

ISRAEL'S PREPAREDNESS
FOR RESPONDING TO THE HEALTH REQUIREMENTS
OF ITS CIVILIAN POPULATION
IN THE EVENT OF DEPLOYMENT OF A
NUCLEAR, BIOLOGICAL OR CHEMICAL
WEAPON OF MASS DESTRUCTION

A Report on Meetings and Interviews
September 29 – October 4, 2002

Leonard J. Marcus, Ph.D.
Director
Program for Health Care Negotiation and Conflict Resolution
Harvard School of Public Health
677 Huntington Avenue
Boston, MA 02115
Telephone: 617-496-0867
e-mail: ljmarcus@hsph.harvard.edu

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Preface

In July 2002, the Harvard School of Public Health joined what are now 18 other schools of public health in the United States as an “Academic Center for Public Health Preparedness.” These Centers are funded by the U.S. Center for Disease Control and coordinated by the Association of Schools of Public Health as part of the national preparedness effort. Each Center is responsible to develop curriculum materials and to deliver trainings to enhance the preparedness of the state and local public health workforce.

The focus of my work is negotiation and conflict resolution. Recognizing the importance of collaborative efforts in the face of public health preparedness, and further observing that significant differences divide those required to collaborate, I have cast this process of conflict resolution pertinent to preparedness more as a matter of developing “connectivity.” The purpose of this connectivity among different entities is to create a seamless web of organizations, people, resources, and information that is best able to catch, contain, and control a bioterrorist threat.

My review of the literature found little on this topic as it specifically applies to bioterrorism preparedness. Hence, there emerged a clear need to link what is known about preparedness to what is known about conflict resolution and collaborative problem solving. While I knew much about the latter, I felt a keen need to learn whatever I could about the former. Israel, because of its vast experience in preparedness for the range of terrorist potentialities, was a logical place to investigate this question. A student in my leadership course here at Harvard, Dr. Isaac Ashkenazi, is former surgeon general of the Israel Defense Forces, an expert on disaster management, and a willing teacher on this topic. He offered to

help me organize the trip and arrange meetings with key officials, for which I am greatly appreciative.

While the trip to Israel was originally conceived to examine the question of connectivity, the visit assumed a much different tone in the days leading up to my September 26th departure. On Monday, September 23rd, the CDC announced plans to begin vaccinating a significant portion of the U.S. health care workforce. The next day, the Boston Globe headlined the intent of Massachusetts to vaccinate 20,000 health workers. These announcements included a number of open questions about vaccination policies and procedures. The trip to Israel assumed a wider purpose, and offered the rare opportunity to investigate these questions at a time of significant interest in the U.S.

This report has been prepared to provide a picture of the decisions, plans, and actions now in place in Israel for U.S. officials, researchers, trainers, and others interested in bioterrorism preparedness. The recommendations that appear for the U.S. are my observations, based upon what I learned and experienced while in Israel. Every effort was made to accurately collect and report the information included. I take full responsibility for any misperceptions or inaccuracies in reporting.

The United States has much to learn from Israel's experience. It is my hope that this report will serve both as a source of information and as a catalyst to further exchange and linkages between the U.S. and Israel on matters of public health preparedness.

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Executive Summary

By virtue of history and geography, Israeli health officials are compelled to seriously prepare for health system responses to the after effects of a weapon of mass destruction – nuclear, biological, or chemical – used against its population. The Israel experience provides a valuable framework for investigating the process of public health preparedness, examining both commonalities and differences in circumstances and activities in Israel and the United States. This report summarizes a week of on-site meetings and interviews with senior Israeli health officials, as well as observation of decontamination procedures and vaccination processes.

Following the 1991 Gulf War, Israel embarked on a serious reorganization and upgrade of emergency services coordination and preparation. Current tensions in the region and the specter of a repetition of hostilities with Iraq have encouraged heightened preparatory activities. These activities constitute serious public health planning and preparedness. Given 1) the relative ease of concealing and transporting weaponized chemical and biological substances, 2) the presence of operational terrorist cells in the United States, and 3) current international tensions, it could be argued that U.S. vulnerability to the bioterrorist threat is on par with that of Israel.

Should a case of smallpox be found anywhere in the world, Israel immediately will vaccinate the entire population, both Jewish and Arab. As a first step in that plan, well over 20,000 people, including hospital workers, first responders, and army personnel are now being vaccinated. Since Israel vaccinated its army until 1995, this program in fact constitutes a “re-vaccination” operation. These voluntary re-vaccinations include careful screening to exclude people at risk for serious side effects or transmission to severely immuno-suppressed individuals. Beyond those precautions, re-vaccinated health workers are returned to work with nothing more

than a bandage covering the vaccination site, as Israelis consider the risk of transmission to be very low. People who participate in the program are expected to donate blood or plasma that will be used to generate a supply of vaccinia immuno-globulin (VIG). Should the entire population be vaccinated, this supply of VIG will be used for those at risk of serious side effects in conjunction with the actual vaccine. Organizationally, an emergency vaccination program will involve closing all neighborhood schools, deploying vaccine and a pre-assigned workforce to each school, and then systematically vaccinating approximately 20,000 people per school over a four day period. Only those people who are immuno-compromised or at risk of serious side effects would be directed to health clinics to be seen by health personnel. Twenty videotapes providing specific information and instructions about this program have been pre-recorded and will be played as appropriate on Israel Television at the direction of the Health Ministry. The speakers in these tapes are doctors and public health officials and not political figures.

Israel is ready and prepared to instantly build, grow, and operate a transitory health response system that is able to encase a terrorist incident, whether a conventional attack or a nuclear, chemical or bioterrorist assault. This flexible system immediately assesses the nature and scope of an event, assembles and coordinates resources through a carefully constructed communication and command network, evacuates victims and then appropriates them throughout the country according to medical needs and hospital capabilities. The process is designed and it operates to reduce victim mortality and morbidity. Israel has used its recurring experience with terrorism to develop and test this system and to train personnel to perform their roles within it.

There is a fundamental distinction between preparedness in Israel and in the United States. Israelis approach the task in a pragmatic, results oriented manner. They apply current resources and time to assess current system capabilities and to determine whether those capabilities correspond to the current threat. By contrast, "preparedness" has a diffuse quality in the United States. Public health leaders are ambivalent if not resistant to responding to bioterrorism as a substantial threat. The key question is: if a case of smallpox were discovered tomorrow in London, would the U.S. be able to provide protections to its citizens comparable to what Israel will be able to do for its citizens? If not, then there is much to be learned from the processes, approach, and accomplishments of Israeli preparedness.

VACCINATION POLICIES AND PROCEDURES IN ISRAEL

Decision to vaccinate the entire population

- **Decision process:** The decision to vaccinate - as well as other major decisions regarding disaster response - is made by the **Supreme Hospital Authority**, a three-person decision-making body. The three people are: the Secretary General of the Health Ministry (a physician who is not a political figure); the Surgeon General of the Israel Defense Forces; and the CEO of Kupat Cholim, the largest health maintenance organization in the country. The Supreme Authority meets under the rubric of the Ministry of Health.
Recommendation for the U.S. - Do not repeat the ambiguities of the decision and communication processes that occurred in the fall 2001 anthrax emergency. Clearly distinguish political and professional decision-making and public messaging prior to an event.
- **Decision criteria:** Their current understanding is that if there is one case of smallpox found anywhere in the world, they will choose to vaccinate the entire population of Israel, including Palestinians. There is currently adequate vaccine though not adequate VIG (vaccinia immuno-globulin) to immediately begin vaccinations. The common scenario discussed was one case of smallpox diagnosed in London. That would provide evidence that smallpox is available and that it can be weaponized. They believe that in this circumstance, it would only be a matter of time until the disease would appear in Israel.
Recommendation for the U.S. - The American public will expect the same protections that are afforded the Israeli population. The difference between an orderly and a panicked process is a factor of planning and preparation. The U.S. should set a benchmark date for state and local officials to meet this expectation, with clear and tested plans in place. Each person in the country should know where to report in the event that an emergency is declared. Clear criteria should be established to distinguish first round individuals – such as children and people who are immuno-compromised – for day one, as well as criteria to inform people about subsequent reporting days. Centers should also

be established at transportation hubs to vaccinate people in transit. This plan, while it cause some alarm in the absence of an emergency, will significantly reduce panic and increase coverage should a broad vaccination be required.

- **The time consideration:** Under these circumstances, time will be the factor in the Israeli decision to vaccinate. Given the risks associated with delays in post-exposure vaccination, the Israelis are preparing to vaccinate the entire population in four days. After exposure to smallpox, there is a 91% chance of no illness if one receives the vaccine within four days. Said one official, "If there is enough vaccine to cover everyone and a system to vaccinate everyone within four days, then I don't need to vaccinate the whole country before a case of smallpox is detected." There were discrepancies heard in the relative readiness for four days, and the methods that would be used to achieve this objective, however four days is considered optimal and feasible.

Recommendation for the U.S. - At present, the prevalent thinking is that it will take the National Pharmaceutical Stockpile five days to distribute current supplies of vaccine nationally. It will be difficult if not impossible to affect an orderly vaccination process given such a delay.

- **Perceptions and practice:** Israeli officials recognize the copycat nature of these vaccination decisions. The army surgeon general stated that the decision to vaccinate first responders and hospital workers stemmed from the impending summer decision by the CDC to recommend the same in the United States. Similarly, they recognize that if they decide to vaccinate the entire Israeli population, that the decision would be regarded as signaling the necessity to vaccinate in other countries. In other words, Israel's decision to vaccinate would prompt demands by the US population to be given similar protections.

Recommendation for the U.S. - There is a delicate diplomatic balance at play in U.S.-Israeli relations that has more to do with foreign policy than public health. Under these circumstances, coordination of public health decision-making and the exchange of information is a complicated matter. While official communications might remain

detached, the U.S. should encourage informal communications and information exchange, such as through academic contacts with Israeli officials.

The current vaccination program

- Israel vaccinated the entire population until the 1980s, ending the program slightly later than other countries. Until 1995, soldiers were routinely vaccinated. Since almost all 18 year olds are drafted – both men and women – and continue (men) in the reserves until approximately 50, this program encompassed the majority of the adult population. Israel was concerned that the policy to vaccinate their army could be perceived as proof that the country had the means and the willingness to weaponize smallpox. To dispel that perception, the smallpox program was suspended seven years ago. As a result of its prior wide pool of vaccinated people, current vaccination efforts are termed “re-vaccinations.”
Recommendation for the U.S. - The U.S. could limit its current vaccination program to people thirty-five years and older, meaning that this program would be restricted to people who have already been vaccinated, thereby reducing risks of side effects. This group is also less likely to be living with young children, and it could be argued, might be slightly more mature and reliable in conforming with post-re-vaccination protocols.
- **The current pace of vaccinations:** In July, the Ministry of Health re-vaccinated 1,000 workers, mostly people involved in epidemiological positions, community health workers, and leading officials. In September, anticipating a similar announcement from the U.S. CDC, Israel announced that 15,000 health workers and first responders would be re-vaccinated. After being vaccinated, these people return on day 6-9 to assess whether there was a take. On October 2, Israel began to re-vaccinate IDF personnel. Ten vaccination sites were established in this first round of re-vaccinations, with an anticipated 300-800 people included in this first round. The full plans for IDF vaccinations were not revealed. Eventually, it is being planned to vaccinate all medical staff in the country, and funeral directors and undertakers as well. People being revaccinated are expected though not obligated to give blood following vaccination, in order to build a supply of VIG.

Recommendation for the U.S. - Israelis were able to mount this ambitious vaccination schedule because of the limited restrictions afforded participants. There were no furloughs expected to be provided by employers and no limits imposed upon workers. Efficiency and cost must be factored into such a plan.

- **Restrictions on the vaccination program:** In order to participate in the revaccination program, each person's doctor must consent to their participation. At Hadassah Hospital, hospital personnel who work with cancer patients are not being vaccinated.

Recommendation for the U.S. - Israel does not have as formidable a litigation concern as in the U.S., though this is still a consideration. By establishing clear exclusion criteria, the U.S. can develop a selection process that should limit legal liability.

- **Legal and health considerations:** The Israelis believe that there is a wide safety margin in their protocols, which creates a tolerably low risk of transmission. Regular screening for HIV, Hepatitis C, etc. is done for blood collected post-revaccination. They sign an informed consent form prior to being revaccinated.

Recommendation for the U.S. - Congress should consider emergency legislation limiting legal liability under circumstances in which appropriate protections and care is provided to those participating in the vaccination program.

The vaccine itself

- **The Israeli vaccine strain:** The vaccination used is the "Lister Strain," which is grown on the chorioallantoic membrane of fertilized eggs. As a result, precautions must be taken for people who are allergic to egg whites. The Lister Strain, which is used in Europe, contrasts with the New York Health Department strain that is considered in Israel to be more virulent with a higher likelihood of side effects. The Lister Strain vaccine is produced under the rubric of the Ministry of Health. It is not known whether there is a difference in take between the two strains. There have been production problems in the Jerusalem plant where the vaccine is being produced, and plans are in process to transfer

production to a plant outside of Jerusalem where there will be more stringent quality control mechanisms in place.

- **Bandaging:** The bandage used to seal the post-revaccination is: Cosmopore E, manufactured by the Hartman company. There is gauze and a taped seal on all four sides. This bandage is porous and allows the lesion to breath. For those with a lesser risk of transmission (those not living with children or immuno-compromised individuals), a regular bandage is used.
- **Injection options rejected and accepted:** There are several ways to accomplish injection. The “Dermojet” is like an electrical gun or rifle. It can quickly deliver 20-30 doses. The problem with this method is the risk of transfer of HIV or Hepatitis B, since there may be skin contact, though there are no such reports of transmission. The other problem is that it uses a higher volume of vaccine. This method was rejected. They are not using bifurcated needles because of the expense, which is about 20 cents for bifurcated needles versus one cent for standard needles. These standard needles are size - G 23.
- **Vaccinations:** Now, a microdrop of 25 lambda is used, with 0.25 milliliter of vaccine. A drop of vaccine is placed on the arm, and then a needle is used to create 15 small punctures. In assembly line fashion, six people are lined up, arm up, and vaccinated. For the small numbers to date, the “take” rate is very high. They do not yet have results of this program.
- **The “furlough” question:** There are no restrictions imposed upon those who have been re-vaccinated. They can go back to work, wearing a shirt that covers the vaccination site, and with a simple bandage over the site. People are instructed to be very strict about hand washing after changing the bandage or otherwise touching the vaccination site. Only one nurse requested time off following vaccination as a result of side effects.

- **Protective measures:** There are a number of steps taken to reduce the likelihood of transmission: 1) re-vaccinations are on a voluntary basis only; 2) willing volunteers complete a questionnaire to assess exclusionary factors, such as eczema, pregnancy, or other health conditions; 3) those who enter the program are shown two instructional videos, one that explains the purpose of the vaccination program and another that presents instructions on how to care for the vaccination site; 4) they are to be asked if there are any children or immuno-compromised people in their home, or if they are working with immuno-compromised patients and if the answer is yes; 5) they are given a large gauze bandage, with adhesive on all sides, a relative expensive option. If the answer is no, the site is covered with a standard, small bandage with adhesive on both ends, the relatively far less expensive protective option.
- **Problems with efforts to reduce transmission:** There are observed inconsistencies in the implementation of these measures. While several minor observed lapses should not be considered over critical, there is an attitude taken by Israelis that is sometimes lax in regards to rules and regulations. “Yehiyeh b’seder” – “It’ll be all right” is sometimes used to disregard the careful precautions outlined in policy and procedure manuals. This attitude increases the risks of transmission and thereby the re-vaccination program, which would be compromised and complicated if these lapses resulted in cases of inadvertent transmission.
- **Participation:** Preliminary guestimates of participation in this voluntary program are 30-50% of people sent questionnaires for voluntary participation.
- **Exclusionary criteria:** Those with contraindications are not vaccinated. These include people with active skin disease, burns, chicken pox, or other diseases with major lesions, as well as a history of eczema. If anyone living with the person has contraindications, the person is not vaccinated. Anyone with an allergy to the vaccine or to eggs is not vaccinated, as are people with any depression of the immune system. People using a high dose of steroids are disqualified, as are people with HIV/AIDS, leukemia, lymphoma, generalized malignancy, or a recent transplantation (past malignancy is not a

contraindication). Women who are pregnant or considering pregnancy within the next three months are not vaccinated. It is believed that 25% of the Israeli population has contraindications. They realize that the more liberal they are with contraindications, the fewer people will be vaccinated.

- **Pregnancy:** If a pregnant woman is vaccinated, the pregnancy is not stopped. There is no problem with breast feeding.
- **Problems with unintended transmission:** In rare cases of transmission, someone infected a grandson, and a soldier infected his brother. These are rare cases and have not affected the vaccination program.
- **Successful vaccination:** A “take” is determined by virtue of the appearance of the postule 7-9 days after vaccination. If there is no postule, it does not necessarily mean there is no take. If there is clearly no take, then the vaccination is repeated. The preliminary take numbers are 63% for the dermojet method and 66% for the currently preferred puncture method.
- **Side effects of the vaccination:** The side effects of the vaccination include local infection complicated by cellulitis and enlargement of the lymph node. One could get a fever in day 4-14. There could be inadvertent inoculation if one touched the vaccination site and then touched another area without washing. For example, there have been rare reports of vaccinia of the eye. The most dangerous allergic reaction is bullows erythmia, which is rare. The most dangerous side effect is eczema vaccinia, which can be treated with VIG. In generalized vaccinia, a rash covers the whole body. The most dangerous is generalized necrosa, which is progressive and which can be fatal. The most problematic complication is encephalitis, brain swelling which can be fatal, and which is not treatable by VIG. The estimated death rate from encephalitis is one in one million.
- **Findings on side effects:** According to Ministry of Health records, vaccination reactions and side effects: Total full reaction among vaccinated – 76 % (n= 929) There have been

a number of side effects reported. The side effects found among those vaccinated: Fever - 5 % ; Headaches - 28 % ; Muscle pain - 18 % ; Nausea - 12 % ; Fatigue and weakness - 31 % ; Shivering - 9 % ; Other - 13 % . There was one case of suspected encephalitis. The physicians in that case wanted to do a spinal tap, though the patient refused.

- **The VIG supply:** Vaccinia Immuno-Globulin (VIG) is used for treating complications and side-effects of the vaccine for skin problems. It is derived from the anti-bodies in the blood of those who have been successfully vaccinated. VIG is not useful in treating encephalitis. It is given with the vaccine for those exposed or who could have been exposed to smallpox. It is estimated that 12,000 liters of VIG will be needed for the country. Now, there are only 1,500 doses in total. Hence, the current re-vaccination program is intended to expand these reservoirs.

Strategies for vaccinating the country

- **The goal:** Four days is the accepted rate by which the entire population could be vaccinated. There are slight differences among people who reported on the status of these plans, ranging from one day to four plus days. Vaccinations would be given on an around the clock basis to achieve the four day benchmark.
- **The process:** It has been decided to close high schools and to conduct vaccinations on a neighborhood basis, with people directed to report to their neighborhood school on one of four appointed days. Two hundred schools will be closed immediately upon learning of the first case, students will immediately be sent home, and emergency smallpox inoculation centers will be established. At each school, 130 emergency personnel will be stationed to provide the vaccinations. At each school, 20,000 – 30,000 people will be vaccinated. From the moment the decision is reached, it will take approximately 18 hours to deploy this system.

- **Health facilities versus schools:** The most widely accepted – though not final decision on vaccinations – is to keep people away from health facilities. Several officials indicated that the final plan will involve limited use of health facilities to vaccinate people with special health considerations and people who are immuno-compromised. These persons would be given VIG in conjunction with their vaccination in order to allay coetaneous side effects.
- **On site personnel:** The vaccinations will be conducted by people who have already been re-vaccinated. These people will include medical personnel as well as civilian and army personnel who do not have medical training but will be given special instructions in the vaccination process. Police would be deployed to maintain order at each site.
- **Implications for the health system:** This program would likely heavily tax the health system, with six anticipated fatalities and numerous cases of side-effects and complications flooding the health system in the aftermath of the vaccination program.

PREPAREDNESS IN ISRAEL

General approaches to preparedness

- **Considerations:** Israel is a radically different position than the U.S., by virtue of geography, history, and population. They are far more vulnerable to a mass casualty nuclear or missile-delivered chemical or biological attack. It could be argued that they are as vulnerable as or perhaps even less vulnerable to a biological attack than the U.S. With the large adjacent Arab population, there might be a strong reluctance to weaponize an infectious disease that could wreak havoc throughout the Arab world, which would likely be less prepared than Israel. Anthrax therefore would be a preferred biological weapon in Israel. In the Gulf War, missiles were fired primarily at the Jewish population surrounding Tel Aviv, avoiding areas with mixed Arab-Jewish populations. (Likewise, it is assumed that terrorists in Indonesia chose to strike Bali because of its proportionately low Muslim and high Hindu population, and because of its concentration of foreign

tourists.) There is a strong likelihood that Iraq could deliver a missile carrying a chemical warhead, and Israel has developed elaborate plans to deal with this contingency. Despite these considerations, Israel is taking full precautions against the possible release of smallpox.

- **The frame of reference:** Given the Israeli experience with conventional weapons and terrorist incidents, they take a very pragmatic approach to planning and preparation. As one person said, "Tell me to prepare for 5,000 victims of a chemical attack on November 15, and I will work on the plan, and then you can tell me whether or not we are ready." There is a focus on numbers, dates, and concrete scenarios. They do not view "preparedness" with the same sort of mystery with which the word is used in the United States.

Recommendation for the U.S. - The Israelis build accountability into their system by assessing performance on hospital and other preparedness drills. The U.S. should consider incorporating this sort of accountability in preparedness efforts, thereby removing some of the insipid attitudes that now pervade the process.

- **The present state of mind:** Israelis consider themselves to be currently "at war." While the first "intifada" that began in 1986 maintained that name through its tenure, this second intifada has been fought on a much larger scale, and so therefore, the Israeli press is now searching for an appropriate name to call what is now considered its current war. This is an important change in frame of reference for the Israeli population and its officials. War demands a different kind of readiness than more low-key responses to conventional terrorist incidents. Unlike American society, Israel is in a constant state of high alert that includes the citizenry as much as the armed forces and police.
- **The nature of the bioterrorism threat:** When it was mentioned that the Soviets had experimented with re-engineering the virus so it would be less resistant to current vaccines (based on the public writings of Ken Alibek, a Soviet scientist and defector), the reaction was that this possibility was known to Israeli intelligence and was held as top-secret information. Over the past two years, the emphasis of preparedness activities

has shifted. They had previously been more concerned about toxicological events. They are at present more focused on a potential biological incident.

- **The Iraqi threat:** During the 1991 Gulf War, 39 scud missiles that carried conventional warheads hit Israel. There were only a few casualties and limited property damage. The country had prepared for a chemical attack, and the whole population was supplied gas masks. Each family prepared a sealed room in their home, and stayed there during the missile attacks. This experience demonstrated to the Israelis that they are able mobilize and activate the population to comply with difficult instructions in the event of a potential non-conventional attack. The other lesson pertained to the response of emergency personnel. There were reportedly fist fights at the sites where bombs fell, and first responders did not coordinate their efforts.

Recommendation for the U.S. - There is a strong inclination in the U.S. to get over the events of September 11, and with it, to become complacent about preparedness. It would be unfortunate not to incorporate lessons learned in those events and the subsequent anthrax incidents, and to translate those experiences into a balanced approach to preparedness.

- **Lessons learned:** The current approach to preparedness harkens back to problems that surfaced during the 1991 Gulf War, as well as the spate of terrorist incidents that continuously hit the country. Perhaps most important, over the past ten years, the Home Front Command was established. This Israel Defense Forces (IDF) command has responsibility for protecting the civilian population, to be distinguished from the remainder of the IDF which has responsibility for security, patrolling the borders, and overall defense. The Home Front Command established headquarters in the Ramla area, at the center of the country, and its commander is informed of and coordinates the response to all incidents, from small events to major incidents.

The national strategy for preparedness and disaster management

- **Combining “command” with committees:** The Israeli preparedness infrastructure involves close cooperation between military operations through the IDF Home Front Command and civilian agencies and organizations through the Ministry of Health. Together they have developed a number of committees to draft recommendations on a wide variety of preparedness topics. The committees include: 1) policy committee that makes final decisions; 2) hospital preparedness; 3) laboratories; 4) dispensing policies and procedures; 5) risk communication; 6) education; 7) community health preparedness (Kupat Holim); 8) security.
- **A matter of attitude:** The former commander of the Home Front Command distinguished between “physical immunity” and “mental immunity.” Physical immunity is achieved through vaccination, concrete plans, and ready access to necessary supplies. Mental immunity however is a state of mind. This requires one to accept that there is a risk – it supercedes denial. It requires one to take actions appropriate to that risk – there is an operational element. And it requires one to be vigilant and flexible, so that one can immediately respond, with an expectation of resiliency and a willingness to correct shortcomings on the other end. In developing mental immunity, one must also recognize the “herd mentality” that affects preparedness. Vigilance comes in spurts, and while there are more stimuli in Israel, human nature encourages quick forgetfulness following a traumatic event. Mental immunity requires emergency preparedness to maintain vigilance even in a quiet period. Good disaster management is a frame of mind, and one key element of preparation is getting leadership into that frame. People in leadership positions must feel responsible for one another.
- **Planning criteria:** Real preparedness needs to be rehearsed and automatic. One cannot improvise in an emergency, especially one with mass casualties that reaches beyond the experience of first responders and emergency personnel. Hence, the importance of drills and clear plans of action. It is important for people in leadership positions in disaster

management to know one another well. Therefore, one important function of meetings, drills, and actual management of incidents is that people get to know one another, trust one another, and learn the working styles and strategies of one another.

- **Preparedness leadership:** In a real disaster, there are times when your senses deceive you. This occurs when leaders are required to do something that does not conform to what their senses tell them. It is then necessary to keep one's eye on technical measures. It is hard to believe that one's senses will be deceptive. This is similar to a phenomenon that faces rookie pilots when they fly into cloud cover. When they cannot see, they stop believing their instruments and start flying the plane based on what they believe to be up and down. This can cause them to spin out into a dive. The same is true for preparedness leadership. There must be clear criteria, predetermined protocols and decisions, a willingness to take appropriate risks based on the information that is available, and then the persistence to be consistent.
- **Leadership assignments:** Leadership must be divided between strategic and tactical responsibilities. People who have strategic responsibilities are not specialists. They make the big picture decisions about the deployment of people and resources. Those with tactical responsibilities are specialists, and perform set functions within the overall plan. Leaders in an emergency management situation strive for a single "picture of the situation." It is important that everyone is working with the same picture and same interpretation, especially across categories of response. There is an established hierarchy and clear order for who is command on the site of the incident.
Recommendation for the U.S. – Responsibilities should be carefully divided between elected officials and expert professional with consideration for their distinct strategic and tactical responsibilities.
- **Communication with the civilian population:** Leadership must be definitive, clear about what needs to be done and must provide direction in accomplishing operational tasks. This clarity is important for directing the civilian population. For this reason, Israelis defer decision-making and communication to disaster management experts.

- **Emergency communication:** The first step in preparedness is the dictionary: everyone must use the same words. The second step is communication: everyone must have single lines of integrated communication. In Israel, different branches of the system were about to upgrade using different equipment, and it was decided in the aftermath of the 1991 Gulf War experience, to use a single vendor and a compatible system. These services are coordinated out of the “Central War Room” of the Home Front Command.
- **Authority:** Only the Home Front Command is authorized to decide whether hospitals should call in caregivers from their homes. If they issue the command, then the hospital will be compensated for wages for that period. If they do not issue the command and the hospital still calls in doctors unnecessarily, the hospital is not reimbursed for the cost of wages. The order is clearly delivered as a “big event” or a “small event.”
- **Different understandings of terrorism:** Israelis have extensive experience with terrorism. They have therefore developed different understandings of the differences and distinctions. For conventional events such as suicide bombings, they define the event itself lasting for only a matter of 5-7 seconds. From that point, it is a problem of the health system response: quick evacuation and treatment. These sorts of incidents, along with chemical incidents, are space specific: they occur in a specific geographical area that can be cordoned off and controlled. Bioterrorism is different, especially when infectious agents are used. Unlike a conventional terrorist incident, bioterrorism is a “silent” event. Therefore, surveillance, detection, and management of the event require a very different set of information and management capabilities.
- **Anti-terrorism thinking:** In order to win at this game, one must think like a terrorist. This is a situation that chooses you. You must think and respond accordingly. This is not a matter of whether you do or do not want to engage in planning and preparation. It is something you must do as duty.

- **Overall risk in the context of international events:** The level of urgency of preparedness depends on what the US intends to do in Iraq. If this confrontation evolves into a diplomatic solution, then Iraq would be less likely to unleash its biological stockpile. They will try to at least create the illusion of compliance with international standards. However, if the Bush administration continues its strategy of confrontation, there is an increased likelihood that a hostile Iraq will mount a counter-response, especially in light of the limited counter-measures available to the Hussein regime and its strategic allies. Since cells have been discovered outside the region, there is a risk that these cells could deploy biological weapons upon the civilian population outside Iraq.

OPERATIONAL ELEMENTS OF PREPAREDNESS IN ISRAEL

Key elements of preparedness and disaster management

- **The radio system:** Following the Gulf War, the country reassessed its emergency communication infrastructure. Emergency organizations as well as the army had incompatible communication systems, each of which needed upgrading. The simultaneous upgrade now has all branches working through an integrated communication network that is radio based and that provides key decision-makers real time information. This includes fire, police, Magen David Adom (EMS), Home Front Command, and environmental patrols on a designated radio channel. Civilian cell phone systems become jammed with traffic with even a small terrorist incident, and therefore, emergency personnel do not use these civilian systems. They use each emergency system as a test and drill of the system. All coordination is conducted by the Home Front Command, and IDF command system that is based in Ramla. The Home Front Command manages all incidents that have five or more victims.
- **Hospital drills:** Israel has developed a well organized approach to hospital drills, using a three year cycle. In year one, they practice response to a chemical attack. In year two, they conduct a drill that is in response to a toxicological, radiological, or biological event.

The year three drill is tailored to the particular needs and or weaknesses of the hospital, or may be modified to a particular situation facing the country or a particular region. The IDF requires these drills and works closely with the hospitals and the Ministry of Health in planning, conducting, and assessing each drill.

- **Disaster concepts and cooperation:** Beyond hardware, the Israelis have also worked to develop a common vocabulary for use in disaster management, so that different branches do not find communication impeded by different words or concepts. They have worked to greatly simplify these concepts and operational procedures in order to avoid misunderstandings in the field. By way of example, Magen David Adom (EMS) workers follow a clear set of instructions when they come upon a disaster site. The first ambulance to arrive takes a command position, and is not to provide any treatment. These personnel immediately report to the Home Front Command on the scope of the incident and the approximate number of casualties so that resources can be directed to the site. Victims are categorized into two groups: lying and sitting/standing. The sitting/standing victims are likely to be loudest, and the ones emergency response workers would most likely to be drawn to. However, those people can be transported by private car or bus, and should not occupy the limited number of ambulances required for the more seriously wounded people. Private volunteering naturally occurs under such circumstances, and thus allows emergency personnel to focus on those who are in most critical need. Except for dismembered bodies, all victims are removed from the scene, dead or alive. Magen David Adom personnel are to use a “scoop and run” approach to their work. Life-saving procedures are generally done in the ambulance during evacuation, reducing the risk of further injuries if a second device is detonated at the scene. Therefore, in “scoop and run” fashion, no treatment is to be provided on site. Once the victims arrive at the nearest hospital, they are most likely transferred by air evacuation to a hospital in a different location for advanced treatment. The hospital or hospitals closest to the incident is primarily responsible for triage services and treatment of lightly and moderately wounded victims. The Home Front Command coordinates IDF Air Force helicopters to transport victims and mobilizes hospitals to accept victims. The Israeli police is responsible for maintaining security at the disaster site, opening up

restricted access to hospitals for ambulances until all victims have been removed, and for keeping anxious family members a distance from the hospital following a disaster. Hospital social workers are responsible for compiling lists and providing family members with status information. Discussion focused on: 1) the March 2002 Park Hotel terrorist incident in Netanya, as an example of how a typical disaster was managed; 2) a potential attack at the Azrieli Towers, a twin tower office building in Tel Aviv likened to New York's World Trade Center, which would be a mass casualty scenario; 3) a chemical attack.

- **Response timing:** Israelis mark time from the moment of an incident, and take great pride in being able to move people quickly and efficiently to an appropriate care setting, deftly appropriating resources to disperse key responsibilities. They describe an actual terrorist incident taking only five to seven seconds from beginning to end. From that point, it is their responsibility to put in place a flexible and resilient medical response system that can often clear a site of all victims within minutes. Twenty minutes is an often heard goal for completely clearing a terrorist site of all victims. To accomplish this objective, there is an adequate supply of carefully coordinated resources strategically placed around the country and ready for instant response. They are able to grow or shrink a response in real time based on the information processed through the Home Command Center. The usual disaster management incident is one to two hours from start to finish. By contrast, a biological incident - especially if it involves use of an infectious agent - could last for a longer period. If there is threat of contagion, such as would be the case with smallpox, plague, botulism, or ebola, they will adapt pressurized rooms as necessary, and may appropriate hotels or other facilities to quarantine victims. Israeli law allows officials to appropriate specified private property, such as vehicles, during a time of war.
- **Hospital procedures:** For mass casualty events, protocols and algorithms must be firmly in place prior to the event. Those simple protocols should be short and specific enough to fit onto a small wallet or pocket card, and no matter how many times they have been repeated, this card should be consulted during each incident. At Hadassah Hospital,

2,000 terrorist victims have been treated over the past two years, and with each incident, strict protocols are immediately put into action. These cards should include primary tasks, questions, issues, and telephone numbers. Each person should create their own card, based on their responsibilities and key contacts.

- **The health care workforce:** During a national emergency or full scale war, the health care workforce is expanded by moving everyone from an 8 hour shift to a 12 hour shift. This creates a 50% increase in staff time. During a major event, police cordon off all roads to all traffic with the exception of emergency transport vehicles. It was decided to even restrict medical personnel from these roads, since doctors and nurses racing to the hospital would impede emergency transport vehicles. It has been decided that the first surge of victims can best be handled by staff already on hand.
- **Authority:** For regular terror attacks, the police are in charge. For mega-terror attacks, the Home Front Command is in charge. Police, for example, are not trained or equipped to handle chemical attacks.
- **Police:** In a major event, police have three responsibilities: 1) secure the site of the incident; 2) close streets - create a cordon for ambulances to reach the nearest health care facilities; 3) crowd control - secure health facilities from family seeking information about the patients so that health care workers can most efficiently do their work.
- **Plans for a major conventional attack:** The Israelis are preparing for a World Trade Center type event happening at their twin tower office buildings, the Azrielli Center. Lesson one of their plan is not to block egresses with emergency vehicles. Police will immediately be on the scene, and thirty ambulances will arrive within 3-5 minutes. War rooms will immediately be placed into operation. Police will likely wear protective gear. They will cordon roads to major Tel Aviv hospitals. Ambulances will use the scoop and run system to collect victims and evacuate them to the assigned hospital. Ambulances will leave the area as quickly as possible using one-way roads created by the police responsible for cordoning the roads. Buses will transport walking and sitting victims to

the hospital. After arriving at a hospital, victims will be triaged in order to spread the workload throughout the country.

- **Response to a chemical attack:** All decontamination is done at hospitals, which have facilities to accept mass casualties. Those not requiring medical services are ordered into their homes, into sealed rooms, wearing gas masks.
- **Information to the public:** At the Israel Television Authority, there are already 20 videos that provide authoritative information about what to do in the event of a nuclear, biological, or chemical attack. The Ministry of Health will authorize which tape will be shown, depending upon the circumstances. It has been decided to use medical personnel rather than politicians to deliver this information. The objective is to reduce public panic and hysteria, by demonstrating that plans are in place, the situation is under control, and appropriate treatment or vaccination is being made available.
- **Emergency Medical Services:** The country has a unified emergency medical system, the "Magen David Adom." (MDA) There are 11 regional dispatch centers for the whole system, as well as a national dispatch center located in Tel Aviv. MDA has a supply of level 3 protective gear, including boots and gloves, as well as positive pressure devices, with one kit per unit. The strategy used by MDA in a chemical or biological attack is to get people out of the hot zone and care for them once they are removed. This minimizes the need to deploy suits inside the hot zone. Atropine is carried for ALS protocols, and organophosphorous is carried in case of a nerve gas attack. As it pertains to general strategies for preparedness and treatment, there is a distinction made between war and non-war operations. Supplies for nerve gas intervention as well as advanced gear are stored at dispatch stations, for deployment in the event of an incident. All personnel are trained in the use of this equipment and how to protect themselves. There are yearly refresher courses, as well as a separate pre-war refresher course

Plans for a mass decontamination chemical incident

- **Background:** Israel is very concerned about use of chemical and toxicological substances. The method of delivery could include an incident similar to the Japan sarin attack, the use of a missile fired either from Iraq or Palestinian territory, or by commandeering an Israeli truck that is transporting dangerous chemicals within the country for domestic industrial use.
- **Haddasah Hospital, Ein Kerem** I was given a tour of the large scale decontamination system developed at the Jerusalem Hadassah Hospital in Ein Kerem by its deputy director and emergency preparedness leader. Following is a description of Hadassah's mass decontamination procedure.
- **Mass decontamination:** Traffic at the facility generally moves around the large hilltop hospital complex in a counter-clockwise direction. When word reaches the hospital that it will receive victims from a chemical attack, the direction of traffic is reversed so that ambulances can efficiently deliver victims to a large parking lot adjacent to a road that leads up to the emergency department. While waiting for victims to arrive, that parking lot will hastily be cleared of all cars and tents will be immediately erected over a football field size area to accept victims directly from ambulances. In the tent area, health workers wearing full protective gear will meet contaminated victims. Here, victims will receive their first examination and evaluation. If they have not already injected themselves with atropine, they will be injected at this time, or they will be administered anti-biotics or any other appropriate medication. From the parking lot tent site, they will make their way toward a road that leads UP toward the emergency area of the hospital. On both sides of the road, there are already installed about thirty showers. The spigots are not in place, however, all the plumbing is in the ground and ready for immediate operation. Victims, still considered contaminated, will make their way to one of the outside showers, having removed their contaminated clothing at the bottom of the hill. Since it is unknown when an incident could occur – it could be winter - the water flowing from these outside showers is warm. At three minute intervals, a bell peels on the

grounds of the hospital, and all victims must hear two gongs before they end their shower and proceed up the hill, to ensure that they have spent a full six minutes under the soap and water. The contaminated water that rinses off the showers is collected at the bottom of the hill and is kept as hazardous waste material. Once having reached the top of the hill, victims are deemed decontaminated. If they are in good condition and are able to sit on their own, they are triaged to a low treatment area. If they are in moderate condition, they are triaged to the lobby of the current children's hospital. In that lobby, ceiling tiles are already marked to indicate where there are sources for oxygen and electricity built into the ceiling for oxygen and electricity. The lobby will be converted into a treatment site for hundreds of moderately wounded victims on stretchers. The most severely injured victims only will be sent to the existing emergency department for intensive treatment and transfer to other wards of the hospital or for evacuation to other hospitals in the country. Hospitals around the country have similar decontamination procedures for mass casualties.

CONFLICTS AND CONSIDERATIONS FOR ISRAEL

- **Discrepancies in planning:** There is an assumption that everyone is on the same page, with the same set of instructions, and same understanding of lines of decision-making and authority. Israel is far ahead of the United States on this matter. However, it was found that when the same question was asked of different people, the answers differed in important ways. These discrepancies provide a clue that Israeli officials would be wise to rigorously check that everyone involved in preparedness has the same understandings of decision criteria and decision responsibility. This should be accomplished in advance of a major event.
- **Profession and political decision-making:** There are periodic conflicts between people who have knowledge – often based on solid evidence – and people who have authority – who must balance a number of considerations in their thinking. Because of the speculative nature of bioterrorism preparedness and the different assessments of risk

among different people, this tension is to be expected, however it must be carefully managed so that it does not interfere with the efficient management of an incident involving mass casualties.

- **Noncompliance:** Lax administration of guidelines, protocols, and procedures for the re-vaccination campaign could result in unintended transmission of the vaccinia virus, jeopardizing the voluntary willingness of health care workers and first responders to participate in the program, complicating the effort to reach intended numbers of vaccinated people in the workforce, and also hindering the process of generating and collecting a supply of VIG.
- **Differing priorities:** Conflicts occur regarding priorities, since hospital personnel do not place the same importance on preparedness as does the army. Hospital staffs, in general, regard preparedness as a distraction, a pull on their time, and a pull on their resources, even though they understand in very concrete terms its importance. This is aggravated by the fact that at many hospitals, there is frequent response to victims of conventional terrorist incidents, which is very concrete and more tangible than NBC preparedness.
- **The psychology of preparedness:** The level of conflict often is determined by the severity of threat. When the threat is high, the country rallies, and people naturally work together relatively smoothly. When the threat is low, there is a higher likelihood of bickering, at the front lines by workers, and on the policy level about budgets and priorities.
- **Public clarity in a free society:** There is a difference between expertise and authority when it comes to speaking with the media. The media is quick to interview, for example, a microbiologist, who offers definitive information, which contrasts with a government authority. While this process is one element of free discourse in a free and democratic society, it can cause confusion for the general public. What is needed is consensus on information and plans, which is hard to achieve in the public forum. The problem, of course, is that a confused population is a problem in and of itself.

CHRONOLOGY OF MEETINGS AND PARTICIPANTS

Sunday morning, September 29 at Tel Aviv Sourasky Medical Center / Ichilov Hospital

LTC. Gaby Neuman, M.H.A.

Head of Hospital Preparedness for Emergency Scenarios Branch
Home Front Command
Israel Defense Forces

Major Avi Goldberg, M.D.

Hospital Coordinator for Non-Conventional Scenarios
Home Front Command
Israel Defense Forces

David Varsanno, M.D.

Director for Emergency Preparedness
Tel Aviv Sourasky Medical Center / Ichilov Hospital
and Director of Cornea Service, Department of Ophthalmology

Sunday afternoon, September 29 in Herzliya

Boaz Tadmor

Commander (until three weeks prior to meeting)
Home Front Command
Israel Defense Forces

Monday morning, September 30 in Jerusalem Haddassah Ein Kerem Hospital

Professor Shmuel C. Shapira, M.D., M.P.H.

Deputy Director General
Hadassah – Hebrew University Medical Center
Ein Kerem Campus, Jerusalem

Monday afternoon, September 30 at Tel Hashomer IDF base

Itzak Ashkenazi, M.D.

Commander
Medical Services and Supply Center
Tel Hashomer Base
Israel Defense Forces

Tuesday morning, October 1 at Tel Hashomer IDF base

Lt. Col. Itamar Grotto, M.D., M.P.H.
Army Health Branch
Medical Services and Supply Center
Tel Hashomer Base
Israel Defense Forces

Tuesday afternoon, October 1 at Tel Hashomer IDF base

Meir Ben-Ishai
Commander
Head, Operational Planning and Emergency Department
Operations Division
Israel Police, Ramle National Headquarters

Tuesday evening, October 1 in Tel Aviv/Jaffa

Boaz Lev, M.D., M.H.A.
Director General
Ministry of Health
State of Israel

Wednesday morning, October 2 at Tel Hashomer IDF base

Michael Huerta, M.D., M.P.H.
Epidemiology Section Head
Army Health Branch
Israel Defense Forces Medical Corps

Wednesday early afternoon, October 2 at Magen David Adom headquarters, Tel Aviv

Doron Kotler
Director, Operational Division
and
Guy Caspi
EMT-P, M.C.I. Chief Instructor
Magen David Adom (Emergency Medical Services) Headquarters

Wednesday late afternoon, October 2 at the Ministry of Health offices, Tel Aviv

Shmuel Reznikovich

Acting Director
Emergency Division
Ministry of Health
State of Israel

Michael Dor, M.D., M.P.A.

Director of the Community Medicine Department
Ministry of Health
State of Israel

Alex Leventhal, M.D., M.P.H., M.P.A.

Director of Public Health Services
Ministry of Health
State of Israel

Amitai Ziv, M.D.

Deputy Director, Medical Center and Director of Risk Management and Quality Assurance, Medical Education
Chaim Sheba Medical Center, Tel Hashomer

In addition, a room full of health care leaders from civilian and military agencies participated in the meeting, presentations, and discussions.

Thursday morning, October 3 at the Gertner Institute, Tel Hashomer "Sheba" Hospital

Daniel Cohen, M.P.H., Ph.D.

Associate Professor
Department of Epidemiology and Preventive Medicine
Sackler Faculty of Medicine
Tel Aviv University
And Israel Center for Disease Control, Gertner Institute

Zalman Kaufman

Israel Center for Disease Control, Gertner Institute
Ministry of Health
State of Israel

Tamar Peled

Israel Center for Disease Control, Gertner Institute
Ministry of Health
State of Israel

Thursday early afternoon, October 3 in Tel Aviv

Brigadier General Abraham Bachar (res.)
President and CEO
Israteam, Professional Crisis Management

Thursday late afternoon, October 3 at Tel Hashomer IDF base

Brigadier General Giora Martonovits, M.D.
Surgeon General
Israel Defense Forces, Medical Corps

In addition, a room full of leaders of military medical agencies participated in the meeting, presentations, and discussions.