



SUSTAINING SAFE NUCLEAR OPERATIONS IN AN INFLUENZA PANDEMIC

**NRC Pandemic Flu Workshop
April 27, 2006**

Scenario

In August, human-to-human transmission of the H5N1 strain of avian flu was detected in a remote village in an Asian country. The country's government attempted to contain the spread of avian flu by a strict quarantine of the area.

That government, due to concerns about disruptions to commerce and tourism, kept the news of the outbreak secret. Due to the remoteness of the affected area, no one outside that country realized that the human-to-human spread of avian flu had begun.

In September, quarantine of the affected area failed. Outbreaks occurred in other villages and a highly populated city near the affected village. The government expanded the size of the quarantine area, which was noticed by the outside world. When questioned, government spokesmen attributed the travel restrictions to political unrest and denied that avian flu was the cause.

In October, avian flu broke out of the expanded quarantine area and started to spread throughout the country. Attempts to contain the disease had failed.

The government still did not admit that an outbreak of avian flu had occurred, but it was obvious to the rest of the world. Telephone calls, internet messages, and reports from returning travelers made it clear the avian flu was widespread. Still, the country's government had not provided any biological samples or technical information on the influenza strain to other countries. Vaccine experts were concerned about the lack of viral samples for testing.

By early November, the lack of biological samples was no longer a problem. The virus had spread worldwide aided by international flights and had established itself in major cities throughout the world. In the United States outbreaks occurred within days of each other in Los Angeles, San Francisco, Houston, Chicago, Detroit, New York, Washington, and Atlanta.

In the first days of the outbreak, much is not known about this flu. Public health experts could not predict how contagious it would be, how many patients would need hospitalization, and what the mortality rate would be.

Panel 1: What steps should be taken early in a flu pandemic to minimize disruption? (Is sequestering workers a practical or workable approach? For how long would sequestering be necessary? Use of masks and other protective equipment? Use of work station disinfectant and cleaning? Use of telecommuting for critical workers who do not need to be on-site? Should NRC resident inspectors also be sequestered?)

The U. S. government had stockpiled flu vaccines. The stockpile contained flu vaccines that were limited in both quantity and effectiveness. Early indications were that the stockpiled vaccines had little effectiveness against the mutated avian flu. A newly-developed, effective vaccine was available in very limited quantities.

Similarly, the government had stockpiled limited supplies of antivirals, including “tamiflu” and others. But early indications were that the dose required for effective treatment would be much higher than had been expected. Therefore, there was not enough to treat everyone who needed it.

Panel 2: If vaccines and antiviral medicines were available in only very limited supplies, who would need to receive them to assure the continued safe operation of the facility?

It is only weeks after the flu first became widespread in the US, but already there are high rates of absenteeism among workers. Absenteeism rates of 20%, 30%, and 40% are common in many workplaces. In some departments, one or several infected workers spread the flu to other workers with whom they worked in close contact. Absenteeism rates in those departments were twice that for the facility as a whole.

The nation’s electricity supply was becoming increasingly stressed. The influenza hit coal miners especially hard. The close working quarters in mines, the humid atmospheres, and the prevalence of other respiratory conditions were ideal for the spread of the disease. Transportation of coal from mines has also slowed because of absenteeism among railway workers. Most electricity in the US is produced by coal. Coal stockpiles are running low at a number of electricity generating plants. In some sections of the country, rolling blackouts occur due to reduced coal for electric generation. There is concern that the stability of the electric grid will be lost if some nuclear plants shut down. This could result in a complete and prolonged shutdown of the electricity distribution system. Without electricity, the transportation and telecommunications systems would collapse within days.

Panel 3: If plants encountered absenteeism rates of 40% with even higher rates among some worker groups, what relief would they need in terms of operations staffing and work hour restrictions to maintain the safe operation of the facility? (Required numbers of senior reactor operators? Diminished emergency response capabilities? Reduced maintenance and surveillance activities? Exceeding normal work hour limits? Rapidly re-licensing individuals who had been reactor operators?)

At some nuclear power plants that did not sequester workers or where sequestering did not work, a member of the NRC resident inspector staff caught the avian flu and spread it to all the other NRC resident inspector staff at the plant. Thus, no NRC resident staff are available at several plants. NRC inspectors from the regional offices are reluctant to travel to make inspections. A number of plants have high absenteeism and are forced to request regulatory relief to permit continued operation. Specifically, NRC was asked to issue a large number of Notices of Enforcement Discretion (NOEDs).

Panel 4: How would NRC maintain the capability to: Respond to an emergency? Conduct inspections? Respond to requests for regulatory relief? How could NOEDs be issued? Could blanket NOEDs be issued? Can the NRC be assured of safety with significantly reduced plant inspections? How would it be explained to the public?

At several nuclear plants, absenteeism among the plant security staff has so depleted the ranks of available workers that the required security staffing levels cannot be maintained. All of these plants requested assistance from local law enforcement agencies. However, in each case the request was denied because local law enforcement agencies had below normal manpower due to their own absenteeism. Simultaneously, those law enforcement personnel who were available were critically needed to deal with maintaining civil order.

National Guard units were also requested to supplement the security at the nuclear power plants, but the requests were turned down. The Department of Defense determined that it needed to maintain its active duty strength. Illness among active duty personnel created a need to backfill using National Guard troops. Beyond that, there were other needs for dealing with civil unrest. Thus, no National Guard troops could be spared for nuclear power plant security.

Panel 5: Would high absenteeism make it not possible to maintain required security staffing levels? What relief might be requested? What contingency measures are available?

Several states and localities concluded that their ranks of emergency responders were so depleted by illness, that they no longer had sufficient staffing to carry out their emergency plans.

Panel 6: How would a high absenteeism rate among State and local emergency responders impact their capability to respond to an emergency? How would NRC/FEMA view this from a regulatory perspective? What should be done?