Aviation Terrorism & Biological Agents

A preliminary Paper

by

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Aviation Terrorism & Biological Agents

"The problem is serious, and it is getting worse"

Since its early beginnings, the aviation industry has been a target for acts of violence and terrorism. Airplanes and major passenger jets have been attacked on the ground, bombed in mid-air, and seized in flight. One of the earliest mid-air bombings took place on September 9, 1949, in Canada, near the town Sault Au Cochon in the province of Quebec. A bomb exploded in a forward baggage compartment of a Quebec Airways DC-3, and all 23 people aboard died in the subsequent crash.

Although many hijackings have ended peacefully, some commandeered planes have crashed on or off airport premises, and some incidents have ended under violent situation on the tarmac.

Airports have been attacked as well. Passenger terminals have been bombed numerous times. In other cases, terrorists using hand grenades and machine guns have assaulted people inside airport buildings.

Emergency crews and airport employees are the ones to arrive on scene within minutes. They rushed in to help, to evacuate, to rescue survivors and casualties, and extricate and free those trapped under debris or in the line of fire. These tasks are often undertaken in extremely hazardous environments, under the threat of secondary explosive devices, or amidst the collapse of structurally damaged buildings.

Under each of these extraordinary circumstances, emergency services, including police, fire-rescue, EMS-Ambulance, have been the first to respond and have become the last line of defense when all else fails. Sometimes fire crews have been trapped in crossfire, as in the 1985 Egypt Air tragedy at the Malta airport, or in the case of amateurish police actions during the terrorist attack at the Summer Olympics in Munich, Germany. In the late hours of September 5, 1972, attempts by ARFF crews to extinguish the flames and to rescue the Israeli hostages from burning helicopters at Fürstenfeldbrück Airfield were hampered not only by shots fired by Palestinian terrorists, but by poorly trained police officers, as well.

Fresh in our minds is September 11, 2001, when four major passenger jets were hijacked and two of them were deliberately crashed into the towers of the New York World Trade Center. Both 110-story buildings pancaked within an hour after impact, killing more than 2,800 people, including 343 fire personnel plus numerous emergency workers and officers from the New York Police Department and the New York/New Jersey Port Authority. Once again, when the intelligence agencies and aviation security departments failed, emergency services became the last line of defense.

The events of 9-11 have proven the paradigm shift in terrorism, long anticipated by counterterrorism experts. A new breed of fanatics is aiming without mercy for maximum destruction and large numbers of fatalities. For martyrdom and the notion of power, indoctrinated young people are eager to kill themselves and others. This self-destructive behavior can be seen within Al Queda cells, with nearly 100 Palestinian suicide bombers within the last 24

months in Israel, and with Iraqi combatants today. With this new brand of violence in mind, the use of biological agents, particularly the dissemination of contagious diseases, may very well become a grim reality in the near future.

Humankind has been frequently targeted by viruses, bacteria, and other agents, causing epidemics of horrific magnitude. The plague pandemic of 1346-1347 claimed roughly 25 million lives, one-third of Europe's population at the time. The Spanish Influenza, a viral infection that traveled the globe in 1917 and 1918, killed approximately 40 million people worldwide, including 700,000 in the U.S. Between 1900 and 1980, viral Smallpox claimed the lives of 300 million people.

Disease has wiped out entire cultures and changed the course of history. In recent years, many new and devastating infections have emerged, including AIDS, Mad Cow, Ebola, and Hoof and Mouth. Between 1980 and 2000, it is estimated that 13 million people all over the world have died of AIDS/HIV and another 33 million became infected with the HIV virus. In comparison, 0.0003 million people were killed in the 9-11 tragedy.

Today, more than 6 billion (6,000,000,000) people live on Earth. Everyday, up to 2 million people worldwide cross national borders. Each year, the USA alone hosts 47 million visitors, throughout the world, 1.5 billion people are passengers on commercial airplanes (domestic and international), and 3 million tons of cargo are moved by air. We consume raspberries from Guatemala, green onions from Mexico, and chocolate from Germany. In the 19th century, Cholera, the plague and other devastating diseases traveled via steamships to Europe and North America. Today, using the service of an aircraft, any pathogen can be virtually anywhere within 48 hours. Combine the threats of terrorism and biological agents with the vehicle of global air traffic, and you have the recipe for scenarios of unimaginable proportions.

And again, emergency services will be the first to respond to such calamity.

FOOD POISONING

On February 3, 1975, a Japan Airline Boeing 747 traveling from Anchorage, Alaska, landed at Copenhagen Airport in Denmark with more than 350 people aboard. Approximately 200 passengers were suffering from severe pain, nausea, vomiting, and cramps. Fire and EMS provided immediate medical attention and ambulance transport to area hospitals. The incident turned out to be accidental food poisoning, caused by sandwich ham contaminated with Staphylococcus.

In 1988, 21 members of the Minnesota Vikings football team became ill after a charter flight, during which contaminated meat was served.

After initial media reports of the celebrity mishap, hundreds of airline passengers reported sickness. An investigation by Public Health authorities found that at least 35,000 (!) passengers on 219 flights were served contaminated food coming from a single catering facility. One or more low-income food service employees suffering from diarrhea caused the massive, but not fatal, infection.

Although accidental, instances could have been intentional or even an outbreak of a highly contagious disease.

CONTAGIOUS DISEASE

Fortunately, most infectious diseases cannot (i.e., Anthrax) or only infrequently be transmitted from human to human.

There are important exceptions, such as Smallpox, the Plague and the Flu. Smallpox was declared eradicated by the World Health Organization in 1980 and soon after, vaccination programs were abundant worldwide.

The Plague is still an existing threat, exacting a tremendous toll on human life. A Plague epidemic began in mainland China in 1884, spread to Hong Kong, and from there via ship – the primary transportation mode at the time - to major port cities around the world; 26 million people became infected, and 12 million died.

Despite the real threat of biological agents and its devastating consequences, the largest problem today is fear and a potentially terrified population.

The United States has survived and recovered from many epidemic outbreaks in the past. The 1917-1918 flu pandemic claimed an estimated 650,000 lives in the US alone. A potentially massive outbreak of Smallpox occurred in New York City in 1947. After a few dozen patients became ill with Smallpox, more than 6.35 million people were vaccinated within a month, over 5 million of them within the two-week period following the outbreak.

Despite more bureaucracy, resources and the capabilities of industry and government have improved in the last 50 years.

CONTAGIOUS DISEASES AT AIRPORTS

The aviation industry should be considered a key target and preferred vehicle for the intentional or accidental distribution of infectious disease and must be adequately prepared for any eventuality.

In 1976, a woman disembarking an aircraft was transported from Toronto International Airport to a medical center. There it was determined that she had contracted Lassa fever.

In February of 2001, a 32-year-old Congolese woman arrived at the Toronto Airport after a 21-hour flight from Ethiopia, via Rome and Newark. She was very weak and flushed with a high fever, which appeared to be hemorrhagic. She hadn’t eaten during the flight. In the beginning, it was feared that this was the first case of untreatable Ebola virus in North America. Blood tests and laboratory work confirmed a few days later that she had contracted Malaria.

Ebola and Lassa are deadly diseases with a mortality rate of up to 90%. Ebola is, however, only moderately contagious, since the originating virus does not become airborne.

At the end of 1997, the outbreak of the deadly Flu virus H5N1 in Hong Kong, more than 4 million people had traveled through Hong Kong's Kai Tak Airport to destinations all over the world.

It is important to note that it typically takes one to two days for people with infectious diseases to develop symptoms; this is the incubation period. Therefore, a person (deliberately or unknowingly) infected with a highly contagious disease, like Smallpox, the Plague, or a flu strain, could board anywhere in apparently good health, only to exhibit symptoms by the time of disembarking in London or Los Angeles. The infection rate on an airplane itself is tremendous, since everyone aboard breathes the same, often recycled air throughout the entire flight.

In 1977, an airplane was grounded for three hours in Alaska and the nearly 50 passengers stayed on board. One woman had the flu. Within a week, more than 30 passengers came down with the flu, caused by the identical strain. In 1998, a Ukrainian man aboard a Paris-to-New York plane infected 13 fellow passengers with drug-resistant Tuberculosis.

DETECTION

Biological agents (viruses and bacteria) are extremely small, therefore, invisible to the naked eye, odorless, and tasteless. In a terrorist attack, biological agents will most likely be released in secret, with no obvious traces. International airports might be key targets, since infected persons will spread the disease throughout the world within days. Unfortunately, many symptoms are initially unspecific (fever, headache, vomiting, diarrhea, respiratory distress), and do not allow for an immediate distinction to be made between a harmless case of flu or a fatal or contagious infection.

Nevertheless, persons traveling internationally are seen first by Border Patrol, INS and/or Customs officials. These officers must become the first line of defense in detecting infected people. In the space of 24 to 48 hours, the first symptoms of many viral or bacterial diseases emerge. This incubation period is exactly the time a traveler needs to arrive in the US from India, Asia, Africa, etc.

Awareness and training in the recognition of specific symptoms will help Border or Customs officials make the distinction between a tourist suffering from exhaustion after a 16-hour flight from Sweden or a traveler from Asia, who is severely ill and coughing. An example would be the discovery during the interview process and document check by an Immigration officer that the latter individual traveled from Surat, a city in the western part of India, which was the location of a major plague outbreak in September of 1994. The person may be checked by a public health officer or a trained medical worker before being allowed to disembark into the country. In this case, a major outbreak might be prevented.

Once a person infected with a highly contagious disease (i.e., Plague, Lassa Fever, Smallpox) has entered the country, the spread will be far more difficult to track and contain.

The patient might be infected with a non-communicable but potentially fatal illness. In many cases, early detection and treatment will increase survivability dramatically. Most bacterial infections allow treatment with antibiotics, etc., since human cells are different from bacterial cells.

RESPONSE

During a 1998 bioterrorism exercise in New York City, most members of the first emergency units sent to the scene “died.” They lacked sufficient detection and protection equipment. It is for these reasons that all emergency services responding to sick persons on airport premises must always consider the risk of an unknown disease or a contagious outbreak.

Through the use of gloves, mouthpieces, disposable overalls, disinfectants, and biohazard bags, emergency responders should always use protection against exposure. One fire fighter/paramedic who catches a contagious disease can infect an entire firehouse, EMS station, or hospital emergency room.

Thorough washing, the use of disinfectants, and decontamination of equipment and areas must become standard operating procedure, particularly after a response to a potentially infected traveler.

Cooperation and the exchange of information between local public health agencies is as essential as the gathering of research and knowledge from recognized institutions, such as the Centers for Disease Control in Atlanta, Georgia (www.cdc.gov), or the World Health Organization (www.who.int).

Emergency Services will always be the first responders in any crisis situation, including terrorist attacks involving biological agents. Being the last organized line of defense, these services must be state-of-the-art in staffing, training, equipment, and preparedness.

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SARS (Severe Acute Respiratory Syndrome)

In February of 2003 in Asia, a disease emerged that fits the profile described in this paper. SARS begins with a high fever and dry cough that can lead to breathing difficulties and make the use of a respirator necessary. The number of suspected and confirmed cases is still growing. Due to the contagious nature of the disease, most cases have been contracted by health workers and their families, or by others in close contact with those who are ill. The outbreak is still not contained and the World Health Organization (WHO) has issued a rather rare worldwide alert.

As of April 2, 2003, more than 1,600 cases have been reported from 16 countries throughout the entire world and more than 60 deaths have been connected with SARS. This includes the March 29 death of Dr. Carlo Urbani, a veteran expert on communicable diseases, and the first WHO officer to identify the outbreak of SARS in Hanoi, Viet Nam.

The disease-causing virus seems to belong to the paramyxoviridae family, the same family of microbes that causes measles, mumps and canine distemper. Findings by research facilities in Hong Kong that claimed to have isolated and identified the virus have yet to be corroborated by other laboratories. The World Health Organization (WHO) does not recommend any medicine to best treat the illness; patients are to be provided with supportive therapy, as with most diseases caused by a virus.

SARS began in Southern China in November of 2002 and has spread via airplanes to different countries and continents all over the world. The subsequent impact on the aviation industry will be grim. On April 1, 2003, American Airlines flight 128 from Tokyo with 125 passengers and 14 crew members aboard was quarantined on the tarmac of San Jose International Airport in California. Five people (three first-class passengers and two crew members) complained of symptoms like those reported from SARS. Passengers who felt sick were transported to a hospital for chest X-rays and to have their travel histories checked before they being classified as suspected cases of SARS. Others on the plane were given medical advice and allowed to depart. They were, however, told to immediately contact a doctor if they develop any symptoms.

Airports in Canada, Singapore, Hong Kong, and elsewhere have already implemented measures to contain and detect SARS cases. Health professionals meet and actively screen arriving and departing passengers for symptoms and pass out Health Alert Notices. These notices ask passengers to see a physician if they begin to have any symptoms that could be a result of a SARS infection. Public education programs involving posters in all terminals and other strategic locations, inform travelers and airport/airline staff about SARS symptoms (fever, cough, shortness of breath and difficulty breathing); what actions to take if there has been contact with an SARS-infected person in the last 10 days; and about the potential risk of visiting a health facility that has been identified as being affected by SARS.

Thai Airways and other airlines have asked their ground staff to observe passengers at check-in counters and boarding gates. Those with flu-like symptoms will not be allowed to board unless they provide a doctor's letter stating they are fit to travel. In addition, surgical masks are distributed, and passengers and cabin crews are encouraged, though not compelled, to wear them.

The best ways to limit further spread of the outbreak are to take serious precautions when in contact with the public, specifically in airports (i.e., airline personnel, customs & immigration officers, airport screeners), or when treating people (i.e., ambulance personnel, airport clinics, hospitals) suspected of having the illness.

It is widely accepted that the virus outbreak is a natural occurrence, similar to the Spanish influenza pandemic of 1917-1918 or the Hong Kong chicken or bird flu outbreak of 1997. It is extremely remote that the virus was intentionally produced and released in Southern China several months ago.

For more information, including more and detailed description of symptoms and the most recent developments, please visit the following Websites: <www.edmus.info>, <www.cdc.gov> and <www.who.int>.

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