

MAVIK

BIOTERRORISM New Threats: Perspectives from the US and Israel

PRESENTATION of speakers



PR. ELIE WIESEL

Elie Wiesel was born in 1928 in the town of Sighet, now part of Romania. Having survived the German concentration camps, along with his two older sisters, he was taken to Paris

where he studied at the Sorbonne and worked as a journalist. Elie Wiesel's first book, *La Nuit*, a memoir of his experience in the concentration camps was published in 1958 and he has since published over forty books.

Elie Wiesel has become a spokesperson for the situation of the Jews as well as other groups that have suffered persecution due to their race, religion, or national origin and was awarded the Nobel Prize for Peace in 1986.

He has been a visiting scholar at Yale University, a distinguished Professor of Judaic Studies at the City University of New York, and an Andrew W. Mellon Professor in the Humanities at the Boston University. Elie Wiesel was also Chairman of the United States Holocaust Memorial Council from 1980-1986.



PR. ARIEL ELIDAD

Arieh Eldad started his medical career as a student at the Sackler School of Medicine, Tel Aviv University, in 1968.

In 1976 he joined the Israel Defense Forces Medical Corps and has the current rank of Brigadier General. He is also the former Surgeon General of the Israel Defense Force Medical Corps.

Currently, Arieh Eldad is Head of the Department of Plastic Surgery at Hadassah University Hospital in Ein Kerem in Jerusalem and has extensive experience in the management of burn care. He plays a significant role in various International Burn Associations.



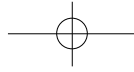
PR. STANLEY PRUSINER

In 1997, Stanley Prusiner won the Nobel Prize in Physiology or Medicine for his discovery of Prions- a new biological principle of infectious agents.

Born in 1942 in Des Moines, Iowa, Stanley Prusiner received his M.D. through the University of Pennsylvania

School of Medicine and completed his Internship and Residency at the University of California in San Francisco. Since 1968 he has been a professor in neurology, biochemistry, and virology at the University of California in San Francisco, and in Berkeley.

Stanley Prusiner has also been the recipient of the Wolf Prize in Medicine and the Keio International Award for Medical Science.



BIOTERRORISM: OLD WEAPON, CURRENT THREATS...

Bioterrorism:

Old Weapon, Current Threats, Israel's Concepts for Preparedness

Professor Arie ELDAD, Brigadier General,
Former Surgeon General, Israel Defense Force Medical Corps

As former Surgeon General of the Israel Defense Force Medical Corps, Professor Eldad belongs to an exclusive group of people who have been involved from early on in fighting bioterrorism and in defending Israel from biological warfare. This has not been an easy task, as certain experts and even members of the administration were skeptical about this "paranoid" and "lunatic" group, who might have been "inventing" these threats themselves. The events of September 11, however, as well as the anthrax scare shortly thereafter, proved that this fear of bioterrorism is not a mere fantasy, but a grave reality. It has underlined the critical imperative that especially the medical community prepare itself in case of a large-scale attack.

An old weapon

Eldad provided a historical perspective by reminding the audience that "bioterror is not a new weapon." His examples of its use in warfare through the ages follow:

- In the Bible we read: "...and it came to pass that night, that the angel of the Lord went out and smote in the camp of Ashur a hundred and eighty five thousands; and when they rose early in the morning, behold, there were all dead corpses. So, Sannherib, King of Ashur departed..." (2nd Book of Kings; 19, 35-36). Research demonstrates that this means "a bulk of army wiped out by plague".

- Hannibal used clay pots with serpents as biological weapons in the Naval Battle, 184 BC.
- In the Tatar attack on Caffa in 1346, plague-ridden cadavers were catapulted through the air, spreading disease
- Carolestein tells us that in 1422, during the Black Plague (smallpox), bodies and excrement were hurled into the ranks of the enemy.
- In 1710, in the war between Russia and Sweden, bodies were thrown over the walls of Reval.
- In the fighting between Pizarro and South American Indians, variola-contaminated clothing was used as a weapon
- During WWI in Germany, people wondered about rumours: Were there shipments of horses with anthrax? What caused the cholera in Italy? the Plague in St Petersburg? Were biological bombs dropped over British positions in the Netherlands.
- Just before and during WWII, the first proven trials became known that the Japanese in China, with bubonic plague, in August 1942. In Manchuria, experiments were conducted on prisoners of war, with anthrax, blister lesions, brucellosis, cholera, and other infections.

Possible Threats

Eldad went down the list of agents of bioterror, including, anthrax, plague, botulism, pest, and smallpox (which may be



the most dangerous because it is so highly contagious). "More worrisome, though, are the activities that we do not have sufficient knowledge of at this stage," he said. "These include, for example, Russian programs to bring various organisms together, creating a new kind of organism that would be responsible for causing new diseases for which we are not yet prepared. That makes it necessary to follow up any emerging diseases of unknown origin."

Anthrax and Management alternatives

He said that in Israel, the use of anthrax with the entire population as a prime target has always been considered a dangerous possibility in Israel. For instance, when it became known that Iraq was developing warheads containing anthrax organisms and viruses, Israel was forced to prepare the population in general. In the U.S., however, until recently, protective and prophylactic measures have been developed to protect only the military.

Eldad noted that it is easier to prepare the people for a missile attack than for biolog-



ical or bioterrorist attacks, which are silent and therefore contain the element of surprise. Also, often the realization that an attack has been launched comes only after the first people who were targeted become ill or die. He added that “the silent onslaught, where we do not have information ahead of time, where it is more difficult to evaluate the situation and prepare for it – this is the most problematic scenario. It is of particular concern in the case of smallpox,” he continued. In the case of anthrax, we know about the incubation period and we know how to prevent serious consequences, from the effects of cutaneous anthrax to the more serious complications of inhalation anthrax.

In inhalation anthrax, which is more serious, the following treatment protocol is followed in Israel:

- Prevention: Vaccination of people at high risk
- Urgent post-exposure antibiotics
- Vaccination prior to discontinuation of antibiotics



In Israel as well as in the U.S., groups have been working behind the scenes on preparedness and on developing protocols and policies on how to react in a variety of specific scenarios. In the U.S., the policy calls for pre-exposure vaccination or administration of antibiotics, especially in vulnerable groups of people, such as the military.



“In Israel,” he explained, “we consider the whole population to be at risk, not just the army.” He emphasized that such a large-scale vaccination program very difficult. The anthrax vaccine, for example, is not approved for young children or pregnant women. For these cases, he said the only way is to act after the fact and to do testing to determine precisely what the organism is. Israel follows the post-exposure policy of prophylaxis for the entire population. Enough antibiotics are stockpiled, and the authorities are prepared to provide post-exposure treatment or vaccination of the population as a whole.

He described how the public health policy was formulated. “As there is little data on post-exposure vaccination, it was accepted in Israel that the final decision to begin vaccinating the population would be made by the Surgeon General, when the time comes.” Eldad estimates that the whole population of Israel can be vaccinated in four weeks. After that period of time, antibiotics will be stockpiled. He explained, however, that high-risk groups will be vaccinated ahead of time. In this case, the term “high risk” refers to those in high-risk zones, as defined by the government. Whether a zone is designated as a persistent-risk zone

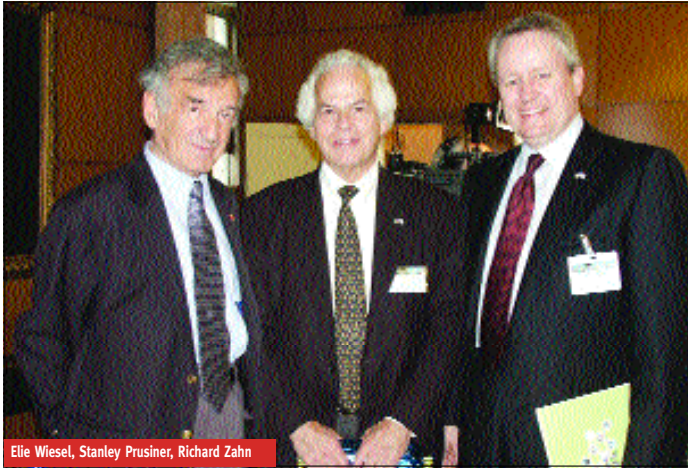
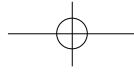
or a transient-risk zone depends on specific atmospheric conditions, such as the climate in general, the wind in particular. He said that close observation of house and farm animals, which are very sensitive to anthrax, would also contribute to the decision-making process with regard to treatment and the definition of danger zones. As mentioned above, it may take longer to define areas of danger when dealing with silent attacks than when dealing with missiles or bombs.

In the transient danger zone, it is not necessary to evacuate the population. People will, however, have to take antibiotics and be vaccinated, after which stockpiling will be undertaken.

These are the tools Eldad named for evaluating and determining danger zones:

- Risk assessment
- Meteorological reports
- Field assessments
- Air sampling
- Mapped morbidity and mortality
- Veterinary mapping

He went on to explain that medical assistance in the persistent danger zone relies on the basic assumptions regarding the “re-suspension” danger of infection, the num-



Elie Wiesel, Stanley Prusiner, Richard Zahn

ber of days until determination of exact boundaries, the availability of community medical services, as well as the need for evacuation of the population.

Medical assistance in the transient danger zone, however, relies on the basic assumptions that there is no potential danger of "resuspension," more time to determine boundaries, and the fact that the population does not need to be evacuated.

According to Eldad, the principles of medical aid include the rapid distribution of prophylactic antibiotics in the danger zones, mapping of morbidity/mortality, and the treatment of patients (in clinics or at home, in temporary evacuation centers, and in hospitals) with antibiotics.

He informed the conference participants that Israel has made a distinction between a small-scale-risk event and a large-scale-risk event. In the first instance, the Command in the Field and the Ministry of Health will be in the best situation to deal with small eruptions of various kinds of epidemics of smaller proportions. In the case of something larger, the army will take control

through the Home Front Command.

Epidemiological Management Team

"As early as 20 years ago," he said, "a team called the EMT (Epidemiological Management Team) was created as an advisory group to the Surgeon General." Today, this team advises the Civil Health Authorities (Director of the Ministry of Health). This group consists of various professionals and experts who can interact on all levels in case of disaster. The former Surgeon General of Israel (Prof. Eldad) heads this team in Israel, assisted by specialists in the nuclear, biological, and chemical (NBC) branches of the military. In addition to that, epidemiologists, microbiologists, virologists, and veterinary surgeons, as well as psychologists and public-health personnel, play an important role. The government Ministries of Agriculture, Environment, and the Interior are also members of the team. Being prepared and informed before crises actually occur ensures that everyone will cope better if and when the time comes, without unnecessary hysteria. "It is thus a well-oiled machine of experts from various government departments, civil health, and the public" he concluded.

Eldad then named the EMT's sources of information: :

- Intelligence information
- Hospital and forensic reports
- Veterinary surveys
- Mapped morbidity/mortality
- Central laboratory
- Epidemiological briefings of casualties

He showed how morbidity and mortality mapping of the country will help to control the precise times for action, treatment, and prevention: For instance, one scenario is that everyone might be receiving antibiotics in the first week, and thereafter treatment will be concentrated on the specific affected areas, where there will be vaccination and antibiotic treatment for another four weeks, until vaccination has been completed.

He explained that a simple, effective mapping system follows morbidity in the country in general, while surrogate clinics will send information on any suspicious cases. Through this system, a very sensitive marker of morbidity throughout the country can help to concentrate on the specific area of need. Mapping is done at constant intervals (hours) and through accumulating numbers of new patients. This system makes it possible to decide eventually when and where to stop antibiotic treatment and where to continue for several more weeks.

An Ounce of Prevention...

Eldad concluded his presentation with the following remarks: "These are examples of the experience and actions taken over the last several years in Israel. It is very important to know how to react to and manage an attack, but prophylaxis, through knowledge and general preparedness, remains the key to success."

