Public Health Chronicles

Today we recall the 1950s with nostalgia. Television sitcoms like *Happy Days* and the music of Sha Na Na are evidence of our positive views of this era. But there was a less appealing side of the period characterized by national insecurity. People wondered whether internal and external threats might strip from them their newfound political and economic power. The atomic bomb was no guarantee of security. The public health community planned for the impossible: “surviving” a nuclear attack on the nation’s cities.

George Moore, a prominent public health official who is now retired, was an eyewitness to the transformative effect of this period on the public health community. This installment of *Public Health Chronicles* focuses on one small part of Dr. Moore’s venerable career: 1957 to 1960, when he was assigned the task of planning civil defense activities. Here, we have a firsthand look at the paradoxical position of public health workers during the Cold War. We learn of plans to evacuate cities despite the haunting prospect that 20-megaton nuclear bombs would incinerate all life within a 20-mile radius; we learn of drills aimed at “allaying panic,” if not survival. We learn that planners believed that well-stocked civil defense shelters might allay some of the destruction wrought by a nuclear attack. Yet, from the perspective of history, we learn the troubling lesson: that public health officials’ actions were shaped by the political climate, thereby playing a role in perpetuating that repressive period. We learn that to apply “rational planning” to an irrational situation may lead to harsh historical judgments. This message is relevant as we confront the issues of our time as well.

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THREATS TO OUR NATION, 1957–1959: A PUBLIC HEALTH RETROSPECTIVE

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I had been serving as Director of the San Juan Basin Health Unit in Durango, Colorado, for three years when, in early 1957, the U.S. Public Health Service called me to active duty to help face a national crisis. The Cold War had intensified the conflict between the two superpowers, the United States and the Soviet Union, and Cuba’s alliance with the Soviet Union made the possibility of an attack from Cuba seem much more likely. As the threat of nuclear war with the Soviet Union grew, I was assigned to the Chicago area to develop medical care plans and programs for five states in the case of a national attack. My base was Battlecreek, Michigan, under the Federal Civil Defense Administration (FCDA).

The political and military tension between the U.S. and the Soviet Union fostered a profound anxiety in our nation during the 1950s. The atomic explosions at Hiroshima and Nagasaki in 1945 showed the world the horrors of nuclear warfare, and the development

of hydrogen bombs in 1952 diminished the hope that a nuclear war could be limited or survivable. As the U.S. and the Soviet Union competed for supremacy in nuclear arms in a strategy that came to be known as Mutual Assured Destruction (MAD), each side developed and stockpiled a vast arsenal of nuclear bombs and the requisite means of launching them. Both sides developed a “second-strike capability,” meaning that each country could launch a devastating attack even after sustaining one; consequently, launching a first strike was considered suicidal and thereby assured the “deterrence” of a first strike from either side. As public awareness of nuclear proliferation and its potential consequences increased, so did the fear that our existence as we knew it could end instantly. People began to understand that even nontarget areas would be exposed to poisonous radioactive fallout in their air and water.

PREPARING CIVILIANS FOR A MILITARY ATTACK

Civil defense refers to organized nonmilitary plans that prepare civilians for a military attack. The emphasis of the FCDA in the 1950s was preparedness. While many questioned whether a nuclear war could be survived, thereby negating plans to prepare for it, we believed

that we would be remiss in our responsibilities to public health if we did not prepare for it.

We began our work with the premise that survival of and recovery from a nuclear attack warranted participation from individuals as well as governmental groups at all levels. In fact, preparedness at the community level involving as many individuals as possible was crucial to our plan. We also believed that a strong, effective, nonmilitary defense would augment national security. Protecting life and property as well as minimizing injury and damage would undoubtedly contribute to a stronger nation and thus ensure victory over the enemy. We attempted to persuade each individual, in addition to groups and government agencies, that he or she had a measure of responsibility to the collective whole. Public as well as private preparedness could mean the difference between national survival and extinction. As Leo A. Hoegh, Director of the Office of Civil and Defense Mobilization (OCDM), stated at the time, "Civil defense is everyone's business." It was this historical context and perspective that fueled my work as Regional Medical Officer for the FCDA in the late 1950s.

The assumption was that enemy bombers and intercontinental ballistic missiles could be launched from Cuba, located just 90 miles from Florida, and from the Soviet Union, in which case they would fly over the Arctic to approach the U.S. from the north. In addition to thermonuclear bombs, an attack might also include attempts to contaminate water and food supplies with chemical and bacteriological agents.

Our team based its civil defense plan on the requirements for meeting an attack in which the maximum size weapons, in this case 20-megaton thermonuclear bombs, would target major cities, heavily populated areas that housed government centers, economic offices, police and fire stations, and hospitals. The blast and heat from these bombs would incinerate the cities and their infrastructures instantly, destroy homes 20 miles from the point of detonation, and ignite secondary fires at distances of 30 to 40 miles. Radioactive fallout, lethal in the first 24 hours, would travel hundreds of miles in prevailing winds. The planning required to prepare for such an attack on the U.S. was, understandably, overwhelming. There seemed to be no hope of survival for people within 20 miles of the blast centers, as fire and radioactivity, complicated by chaos and traffic congestion, left little for which to plan. It did seem possible, however, that in rural areas, towns, and small cities, which were less likely to be targeted, significant portions of the population

could survive. These areas, therefore, became the focus of our survival plans.

Civil Defense Emergency Hospitals

After getting settled in Battlecreek, I contacted the directors of the state health departments in Minnesota, Wisconsin, Illinois, Indiana, and Michigan—my states of contact—about our plans. While federal agencies could assist with planning and coordinating procedures, the city and county health departments would be the requisite agencies responding to any disaster. It would be up to each community to improvise emergency facilities, utilize health personnel, and care for the injured. Knowing beforehand the dangers of radioactive fallout would mitigate the immediate confusion following an attack and allow communities to mobilize resources and reestablish communication expediently yet safely.

As citizens around the country became increasingly anxious about the tense situation between the U.S. and the Soviet Union, we endeavored to allay panic and assure people that everything possible was being done to provide them with a plan for survival. Our objective was to teach people how to respond to a disaster and to use the tools we offered. The most important element was to help people survive the initial attack so that they could begin to help themselves and others recover for the long term.

My initial task was to find suitable locations for positioning 255 Civil Defense Emergency Hospital (CDEH) units in rural areas outside of target cities where most existing hospitals would be destroyed. The CDEH had

A Civil Defense Emergency Hospital unit unpacked and ready to use in a school in Battlecreek, Michigan

as its prototype the 60-bed Mobile Army Surgical Hospital (MASH), but it was adapted to civilian needs. Under the early civil defense strategy, the improvised hospitals were stored in state or federal warehouses. Because the explosive power of the larger thermonuclear weapons would result in more severe destruction than previously anticipated, with larger areas of fallout and widespread interruptions of communication and transportation, we decided that the improvised hospitals needed to be stored away from the target areas and closer to the sites where they would be used. The ideal locations for carefully pre-positioning the CDEH units for storage, agreed to by the five states and the OCDM, were rural schools where the units could be safely stored in their original packing until needed.

Each CDEH unit served as a 200-bed general hospital and included generators, gasoline lanterns, water pumps, and battery-operated surgical lamps in addition to basic medical supplies. The CDEH was packed for long-term storage, although antibiotics, insulin, blood-typing sera, radiographic paper, and other perishable items that required refrigeration needed to be replaced periodically. The generators, water pumps, and other mechanical equipment also required routine maintenance to ensure proper operation. There were no narcotics. We assumed that utilization of the hospitals would be for an indeterminate period and that the eventual care provided must be broad and definitive for the effect of a nuclear blast. Each unit consisted of 367 cases containing the supplies, weighed 24,000 pounds, and could be transported in one moving van. One unit cost the OCDM more than

\$26,000, which is the equivalent of nearly \$200,000 in 2008 U.S. dollars.

Once we began pre-positioning the CDEH units in rural schools, we worked with local health departments to inform the public about what they could expect in the days and weeks following an attack. Central to our initiatives was education about radioactive fallout. Intense ionizing radiation emitted from both the blast and drifting fallout would make immediate rescue operations impractical. Until radiation intensities were known and until radiation decayed and dropped to a "safe reading," the surviving population would need to remain under cover, even if injured. Because most people would have no way of reading radiation levels and communication systems would be down, the OCDM advised the public to build family fallout shelters and to store provisions and water for two weeks. Organized medical care would not be available for hours or even days, so we encouraged every family to have at least one member trained in first aid and home nursing care and offered free instruction in both.

Most of the CDEH units were pre-positioned in their original packing for long-term storage, but we allocated some units for the purpose of training and familiarization of professional and auxiliary personnel. We prepared instruction manuals for converting the unit to an efficient 200-bed hospital and developed additional pamphlets on evacuation shelters, radioactive fallout, organizational procedures for health manpower, nutrition, and food safety. We also published articles describing emergency childbirth and mortuary services.

Although our emphasis was on survival in the event of thermonuclear bombs, we never failed to address the possibility of chemical and biological weapons. We considered the possibility that water and food supplies could be contaminated with chemical and bacteriological agents. Our materials included procedures and supplies for checking water for turbidity, changes in pH, presence of bacteria, and radioactive deposits. We made sure that the local health departments' small laboratories were well equipped to make bacteriologic examinations. We provided fluorescent antibody and phage tests for rapid bacteriological diagnosis as well as kits for chemical warfare sampling. We trained monitoring teams in food and water decontamination.

By 1958, I had positioned more than 145 CDEH units in support areas for a total of 29,000 beds. Within two years, I had positioned another 100 units. We trained more than 9,000 medical personnel and displayed the emergency hospitals to

A simulation of health personnel and patients in a Civil Defense Emergency Hospital set up in a school in Battlecreek, Michigan

278,000 viewers in our attempts to inform communities of the proposed emergency services and supplies. I helped the local health departments and schools find and train workers to unpack the crates and set up the emergency hospitals. These teams were not necessarily the people who would staff the hospital, as we assumed that medical and nursing personnel would be available among the refugees as patients arrived. We emphasized to communities the need for self-help and urged families and neighborhoods to share resources for fallout shelters and provisions needed for the initial two weeks following a nuclear blast. Our plans were specific and comprehensive, and our communication with state and local officials ensured that the printed materials were distributed widely and freely. The state and local health departments cooperated fully in producing exemplary public health plans for their communities in the event of a disaster, including instruction in first aid.

EMERGENCY PREPARATIONS IN CHARLOTTESVILLE, VIRGINIA

Toward the end of 1959, my tour in the Chicago area ended when I was assigned to Charlottesville, Virginia, as Coordinator for Disaster Preparedness. The Department of Health, Education, and Welfare (HEW) Region IV office was relocated to Charlottesville because it was assumed Washington would be a key target city in the event of an attack. If an attack seemed imminent, the U.S. Surgeon General (SG) and his staff would evacuate to Charlottesville, a small city located 150 miles southwest of Washington that was considered safe. An underground shelter, where the SG and his staff would live and work, had been built deep within the new HEW building. The shelter had its own generator and communication equipment and was designed to provide protection from radioactive fallout as well as chemical and biological agents. My job was to prepare the shelter for the SG's arrival and to maintain its equipment and supplies so that he could function efficiently during a national emergency.

Of course, the government assumed that intelligence would alert it to the possibility of an attack several hours before the attack occurred, allowing the SG and his staff the time needed to travel to Charlottesville to begin operations. I knew, however, that if Washington were attacked, it was possible that no one would arrive, and the civil defense operations would be in my hands. It was a daunting thought. Fortunately, Washington was not attacked, and eventually the national emergency with the Soviet Union diminished. Federal funds for civil defense were slashed, but I was able to stay in Charlottesville as Community Health Consultant for

HEW Region IV, and after a year I was promoted to Deputy Regional Medical Director. The shelter remained vacant and my civil defense responsibilities were put on hold until 1969, when Hurricane Camille wreaked havoc on the area.

CIVIL DEFENSE AND PUBLIC HEALTH: PAST AND PRESENT

The U.S. survived the Soviet threat and is the nation today that holds the most power for maintaining world peace. The determined effort this nation made to meet the threat of war in the 1950s, and later during the Cuban Missile Crisis of 1962, was evidence to the world of the country's strength and resolve. Fortunately, the efforts of the civil defense program of the 1950s were not tested and their material success is still a matter of speculation. It is possible, in fact, that they may have actually done little to stave off the effects of multiple nuclear blasts.

The civil defense program was not, however, without merit. Because our efforts focused on nontarget rural areas, the plans for survival were cohesive and manageable for smaller populations. If anyone could survive a nuclear war, it would be in such a rural area, and we made sure people were well-equipped with supplies and information. These people were also prepared to work toward long-term resumption of community life. The large civil defense efforts may have also been a deterrent to a nuclear attack by the Soviet Union, as these efforts were well-publicized. In the event of a "second strike," the nation that survived or did so more effectively would be the winner.

Probably the most important benefit, but also the least tangible one, to our civil defense efforts in the 1950s was its impact on the emotional strength of the communities. The threat of war, particularly one as encompassing as a nuclear war, can render individuals and communities vulnerable and helpless. Our plans actively involved every member of the community to some degree, equipping them with a plan of responsibility that each member could carry out. Even if they did not feel more secure, they felt as though they were contributing to a greater cause and doing everything possible to help themselves and others to survive.

The planning undertaken for surviving a military attack can be readily employed to help people survive a natural disaster. Endowing the public with facts, a plan, and even supplies in a crisis is a vital and continuing role of public health, and this role is exemplified admirably in the 1950s civil defense effort.

While atomic weapons still pose a military threat among nations, terrorism—conducted by groups

without distinct national affiliations—has emerged as the new threat to our collective well-being. The civil defense objectives in the 1950s were designed to help people survive a thermonuclear attack. In 2008, however, the greater risk may be from biological and chemical warfare. Rather than preparing for survival of such attacks, which may be impossible, the best strategy now is to make every effort to prevent them.

Because biological and chemical terrorism has such profound implications for our society, I thought about the connections between my experiences in the 1950s and today's threats. If I were assigned to the Great Lakes region for civil defense in 2008, what would be my focus or line of consultation? Certainly, the emphasis in 2008 should be on prevention rather than survival, with attention paid to vigilant protection of food and water supplies. One initiative would be to ensure that the Great Lakes are protected from contamination, as several states have cities that draw their drinking water from them. First, ships entering the lakes need to be monitored for refrigerated biological agents in their cargo in addition to any radiological activity. Second, some cities use tunnels marked with water-intake cribs on the surface that are quite visible and could be targeted by terrorists on freighters or small boats for contamination with agents, such as chlorine-resistant anthrax spores or cholera vibrios. To prevent such a scenario, the water-intake cribs should be secured with equipment and personnel, and information about their locations should not be readily available online. Chicago has already recognized this danger and has equipped its water-intake cribs with video cameras and other monitoring devices that are connected with the mainland. In addition, security agents should monitor the waterfront and warn vessels on the lake not to approach the cribs under any circumstances. Cities should also have a system in place to halt water flow immediately during a suspected emergency.

Current government agencies are aware of such dangers and have implemented policies to keep the Great Lakes and other water sources safe. The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 addresses national, state, and local preparedness and response planning for a variety of health initiatives, including public health emergencies resulting from bioterrorism, and has authorized \$1.6 billion for grants to assist state and local governments. Further, the Public Health Service, the Centers for Disease Control and Prevention, the Department of Homeland Security, and other agencies recognize the importance of securing water and food supplies from terrorist acts and continue to update policies that address these concerns. Also, the United States and Canada are collaborating to identify and inspect foreign and domestic ships entering the Great Lakes from the St. Lawrence River.

The U.S. government has modified the 1950s civil defense strategy to today's "all-hazards" approach, encompassing preparation for and response to natural, technological, and terrorist emergencies. While all bioterrorist acts cannot be prevented, we need to continue to find ways to mitigate the more serious threats. International alliances, as well as federal, state, and local governments, need to be aware of biological and chemical threats in a variety of forms and be especially vigilant in protecting water and food supplies. While the nature of threats continually poses new challenges, the role of public health officials addressing those threats remains constant.

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