handbook is to serve as a concise pocket-sized manual that can be pulled off the shelf (or from a pocket) in a crisis to guide medical personnel in the prophylaxis and management of biological casualties.

Department of the Army Format Available: This resource provides guidance on immediate field response to a chemical or biological attack. In addition to describing individual agents and their countermeasures, this handbook includes detailed procedures for performing triage and patient decontamination, including handling exposed military working dogs. The handbook serves as a guide for conventional forward-deployed medical elements providing health service support to chemical and biological casualties. This handbook will primarily appeal to military physicians, especially those deployed in ground based operations. Throughout the world, nationas and terrorists are attemtping to produce, or have already produced, agents of chemical and biological warfare and the means to employ them. These areas and enviornments may also be affected by these elements and this resource may be helpful to hospital teams and Emergency Room ER staffs that are impacted from these casualties in local communities, near or a distance from an actual battlefield, resulting from an increase in terrorist groups and government access to these harmful toxins. Meidcal school students, especially those tasked to internships at emergency rooms in large cities or foreign deployments may be interested in this volume. Airbone Hazards Related to Deployment is available here: The Professional Bulletin of the Chemical Corps --print journal subscription --sign up to subscribe to never miss an issue here: Government Printing Office Format Available: This is a manual for healthcare providers caring for victims of chemical attacks or accidents. It will increase the level of preparedness and response capability of military and civilian practitioners responsible for chemical casualty care. It describes each type of agent in detail in the medical management for each, along with detection and decontamination techniques and equipment. Contains some copyrighted material Chemical, biological, and mid-spectrum agents are often referred to as weapons of mass destruction, or WMDs, and the official military definition of WMD includes these three kinds of agents, Chemical agents, biological agents, toxins, and point sources of radiation may cause mass casualties while leaving structures intact; a better term for these kinds of weapons is mass-casualty weapons, or MCWs. Those designed to produce only temporary incapacitation are referred to as incapacitating agents. Chemical agents may have chemical names as well as common names. Chemical agents developed for military use may also have a NATO code. Physician References and Medical Handbooks resources collection can be found here: Army Surgeon General Office can be found here: Army, Borden Institute can be found here: This book provides a detailed description of the evidence-collection protocols that will be required in criminal cases that involve the release of a chemical agent, biological agent, or radiological material. A chapter on the crime scene profiles procedures for what to do first upon arriving at the scene, procedures for entering the "hot zone, " and procedures upon leaving the "hot zone. Information is provided on general detection instruments, chemical agent detectors, biological agent detection equipment, and equipment for detecting radiological material. A chapter on chemical evidence collection contains descriptions and discussions of equipment preparation, chemical liquids, chemical vapors and aerosols, chemical agent solid sampling, chemical surface sampling, and chemical dermal sampling. This chapter advises that the purpose in collecting evidence in a hazardous chemical incident is to collect a representative sample of the material in question and determine the physical and chemical characteristics of the evidence. This can only be achieved through a well-planned and well-executed collection protocol. The chapter on biological evidence collection considers equipment preparation; biological liquids and aerosols; and biological agent solid, surface, and dermal sampling. The chapter on radiological evidence collection identifies the sources of radiological material; the characteristics of radiological evidence; and procedures for radiological liquid, airborne, solids, surface, and dermal evidence collection. Extensive photographic illustrations, tables, 32 notes, a glossary, subject index, and appended supplementary information on hazardous materials.

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Chapter 8 : MEDICAL MANAGEMENT OF BIOLOGICAL CASUALTIES HANDBOOK

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