Emergency Preparedness Manual

Introduction

The focus of this manual is individual and family preparedness for the inevitable avian flu pandemic striking the US. Neither the United States government nor private business is adequately prepared for this event. In fact, both the Department of Homeland Security and FEMA have released public statements to this effect, warning us that each family will have to take care of itself. If economic disruptions last for more than a year, as the Congressional Budget Office predicts, many of the items that you want to have every day could become quite scarce and very expensive, even after the pandemic has passed. It is not possible to predict disruptions of public utilities, except to say that when the pandemic does occur, utility disruptions will follow; however, the actual extent of the disruptions could be highly variable. The pandemic might only cause minor inconveniences, such as the temporary rationing of gasoline, or it might cause a complete collapse of the global economy. Your emergency utility planning has to make some fundamental assumptions, the following **minimum** assumptions should be made and basic preparation steps be taken:

- The pandemic will last for a cumulative period of one year to 18 months. It will come in three distinct waves, each may last two months. Possibly 33% or higher of the population will get the flu and probably 20% to 50% or higher, of the infected population may die from it. Absenteeism in the work place will be 50% or higher.

- Each wave will disrupt gasoline production, the power grid, public water supplies, garbage collection and sewage treatment. The pandemic will disrupt natural gas service for six straight months. Many homes and businesses still have pilot lights in their ovens, furnaces, and water heaters; therefore, utility workers must go to every address that is served by a particular local pipeline in order to verify that the gas valve has been turned off at the meter prior to restoring the flow of gas. Some disruptions will occur simultaneously and last for weeks.

- Any one of us may not survive a major pandemic; it is likely that one in forty won't. If you haven't already made preparations and arrangements, now is a good time. If needed, buy more life insurance now since it takes time to get a policy. If nothing happens, you can always cancel it later.

- Get a Pneumovax vaccination. The reason for this is that many experts predict that the most likely time for a pandemic to begin is during the regular flu season.

- The majority of people in your community will be unprepared. For this reason, you should formulate a response when desperate people come to your door in search of food, water, and sundries.

- Keep your car's gas tank as full as possible, you will not be able to buy gas if there are no drivers for the fuel trucks or power for the pumps. Be sure to have cash on hand for making small purchases.

- Anticipate that some civil disturbances will occur in every town. These disturbances could spill into your neighborhood, so you may wish to arm each member of your family. Under normal circumstances, the mere presence of a firearm is enough to dissuade all but the most desperate of criminals. Cover all of your first floor windows with security bars or plywood and post quarantine signs on your doors and walls. Buy the hardware now. If things begin to turn ugly, consider placing an armed guard on the roof and sleeping in shifts.

- Expect disruptions of waste hauling and sewage processing. If your community cannot haul away your garbage, you will have to store it in-definitely, so plan ahead to sort it out and burn what you can. Think about reusing as many items as possible, such as metal cans and plastic bags. If your community cannot process sewage, and your toilets become useless, you will have to dig a latrine and build a privacy screen. Alternately, you could invest in a couple of self-contained camping toilets, which could be used indoors.

- Influenza will affect people in every profession, so you should assume that the police department, the fire department, and the local ambulance service would be understaffed and overwhelmed. Do not count on them to respond to your needs.

Ten Things To Know About Pandemic H5N1 Influenza

1. Pandemic influenza is different from avian influenza.

Avian influenza refers to a large group of different influenza viruses that primarily affect birds. On occasions, these bird viruses can infect other species, including pigs and humans. An influenza pandemic happens when a new subtype emerges that has not previously circulated in humans. For this reason, the avian H5N1 influenza is a strain with pandemic potential, since it could adapt into a strain that is contagious among humans. Once this adaptation occurs, it will no longer be a bird virus--it will be a human influenza virus.

2. Influenza pandemics are recurring events.

An influenza pandemic is a rare but recurrent event. Three pandemics occurred in the previous century: “Spanish influenza” in 1918, “Asian influenza” in 1957, and “Hong Kong influenza” in 1968. The 1918 pandemic killed an estimated 40–50 million people worldwide. That pandemic, which was exceptional, is considered one of the deadliest disease events in human history. Subsequent pandemics were much milder, with an estimated 2 million deaths in 1957 and 1 million deaths in 1968. A pandemic occurs when a new influenza virus emerges and starts spreading as easily as normal influenza – by coughing and sneezing. Because the virus is new, the human immune system will have no pre-existing immunity. This makes it likely that people who contract pandemic influenza will experience more serious disease than that caused by normal influenza.

3. The world may be on the brink of another pandemic.

Health experts have been monitoring an extremely severe influenza virus – the H5N1 strain – for almost ten years. The H5N1 strain first infected humans in Hong Kong in 1997, causing 18 cases, including six deaths. Since mid-2007, this virus has caused the largest and most severe outbreaks in poultry on record. Starting in 2003, infections in people exposed to sick birds were identified. Since then (as of Dec 2007), over 300 human cases have been laboratory confirmed, with outbreaks in 67 countries, and more than 75% of these people have died. Most cases have occurred in previously healthy children and young adults. Once H5N1 evolves to a form as contagious as normal influenza, a pandemic will begin.

4. All countries will be affected.

Once a fully contagious virus emerges, its global spread is considered inevitable. Countries might, through measures such as border closures and travel restrictions, delay arrival of the virus, but cannot stop it. The pandemics of the previous century encircled the globe in 6 to 9 months, even when most international travel was by ship. Given the speed and volume of international air travel today, the virus could spread more rapidly, possibly reaching all continents in less than 3 months.

5. Widespread illness will occur.

Because most people will have no immunity to the pandemic virus, infection and illness rates are expected to be higher than during seasonal epidemics of normal influenza. Current projections for the next pandemic estimate that a substantial percentage of the world’s population will require some form of medical care. Few countries have the staff, facilities, equipment, and hospital beds needed to cope with large numbers of people who suddenly fall ill.

6. Medical supplies will be inadequate.

Supplies of vaccines and antiviral drugs – the two most important medical interventions for reducing illness and deaths during a pandemic – will be inadequate in all countries at the start of a pandemic and for many months thereafter. Inadequate supplies of vaccines are of particular concern, as vaccines are considered the first line of defense for protecting populations. On present trends, many developing countries will have no access to vaccines throughout the duration of a pandemic.

7. Large numbers of deaths will occur.

Historically, the number of deaths during a pandemic has varied greatly. Death rates are largely determined by four factors: the number of people who become infected, the virulence of the virus, the underlying characteristics and vulnerability of affected populations, and the effectiveness of preventive measures.

Accurate predictions of mortality cannot be made before the pandemic virus emerges and begins to spread. All estimates of the number of deaths are purely speculative. WHO has used a relatively conservative estimate – from 2 million to 7.4 million deaths – because it provides a useful and plausible planning target. This estimate is based on the comparatively mild 1957 pandemic. Estimates based on a more virulent virus, closer to the one seen in 1918, have been made and are much higher. However, the 1918 pandemic was considered exceptional.

8. Economic and social disruption will be great.

High rates of illness and worker absenteeism are expected, and these will contribute to social and economic disruption. Past pandemics have spread globally in two and sometimes three waves. Not all parts of the world or of a single country are expected to be severely affected at the same time.

Social and economic disruptions could be temporary, but may be amplified in today's closely interrelated and interdependent systems of trade and commerce. Social disruption may be greatest when rates of absenteeism impair essential services, such as power, transportation, and communications.

9. Every country must be prepared.

WHO has issued a series of recommended strategic actions for responding to the influenza pandemic threat. The actions are designed to provide different layers of defense that reflect the complexity of the evolving situation. Recommended actions are different for the present phase of pandemic alert, the emergence of a pandemic virus, and the declaration of a pandemic and its subsequent international spread.

10. WHO will alert the world when the pandemic threat increases.

WHO works closely with ministries of health and various public health organizations to support countries' surveillance of circulating influenza strains. A sensitive surveillance system that can detect emerging influenza strains is essential for the rapid detection of a pandemic virus. Six distinct phases have been defined to facilitate pandemic preparedness planning, with roles defined for governments, industry, and WHO.

Pandemic Scenario

When the pandemic finally does arrive in the U.S., and people begin to practice social distancing, the lowest-paying industries with the highest public exposure will be shut down, and most of their employees will be laid off. Anyone who is not laid off, and who is still interacting with the general public, will almost certainly be exposed to the flu and they, in turn, will bring the virus home to their families. Ironically, the ones who are laid off will fare no better. They, too, will eventually be exposed to the flu and will bring it home to their families, because at some point in time they will have to leave their apartments in search of food, toiletries, and medicine. When they do, they will encounter infected people on the street, in public transportation, and in the stores. In very short order, these people are going to cause an enormous problem for the health care system, law enforcement, and every level of government.

Whether they are actually sick with the flu or not, it is likely that several million poor people will be flat broke and starving within a week, so they are sure to try every resource possible to get free food. They are going to show up at medical facilities, police stations, government offices, and schools in search of assistance. When they discover that the government is unable to help them, panic will set in and there will be civil disturbances and property crimes (remember New Orleans?).

Some of these people will merely go from door to door begging for handouts, but others will try to steal what they need from wherever they can. To make matters worse, within a couple of weeks, millions of these people will have full-blown cases of the flu, and there will be no safe means of handling the sick and the dying, or their corpses. Surely, any location with low-rent apartment buildings will be hell on Earth.

Although it might seem reasonable to believe that people at higher income levels will fare much better than the poor, which is not necessarily going to be the case. In fact, this same scenario will eventually unfold in every neighborhood in the country, no matter what the socioeconomic status: if you are laid off you will receive no income, but if you go to work you are likely to become sick.

Surely, as the pandemic progresses and the economy worsens, almost every industry will begin layoffs and people will eventually find themselves short of money for their necessities. However, whether or not you have the money or the credit to buy food, toiletries, and medicine is not the issue here. The issue is simply the risk associated with exposure to people who are sick. Since global flu vaccine production capability is only about 500 million courses per year, the first several million will undoubtedly be distributed exclusively to political leaders, security forces, and civilians who hold mission-critical jobs in such fields as medicine, law enforcement, and public utilities. Therefore, you might not be able to vaccinate your family until after the pandemic has passed. To complicate matters, Tamiflu, the drug that is given to patients with severe flu viruses, is limited in supply and is most effective when is administered within 48 hours of the onset of symptoms.

Although in a typical flu patient the very worst symptoms may come and go within a matter of a few days, it could take many weeks for the flu to make its way through an entire community. Flu pandemics typically occur in two or three global waves, stretched out over a year or more. Consequently, people who did not become sick from the first wave would still be at risk of getting the flu during any subsequent waves. It is important to note that a pandemic wave does not have a clearly defined beginning or end.

A wave is merely a period of time during which a whole lot of people become sick, more or less simultaneously. Between waves, however, many people will still be recovering, and more people will become sick. Unfortunately, it is the human interaction between the waves that is largely responsible for generating subsequent waves. As flu cases diminish, people will let down their guard and begin to return to their old routines, even though the flu is still pre-sent in their communities.

This unguarded behavior is what tends to cause the next wave. In addition, the virus may continue to mutate, possibly acquiring the ability to reinfect and kill people who had previously survived it. Since there will be no time period during the pandemic in which it will be completely safe to expose yourself to others, the only sure way to prevent infection will be to isolate your family in your home and wait it out; and, since each wave could easily last two or three months in any given community, with a month-long recovery period after each wave, you might feel compelled to isolate your family for one full year. While you may not find it absolutely necessary to completely withdraw from society for such a long time, you may have to cope with several months of economic disruptions during the pandemic and several more months of disruption afterward. Even conservative pandemic predictions assume that most communities will experience limited availability of commodities and services for at least a couple of weeks. Mainstream predictions, however, assume that there will be varying degrees of nation-wide economic disruption lasting several months which will only become worse as time goes by. These disruptions will be followed by a lingering global recession lasting over a year.

Although it is improbable that any town in the United States would have to cope with a total and simultaneous collapse in the distribution of food, medicine, utilities, and public services for more than a few weeks at a time, it is highly likely that every community will have to adjust to sporadic and repeated disruptions over a period of several months. Some disruptions may be intermittent, but some may linger for quite a while. However, since you can not know in advance which goods or services will be unavailable in your town, or for how long you might have to get by without them, it would be prudent to prepare for complete and total independence and self-sufficiency within your own home for the minimum six-month duration of a global pandemic. Over a period of time, disruptions in supply chains and staffing could make it impossible for utility companies and public services to operate normally.

If you are not prepared for the possibility of disruptions, you could be faced with serious challenges to your present lifestyle. However, rather than speculate about which utilities and services might fail in your community, or in which order they might be disrupted, you should simply anticipate that at some point in time you will lose each and every one of them. Apart from the pressing need to keep your family warm, clean, and well fed, you should also think about how to keep them safe. You need to understand that there will be many millions of unprepared people in thousands of cities and towns all over the country who will suffer from absolute despair at the prospect of starving or freezing to death. Predictably, their despair will eventually give rise to localized store looting. Before long, the looters will undoubtedly seek out affluent neighborhoods, as some of these people see no alternative but to break into homes in search of food and shelter. If this scenario seems a bit far-fetched, perhaps you should remind yourself of just how quickly the situation in New Orleans eroded into anarchy.

The interdependent nature of modern society increases the risk that a systematic failure could occur. This can happen if one or two fundamental economic resources failed resulting in a domino effect precipitating the collapse of other key but dependent commercial and industrial segments of the economy. In other words, a failure of one critical system leads to the failure of another and so on until the entire system collapses. Taken together, these factors could result in the temporary disruption in the delivery of basic supplies and services we all now take for granted. The resulting chaos might be accompanied by a period of civil unrest especially within large urban centers.

Once the pandemic begins there will be no help from any outside source. This is one of the primary warnings to local governments by the US Department of Homeland Security in a report on pandemic planning and preparedness released in May 2006.

The reason for this is that modern modes of human transportation will bring the pandemic viral strain to every region of the developed and undeveloped world at about the same time. Unlike hurricane or earthquake relief efforts, there will be no unaffected states or countries available to send help. In a major pandemic the medical systems of every country will be rapidly stretched to the breaking point, unable to treat even a fraction of their own citizens seriously ill with the virus. There will be no antiviral or vaccines available to most people. Even cold medications, regular antibiotics, and routine medical supplies like syringes and gloves could become scarce.

It is true that patients becoming ill at the very beginning of the first pandemic wave will probably get a hospital bed and medical attention. However, in the event we are confronted with a severe pandemic, it won't be long before all available medical resources are exhausted and the doors to the hospital closed to all new patients. Ironically, some of the features of our modern world economy that provide us with our high standard of living are the same ones that place us at such high risk for collapse during pandemic influenza. Part of our vulnerability stems from the intensely interdependent nature of our economy's infrastructure and the pervasive use of "just in time" inventory methods. Other reasons include the highly specialized nature and productivity of today's work force. If a significant number of workers in the advanced economies are unable to work due to illness or death, this will be severely disruptive to the economic and industrial life of every affected nation.

Workforce Impact

An area of major concern in a pandemic is the almost immediate reduction in the work force. Estimates range from 25% to 40% in all professions. People will stay away from their jobs because they or a family member have flu symptoms, fear of contracting the virus and contaminating their families, a reduction in or failure of public transportation, fear of social unrest due to reduction of law enforcement personnel or to provide childcare because schools have closed. Needless to say, economic and social disruption will be great. In a recent survey in New York City, 52% of health care workers indicated that they would be unwilling to work during a SARS outbreak. Similar numbers might be expected to be unwilling to work during an influenza pandemic. The major concern was personal safety and the safety of family members.

Hospitals And Health Services

Hospitals will be hard hit during a pandemic— not only from the volume of patients, but from staffing shortages, shortages of equipment, supplies and food, and from loss of revenue from various sources. In the United States there are 105,000 mechanical ventilators, 75,000 to 80,000 of which are in use at any given time for everyday medical care. In an influenza pandemic, the United States may need as many as several hundred thousand additional ventilators. Nonessential medical services and surgery may be cancelled. Medical testing for non-influenza conditions may cease. There is no surge capacity in most hospitals so other facilities, from gymnasiums to warehouses to hotels to sports stadiums, would have to be quickly refitted and provided with staffing—but, there would be no excess health-care workers from other regions to come to the rescue—no available hospital beds. Based on county projections, as many as 57,000 additional hospital beds may be needed in King County.

Long Term Care Facilities

Long Term Care Facilities may be especially hard hit due to staffing shortages. Doctors would be in short supply. The condition of non-ambulatory residents could become unstable very quickly without the caregivers who care for them and administer their medications throughout the day. These facilities will also be at high risk for looting because of the medications kept on premises, resident's valuables, the easily accessible food supply and the lack of security. Another problem would be the potential for employees and relatives of residents to introduce the virus while working or visiting loved ones. Strict quarantine protocols would have to be enacted to prevent contamination of the premises and its residents.

Mortality Considerations

Cold storage plants or refrigerated trucks will have to be used as temporary morgues until proper burials or cremation can be provided. Historically, the number of deaths during a pandemic has varied greatly. Death rates are largely determined by four factors: the number of people who become infected, the virulence of the virus, the underlying characteristics and vulnerability of affected populations, and the effectiveness of treatment and preventive measures. Accurate predictions of mortality cannot be made before the pandemic virus emerges and begins to spread.

Education

Formal education at all levels will be interrupted should we experience a pandemic, even if it is only of the moderate variety. This prediction is based upon the DHHS PIP that calls for the practice of *social distancing* as a means to prevent spread of bird flu within the population. Practically speaking, what this public health policy calls for is a closure of all schools and colleges during the pandemic waves. Distancing, to be effective, must be instituted early in each pandemic wave and extended for a week or two after each wave ends. During an 18-month pandemic characterized by 3 waves, the distancing policy will be in effect from between 6 and 9 months. Obviously this policy will disrupt the continuity of education leading to the loss of at least 1 but possibly 2 full semesters of course instruction.

Quarantine

Governments will not hesitate to impose quarantines, including requiring people who may have had exposure to the virus to stay within their homes, denying entry rights to planes, buses, trucks and ships from other areas or countries where the disease is spreading, forcibly isolating people showing suspicious symptoms, closing schools, shutting down public transportation, banning concerts, parades & sporting events, and making businesses liable for enforcing emergency restrictions on their staffs. The public will accept these restrictions as long as the initial panic lasts, but when the strains on the health care system and the economy become too painful, and new infections don't seem to be appearing, people will begin to resist, possibly violently, the government control over their lives. The administration has already announced that the US government will do nothing in response to a bird-flu pandemic by way of providing any help to cities, states, and hospitals. Michael Leavitt, Secretary of Health and Human Services, has been saying this for months. Here is one such statement:

"Any community that fails to prepare [for a pandemic] with the expectation that the federal government will throw them a lifeline is tragically wrong….Every community will have to take care of its own." ("U.S. Health Chief Says Flu Pandemic Would Be Dramatic," Associated Press, Jan. 13, 2006).

Every state, community, hospital and citizen should assume that there would be no help from the federal government in response to what may be the worst disease pandemic in human history.

Police And Fire Services

A reduction in these critical first responders would have an important influence on public safety and the consequences resulting from routine emergency conditions. The police forces stationed around hospitals controlling access to these facilities will also receive a high exposure to airborne and direct contact influenza virus. These conditions are likely to lead to an above average rate of infection in this critical group of public servants, with attendant higher rates of absenteeism and death than other groups of public sector workers during the pandemic waves. As law enforcement departments become understaffed, lack of effective policing could result in lawlessness or in some cases a collapse in civil order.

Electric Power Grid

A severe influenza pandemic could lead to a catastrophic and prolonged failure of the electrical power grid in the US. Most power production in the US is coal fired, and these units depend upon regular delivery of coal by rail. Power industry guidelines call for generating plants to keep a 25-day coal stockpile onsite to ensure uninterrupted power production in the event of a coal supply disruption. The delivery of coal by rail would seen to be one of the weakest links in the health of the US electric power grid. The illness or absence of 30% to 40% of these key workers at any point from the mine to the power plant could bring deliveries to a halt. Nuclear and hydroelectric electrical generating facilities are not dependent on frequent supplies of fuel, and could remain online as long as there were a sufficient number of plant personnel available to operate the plants safely. These workers are highly trained, some require state or federal licensure to perform their duties, and none are easily replaced. With very little reserve coal on hand, this could result in the rapid shutting down of the affected plants. If enough US plants connected to the fragile power grid were affected in this way, brownouts or blackouts in large regions of the US would result.

Distillates, Natural And LP Gas

Gasoline, diesel fuel, and fuel oil are refined from crude oil. These products reach the consumer by flowing through a national pipeline system. Natural gas and LP gas are also transported by pipeline. The pipelines are pressurized using large electric pumps located along the path of the line. Some pumping stations have backup diesel fuel operated generators to support the flow through the line during short-term power outages but the quantity of fuel on hand to operate these systems is limited. Absenteeism or illness of personnel that operate the refineries or the pipelines could result in their dysfunction and an interruption in the flow of fuels. A failure of the electrical power grid would prevent the pipeline companies from moving their products to the marketplace. The local natural gas utility operator may also be adversely affected by illness and absenteeism of their workforce that could affect public safety or the ability to make emergency repairs to the intercity pipeline. No gas utility company can assume the liability of operating an unsafe system. The prospect of proving service to customers in areas where their employees are unable to travel safely to monitor or repair their systems may compelled them to voluntarily interrupt service.

Water, Power And Gas Utilities

These three utilities all require a minimum number of staff to keep them operational. If the technical staff are reduced below that minimum they will fail and the utility will not be available to homes and businesses. If the water supply is interrupted we will dependent on water we have stored for emergencies, the collection of rain water or bottled water distributed by emergency personnel. If water service is interrupted, even briefly, the pressure in the pipes may drop allowing contaminated ground water to enter the pipes through small leaks. Tap water will then need to be purified for drinking (boiling or chemical additives) until pressure is restored and the contamination flushed out. If the heat source in a home is interrupted in winter (the power grid on the west coast is extremely fragile) pipes may freeze and the water supply may be lost. The ability to cook and keep food refrigerated or frozen may be lost. Loss of lighting may make homes and establishments more vulnerable to looting and other crimes. The loss of water or power could be especially devastating to hospitals or long term care facilities. Most water utilities use electric power to pressurize their systems meaning that a failure of the electric power grid will lead to a shutdown of water service. Illness among the water utility staff could also play a role in water service reliability or safety during the pandemic. While many water utilities have backup diesel generators, they typically have only a week or two supply of fuel. There may be periods of rolling electrical brownouts and blackouts, where water service becomes available only intermittently. Therefore, if electricity service becomes unreliable, loss of water service will follow shortly.

Food Production And Security

Shortages would emerge everywhere. At the first sign of a pandemic, there would be a run on indispensable items such as food water and medications. Supermarket shelves would be emptied in days if not hours. With complex distribution systems hampered by staffing shortages and possible quarantines it may be days or weeks before shelves are restocked to even a minimum level. Food processing and distribution is also vulnerable to the illness of manufacturing workers, the electrical grid, truckers and loading dock personnel. Disruption in diesel fuel supplies could also affect transcontinental food shipments by truck. Absenteeism among railroad personal would have an impact on transportation of US imports and exports of agricultural products. Food shortages typically translate into very high prices for what supply is available.

Economics

WHO predicts that stock markets would close once a pandemic was confirmed. Soaring death rates would puncture the housing bubble and create vast housing oversupply. Apartment owners would slash rates to try to replace deceased tenants. Restaurants, theaters, sports venues, vacation & recreation businesses, air lines and any businesses that depend on serving the public in either large or small groups would probably close or be severely affected. Economic contraction during and after a severe pandemic is likely due to a loss of production and consumption of goods and services. Future productive capacity will be impaired due to the death or incapacitation of a portion of the work force at all skill and professional levels. Demand for medical goods and services will rise to an unprecedented level during the pandemic but due to capacity and supply constraints, will not be met. Demand and spending for consumer durables and discretionary items will plummet.

Communications

Local TV and Radio broadcasts will probably cease if there is a regional power failure in your area as will cable TV. Satellite TV may remain active but you will need an alternative source of power to operate your system to view it if your power is be out. Landline telephone systems have an excellent record of remaining operational even during power failures. However, in the event of a widespread prolonged blackout, they will not be able to continue to function for long. Cell phone towers have a small backup power capability but won't last. If the grid fails, all phone service will eventually fail as well. In the event of a power grid failure, the Internet backbone may be functional in some areas if you could access it. Most service providers will not be operating and few server farms will have power. It is likely then to expect most fiber to be dark and remain so along the Internet until the power grid has become secure once more.

Pandemic Survival Plan

Your first priority should be writing a pandemic survival plan. A good plan is one that includes where your family will live during the pandemic, with whom you will partner, and how you will provide for your family's basic needs. Draft this plan as soon as you accept that risk from an influenza pandemic is real and high. When deciding about how much time, effort, and money to commit to pandemic preparedness, consider that your goal is to survive the duration of the pandemic. To insure this survival requires having an appreciation of how the pandemic could affect your family and way of life. With this appreciation comes a better idea of what needs to be prepared and how you can meet basic challenges such as adequate supplies of food, water, and electrical power.

Surviving well during the pandemic doesn't require a permanent or even the best solution, only a solution that is "good enough." Most people will be better off staying in their well-prepared and provisioned home than on the crowded road, in the midst of potential fuel shortages with other pandemic refugees and the criminals seeking to prey on them. If you live in or near a high crime area, you could investigate a safer place to stay during the pandemic in light of certain rising crime rates if police services deteriorate. If relocation is impossible, discuss how you can make your neighborhood safer with family.

Some people may wish to locate a pandemic refuge outside the city. Remember, it is unnecessary to implement a long-lasting solution. All you need is a temporary solution that is good enough to get you through the 18-month pandemic period. If you are an urban resident and plan to leave the city for a retreat in the country, do so early in the pandemic. If your city has the misfortune to be one of the first areas affected by the pandemic, be aware that the federal government's plan relies heavily upon the imposition of quarantines to contain the spread of the pandemic. You might find the road out of town blocked if you wait too long.

Running out of food before you run out of virus

According to the Calhoun Times (Georgia), Dr. Ed Miron told the Calhoun Rotary Club (a civic organization) that he believes the world is on the brink of another pandemic flu. (Dr. Miron practiced medicine for 23 years in Calhoun before joining the Foreign Service in Riyadh, Saudi Arabia.) I think we'd all agree with several points Dr. Miron presented to the Rotary Club, to wit:

- All countries will be affected by a flu pandemic.
- Closing borders would delay, but not stop, the spread of a pandemic.
- You get avian flu from birds, not people. But, "If it mutates, you could have a big problem." (Understatement)
- In a pandemic, we will not have enough medical resources.
- A pandemic flu would also cause great economic and social disruptions as sick workers force businesses to close or curtail operations.
- "Sheltering in place" may be the best strategy for combating pandemic flu.
- The federal government suggests that local health departments be empowered to close schools for up to three months during a pandemic.

Dr. Miron made all those points to the Rotary Club. Then came this: Miron also suggested that every household stockpile a two-week supply of water and non-perishable food. "It's cheap insurance," he said. Do you see the non sequitur?

Given that the risk of infection might necessitate closing schools for as long as three months. Given that "sheltering in place" - staying home, away from other people - may be the best strategy for avoiding infection. Dr. Miron somehow concludes that....You only want enough critical supplies to shelter in place for two weeks. As I've discussed before, I don't understand why community leaders think it makes sense to tell us

- A flu pandemic would last perhaps 18-24 months. There likely would be two or more waves of illness, lasting six to eight weeks each.
- Federal governments and other "outside" entities will be of limited help. Therefore, much will depend upon individuals and localities being self-sufficient.
- We should reduce exposure to the flu by reducing public outings. (The concepts of "sheltering in place" and "social distancing.") The risk of infection might necessitate closing schools for as long as three months. Production and transportation of foodstuffs could be hampered by high employee absenteeism.

....then, given that scenario (based on official U.S. government planning assumptions), they recommend we all get a three-day to two-week stockpile of food and water. Huh??? There's every reason to believe a pandemic will be a drawn-out affair. Why on earth do we want people to prepare like it will be a short-term affair???

As I've stated before, recommending a three-day (or two-week) household stockpile subliminally understates the potential risk and, therefore, encourages people to under-prepare. That is bad. And as I asked before: If you're the head of a household, think about the kids. What do you do for them on the fourth day of your "three-day supply of food and water?" Let's quit giving false assurances and instead get serious about planning and preparation. OK?

Trickle-down Theory: Federal - State - YOU

If you're just beginning to research what bird flu is and what it might mean to you, make sure you quickly understand this point (it will affect much of what you do):

There's a very rational, unavoidable reason for this - namely, the *widespread scope* of a flu pandemic. At a January 12, 2006 meeting in Vermont, U.S. Health and Human Services Secretary Michael Leavitt said:

"It will break out in every community at the same time, and every community will have to take care of its own. Every state, every city, every town, every church, every business, every school and every family needs a plan. That is what will ultimately produce our readiness."

As the U.S. Pandemic Influenza Plan states:

"In the extreme, until a vaccine [is] available in sufficient quantity, ... thousands of communities could be countering influenza simultaneously with little or no assistance from adjacent communities, the state, or the federal government. Preparedness planning for pandemic influenza response must take this into account."

Preparing for a pandemic is such a big task that it has to be divided. Responding to a serious flu pandemic is more than the U.S. government is capable of doing - much more. Quoting again from the U.S. Pandemic Influenza Plan: "The unique characteristics and events of a pandemic will strain local, state, and federal resources." You absolutely MUST understand that.

An oft-repeated admonition

The U.S. federal government has emphatically and repeatedly told the state governments that federal help may be very limited during any pandemic - that the states should plan for as much self-sufficiency as possible. Secretary Leavitt has been going state to state participating in pandemic planning meetings. With great consistency, he's been making it clear that local readiness is the bedrock of pandemic preparedness and that there will be no turning to Uncle Sam should the worst happen.

In Orlando, FL he said:

"Any community that fails to prepare with the [idea] that somehow, in the end, the federal government will be able to rescue them will be tragically wrong."

In South Burlington, VT:

"Any community that fails to prepare with the expectation that the federal government will throw them a lifeline is tragically wrong."

In Las Vegas, NV:

"Any community that fails to prepare because they assume the federal government would come in and rescue is tragically wrong. That is why the president has asked us to mobilize the country."

I could show you a much longer list of state meetings where Secretary Leavitt has said the exact same thing - obviously. (Quite clearly, this is one of the main messages in his "talking points.")

Now, take this one step further. In the event of a significant flu pandemic, the federal government has said what is unquestionably true - it cannot provide wide-scale help to the states. By extension, how much do you think the states can help with your individual needs (especially if the states have limited federal help)? I am not suggesting that the federal government wouldn't help the states or that the states wouldn't help their citizens. Quite to the contrary, I expect all levels of government would be throwing everything they can at this. They would have to.

BIG IMPORTANT POINT: The core pandemic preparation for any household or business falls to that household or business. Any other approach is risky (said kindly) or foolhardy (said bluntly). There's a reason Secretary Leavitt chose the phrase "tragically wrong."

What will the governments do? In a nationwide event like a pandemic, governments must focus on the fundamentals. Things like:

- Healthcare systems
- Distributing influenza medicines (if available)
- Infrastructure operation: utilities, sanitation.
- Preserving peace and safety

You'll notice that doesn't include things like food ... prescription drugs ... diapers and baby food ... contraceptives ... toiletries and other comforts ... batteries or generators ... dog or cat food. Businesses, there's no mention of providing you with parts and ingredients, telecommuting services, or uninterrupted trucking. Nothing about making your workplaces less infectious. If you want those things, you'd better be making plans. What the governments and others are providing are suggestions on what to consider as you draft your household or business pandemic plans. But YOU have to develop those plans and make your preparations. YOU. Your governments will do all they can. But that won't be enough.

The buck stops here. Emergency preparedness always "starts at home" with individual households, businesses, and local communities thinking about how to protect their interests. Due to the scale of a pandemic, the federal government can't help states much. States can't help each other much. States can only do so much for individual citizens. Bottom line: Individuals and businesses need to make their own basic preparations and consider any state or federal help "gravy." This is also why there's an unusually strong appeal for public-private collaboration on pandemic plans. A serious flu pandemic would require the broad pooling of resources to cope. Let's talk heart-to-heart for a moment ... and put this in context. Sooner or later, another flu pandemic will happen. They happen from time to time. Influenza A H5N1 - the bird flu strain that's causing such concern now - may or may not cause the next human flu pandemic. No one knows. We don't know "if" or "when." What the experts do know is that H5N1 is particularly nasty. They don't know how much of that nastiness will remain if H5N1 should cause a human pandemic. But if it should cause a pandemic, the pandemic could be a major one. Major flu pandemics can be absolutely horrible. And have far-reaching impacts on individual lives, communities, countries, businesses, and economies. A pandemic won't last forever. But how well we do during the event and how quickly we recover will be directly influenced by how well we prepare. It's just that simple.

In a pandemic, sickness is just part of the problem

Let me be blunt. If you think pandemic planning is all about how to keep from getting sick, you're missing the point. Well, you're getting part of it; but you're missing two of the three possible dimensions of a pandemic's impact. We don't want to make the mistake of just seeing the direct effects of a pandemic - those which are more readily visible. Rather, we also need to look downstream at the relatively hidden effects - the ripples, the domino effects. Or, if you will, the "complications." So let's think it through, shall we?

Sickness-related issues - like avoiding sickness, treating the sick, and coping with an overloaded health care system - deal with the direct consequences of the pandemic. These are very central concerns and might be dramatically huge in scope, depending upon the exact virulence of the virus. However, especially for a severe pandemic, the indirect consequences might be just as great in their own right (possibly greater). There are two aspects to the indirect consequences - immediate and long-term. The immediate indirect consequences involve the countless societal complications resulting from a very large number of people being sick, caring for the sick, or otherwise being diverted from normal society-supporting activities. In particular, high employee absenteeism could cause a reduction of normal activities in wholesale and retail commerce, public services, businesses, health care, social activities, and other areas. Some of these activities are more critical than others. For example, some of these businesses produce food and medicine. Some of them pick up trash. Some of them sell gasoline. Any curtailments of these, in addition to "social distancing" to avoid sickness, could have serious impacts on daily living.

The long-term indirect consequences might reflect what happens when a society experiences

(1) The loss of a large number of young adults
(2) Major disruptions to normal economic activities, and/or
(3) Altered relationships between groups. (Again, these effects would be an issue within a severe pandemic, especially.) Examples:

- What happens to a company that lost access to critical operations or supplies for an extended period? In the meantime, what if it falls behind in a competitive market?
- What might happen to public health systems?
- What changes might appear in different segments of the insurance industry (life, health, business insurance)? (Post-Hurricane Katrina, look at what's happened to property insurers ... and how they're reacting.)
- What changes might appear in different segments of your industry?

- What would be the financial impact of a lot of people losing some or all of their household income for a few weeks?
- What would happen if a significant percentage of income-earners were no longer paying income taxes or contributing to a federally operated pension plan (e.g., U.S. Social Security system)? A future pandemic might disproportionately strike people in their income-generating years. What if those "government revenue shortfalls" struck suddenly - within a year or two? How would your government respond, fiscally?
- What happens to birth rates? And, in turn, what happens to all of those who provide products and services for children? How might a shift in the demographic mix affect consumer needs and patterns?

Admittedly, there's a ton of speculation in the above comments. But these are not wild imaginings on my part. Similar thoughts have been expressed by professional analysts. The combined direct and indirect impacts are why we must Think It Through. The consequences of a pandemic could be very broad, very deep, and/or very long-lasting. We must plan for this. Unfortunately, I suspect that as we proceed down that chain of possible impacts - from direct effects to immediate indirect effects to long-term indirect effects - fewer people are giving it thought. Which means fewer people are planning for the indirect effects. In any case, pandemic planning is NOT just a matter of not getting sick. You could avoid contracting the new flu, yet die from lack of medicines you take for an existing condition ... or from starvation or dehydration ... or by freezing ... or from some other secondary factor. Or you could suffer financially if you lost your income for a while ... or your retirement fund declined sharply because it holds stock in companies who didn't prepare for a pandemic.

Why all the talk about a "three-day supply?"

Based on past experience, it's widely assumed that a flu pandemic would last perhaps 18-24 months (maybe more, maybe less). Within that period, there likely would be two or more waves of illness, each lasting perhaps six to eight weeks (maybe longer), according to the U.S. Pandemic Influenza Plan. Given that scenario, officials or experts tell us there are several conclusions and planning recommendations:

- Federal governments will be limited in how much local help they can provide. A pandemic is too widespread, affecting too many people. There's no way federal agencies can be everywhere at once. Agreed.
- Therefore, much will depend upon individuals and localities making their own preparations and being self-sufficient. Agreed.
- To reduce your exposure to the flu, you should cut back on your public outings, especially to high-traffic places - like the grocery store. (This is called "social distancing.") Agreed.
- Also, there's always a chance that production and transportation of foodstuffs could be hampered if the companies involved are experiencing high employee absenteeism. (The official U.S. government pandemic plan assumes a 30% infection rate.) Agreed.
- But even if your grocery store is fully stocked, you still want to avoid going there for a few weeks. ("To reduce your exposure to the flu,....") Agreed.
- Therefore, your household should stockpile three days' worth of food and water as part of your pandemic preparations. Huh??? Let me get this straight. In all likelihood, a pandemic would last more than a year, coming in waves lasting several weeks each. I really need to be self-sufficient, plus avoid mixing in public as much as possible. And food deliveries might even be delayed. So I should stockpile three days' worth of food and water??? Yep, that's what they say:

"Families are advised to have at least a three-day supply of food, something residents of hurricane-prone areas already do." Charlotte Observer, 4-9-06, Are we ready for possible pandemic?

The Denver, Colorado water utility is putting emergency kits at water treatment plants and key pumping stations. Along with many other items, **"Each plastic tub holds enough food to feed one or two people for three days."** Rocky Mountain News, 4-17-06, Denver Water readies for flu pandemic

"I think every person should have a little stockpile of food and water, a little bit like the air-raid shelters in the Cold War," said Arthur Caplan, director of the Center for Bioethics at the University of Pennsylvania. **"The No. 1 strategy in protecting yourself from avian flu is to minimize contact with others."** ABC News, 3-12-06, How Will Bird Flu Change Your Life

Look at that last quote again. It's at odds with itself. "The No. 1 strategy" is to "minimize contact with others." But the recommendation is to have a "little stockpile." Do we not realize that a "little stockpile" will only let you minimize contact for a little while?

Matching the supply to the need

You have to match the emergency supply to the type of need you're anticipating. That makes sense, doesn't it? A flu pandemic is a very different kind of problem to plan for. We're not talking about a hurricane, winter storm, or moderate earthquake. Those deliver relatively localized blows, then move on. Afterward, governments and non-government organizations move in with assistance. The National Guard (U.S.) or similar military troops can help. Retailers arrange for special shipments of food, water, ice, and recovery supplies.

If you're anticipating a snowstorm, maybe an extra three-day supply of food and heating is adequate. For a hurricane/typhoon, maybe you stock enough extra food for a week or 10 days. But for a threat with the uniquely high impact of a flu pandemic, why not have enough supplies for two or three months? (The U.S. Department of Health and Human Services recommends having a two-week supply of water and food. Even that sounds inadequate to me.)

And it's not just food and water. What about medicines, infant care items, etc.? You don't have to build a fortress or live hermit-like. But to the greatest extent reasonable, consider having a self-sufficient household for three months. If a pandemic begins and supplies aren't disrupted much, great. You can save your stockpile for the pandemic's second or third wave, which may be worse than the first wave. If the pandemic is mild or doesn't happen in the next few years, no harm is done. Use the stockpile. Or, if you're "rotating stock," as advised, just keep the stockpile perpetually.

Let me tell you something else the idea of "three-day supply" does. It suggests the effects will only be felt for three days. That is false assurance. Or it suggests that someone will begin bringing you food and water after three days. That is false assurance. It subliminally understates the potential risk and, therefore, encourages people to under-prepare. That is bad, bad, bad.

Let's get down to brass tacks. If you're the head of a household, think about the kids. What do you do for them on the fourth day of your "three-day supply of food and water?" Get serious about planning and preparation.

"Stockpiling" is not a dirty word

"Stockpiling" is not a dirty word. Stockpiling is not a bad practice. Sometimes a company buys and stores extra raw materials, parts, or other important supplies which it needs to operate. It may buy far more than it normally needs. It does this because it sees short-term possibilities that (1) demand for its products may spike (so it will suddenly need to produce more than normal) or (2) it may lose access to its supply of those materials (for any number of reasons). So it buys some extra. Stockpiling is a form of insurance. The company is trying to protect itself from either (1) being shut down because it runs out of materials and can't produce at all or (2) missing opportunities because it can't produce enough.

We don't complain when companies buy and store extra supplies like this. We don't think they're unreasonable to do this. We don't think they're greedy. In fact, we think it's pretty smart, pretty good planning. It's prudent.

What if the stockpiles are never needed?

But what if those shifts in demand or supply don't materialize? What does the company do then? Whatever course the future takes, at some point the company will use the stockpiled materials. For perishables or any materials which degrade over time, the company can rotate stock ("first-in, first-out") to reduce or prevent wastage. If it ends up not needing some materials, it probably can sell them to some other company. Yes, there is a "cost of money" involved (since cash is tied up in inventory) and there may be a cost for the storage space (maybe not). The company thinks of these costs as nothing more than the "premium" for this "insurance." It's like the premium paid for fire insurance. (And if some of the stockpile goes to waste, so be it. That was a known risk from the outset. That loss makes the "premium" larger, but acceptable.). In these cases where the extra supplies end up not being needed, we don't necessarily think the companies were foolish to have stockpiled in their best judgment. Just like if their plant doesn't burn down, we don't think the company was foolish to have fire insurance.

Companies are smart to stockpile.

So are hospitals. I've read many reports of hospitals stockpiling extra supplies which would be needed in any pandemic - masks, gowns, gloves, IV supplies, ventilators, etc. They'd be negligent not to, wouldn't they? And, of course, governments at all levels are making similar pandemic preparations.

So why do some people think it's dumb or wrong for an individual or household to store extra supplies in light of a possible flu pandemic? There's a logical disconnect there. Even more vexing, some who would criticize *pandemic-related* stockpiling by individuals do not object to individual stockpiling *in general*. Is it wrong for me to keep extra batteries, a kerosene heater, a first-aid kit, and non-perishable food against the possibility of a power outage from a hurricane or winter storm? "Of course not," they would say.

We *should* prepare, shouldn't we?

But surely these same people agree that we absolutely should PREPARE for a pandemic. However, are we only supposed to prepare in those areas that don't involve buying extra supplies? In other words, we should learn all about hand washing and social distancing. And we should plan how to educate our children at home for a few weeks if schools are closed. And we should set up telecommuting services for our employees. But we are not supposed to buy extra food or hand sanitizers or latex gloves or Tamiflu? Huh?? Stockpiling is part of "preparing," too. Stockpiling can help reduce the flu's spread, too. Am I completely missing something here?

Your government agrees with your common sense

As if common sense didn't tell you that individual stockpiling is advisable, just listen to what your governments are saying. They have been REPEATEDLY saying:

- Because the pandemic will affect so many places at once, federal governments will be limited in how much local help they can provide.
- Pandemic preparation at the local and household level is critical.
- Stockpiling is recommended. (They even provide suggestions on what to stockpile!)

My conclusion: Do you want to lessen the economic and societal "shock to the system" (and shock to *you*) should a pandemic occur? Then stockpile. Start buying what you'll need during a pandemic. Go to your local stores. Look here for other ideas. Start TODAY.

FOOTNOTE #1: The rationale given against individual stockpiling of anything is akin to the rationale given against individual stockpiling of Tamiflu. I think it's a weak rationale; often well-intended, but specious.
FOOTNOTE #2: It probably goes without saying, but encourage others to prepare, too - including stockpiling. If your extended family or the elderly couple next door aren't understanding the risk, consider stockpiling extra to share with them.
FOOTNOTE #3: I haven't addressed the issue of the "haves" and "have nots" among individuals and among the world's countries. For the current discussion, assume everyone in the world has access to needed supplies and has enough income to buy extra supplies. The question is: should they buy those extra supplies? (Or, at the least, should they not be criticized if they do?)

The globalization of commerce - with its long supply chains fed by specialized companies - is a concern for pandemic planning. The concern is that manufacturing which involves many suppliers and transporters is a chain with many links. A "weakest link" in the chain could disrupt product availability. To illustrate, when you stroll through Wal-Mart you brush up against many products which have traveled from far away. Wal-Mart's Global Procurement team has 1,600 employees in 23 countries who source products from more than 70 countries. "I can go a few weeks without buying a curling iron or gas grill." Of course. But what about consumables like razors (from Germany & Brazil) and Kleenex tissues (Canada)? And, far more importantly, what about items in the grocery and pharmacy sections of this Wal-Mart Supercenter? My point, of course, isn't to fret over curling iron availability (for your benefit) or curling iron sales (for the store's benefit). My point is to illustrate how many products (and ingredients/parts/sub-assemblies) involve international trade and international transportation. One thing I noticed in checking products at Wal-Mart was that toiletries and chemical products (e.g., plant fertilizers, pesticides) usually are made in the U.S.A. But are any of the chemicals and ingredients used to make these end-products imported? (Whether imported or not, these ingredients still must be transported, so the supply chain issues remain. But this post deals with international trade; so I wonder how many chemicals are imported?) International trade is a two-way street.

For example, Wal-Mart exports fruit juices from California and New York to Argentina. And it exports Illinois peanuts to Wal-Mart stores in Japan and Korea. A pandemic will impact the production and sale of products, some more critical to daily living than others. Some of these disruptions would have economic impact. Some would have a health care impact. Some would simply have a convenience impact. (Forget cosmetics; what if you couldn't get diapers?).

"Just in time" versus "Just in case"

An article in the Wall Street Journal details concerns about the supply chain for various drugs should a flu pandemic occur.

“In the event of a pandemic flu outbreak, that chain is almost certain to break. Thousands of drug-company workers in the U.S. and elsewhere could be sickened, prompting factories to close. Truck routes could be blocked and borders may be closed, particularly perilous at a time when 80 percent of raw materials for U.S. drugs come from abroad. The likely result: shortages of important medicines -- such as insulin, blood products or the anesthetics used in surgery -- quite apart from any shortages of medicine to treat the flu itself.”

The Journal notes that the widely embraced "just-in-time" business practice -- keeping minimal inventories and delivering products just when needed -- is at odds with the "just in case" rationale behind preparedness planning.

"Most if not all of the medical products or protective-device companies in this country are operating almost at full capacity," says Michael Osterholm, director of the Center for Infectious Disease Research and Policy at the University of Minnesota. **"That's the reality of today's economy: just-in-time delivery with no surge capacity."**

The Journal says the severe acute respiratory syndrome (SARS) outbreak in 2003 in Canada offers a case in point. When SARS hit, the country's largest nurses' union complained about a shortage of N95 masks after much of the existing supply was shipped to Asia, where the disease hit hardest. These masks protect against contracting flu by filtering out at least 95 percent of certain airborne materials during normal breathing. Some nurses in Canada had to use less-protective masks when caring for SARS patients. Others were rationing the supply. The main companies that manufacture the masks - 3M Co. and Kimberly-Clark Corp. - had to scramble to meet the sudden demand because, like many companies; they didn't have an existing stockpile. The outbreak was relatively brief and limited in location - a minor blip compared with what would likely happen with pandemic flu.

Dr. Osterholm has proposed a national initiative to identify critical items and ensure their supply during a pandemic. High on his list of "critical products" are tools for fighting flu itself, such as face masks, ventilators to help the sickest patients survive and syringes to administer a vaccine if one becomes available. Dr. Osterholm, who also is associate director of the Department of Homeland Security's National Center for Food Protection and Defense, says the country also needs reliable supplies of food and water, the ability to keep heat working in northern climates and medical products for non-flu-related illnesses. The U.S. has 105,000 ventilators, most of which at any given time are in use. The federal stockpile of medical products has about 4,500 more. In a pandemic, tens of thousands more would be needed.

You're right, it's not 1918. Is that good or bad?

Can future flu pandemics be as severe as the 1918-19 Spanish Flu pandemic?
Some people say "No, we will never see another 1918" because:

1. Medical knowledge and tools are vastly improved.
2. Crowded, unsanitary conditions in 1918 made it easier for the flu to spread.

While those statements are true on their face and seem reassuring, they overlook three critical factors:

1. The difficulty of ordinary systems to cope with extraordinary demands. Capacities can be exceeded quickly.
2. Many ordinary systems have become far, far more complex and intertwined.
3. Some factors in our modern world would pose new, complicating challenges during a pandemic.

To illustrate, consider:

- Insufficient "surge capacity." We know how to make medicines and medical supplies, but we can't make enough in a reasonable time frame. Vaccines would have to be rationed during a pandemic, for example.
- Supply and distribution chains are global and long.

This post and others that follow discuss the false security offered by many "pandemic naysayers."

From time to time, people talk about how any future pandemic can't be as bad as the 1918-19 "Spanish Flu" pandemic. As one doctor flatly stated, "we will never see another 1918." Is that true? Is it absolutely true or just probably true? What leads to this conclusion? The issue is not whether a pandemic will occur. Health experts are confident pandemics will continue to happen. The question is how severe future pandemics will be. This is a heart-of-the-matter question because it's key in determining what level of pandemic planning and preparation is advisable. And the way this opinion is expressed also can influence how seriously others take the risk. In today's post, I'll give you some examples of these "1918 can't happen" observations, then comment on the reasoning of each. Later, I'll extend this discussion to some broader potential consequences of a severe pandemic.

I'll tell you up front that I'm very concerned about the prospects for the next flu pandemic. I don't think I'm irrational about it. But I am very concerned - and with good cause, I think. Furthermore, my concerns include the real possibility of a 1918-magnitude (severe) pandemic. Those of us who are concerned are not saying a severe pandemic WILL happen. We're saying it CAN happen. The naysayers are saying it WILL NOT happen because it CANNOT happen. (If you could read their minds, do you think the naysayers believe there is absolutely no possibility of a severe pandemic? I think not.

But what they say, often quite pointedly, is that it's not possible. That influences what others think. Looking around at others who share this concern, I don't get the sense that they relish the idea of a pandemic ... or of being the one trying to tell others about the threat. On the other hand, I often feel that those who are loudly "debunking" the warnings about future pandemics take great delight in doing so. To them, every day without a pandemic is simply another day the "flu fearmongers" were wrong. (It's not unlike some who, at the recent end of the relatively quiet Atlantic hurricane season, were saying, "Hey, Mr. Weatherman, where's that 'more active hurricane season' you predicted?")

I think people have concluded wrongly if they think a 1918-severity pandemic can't happen. Perhaps they reached their conclusion too quickly, without fully thinking it through. They looked at the most obvious, top-layer considerations, quickly satisfied themselves that "there's nothing threatening about this," and never looked deeper. (It's shoot-from-the-hip analysis). And, in their minds, if anyone else thinks there IS a serious threat, such people are quickly labeled "bird flu fearmongers." As to other possible causes, sometimes the naysayers' thinking may be constrained by preconceived opinions. They interpret the information so it harmonizes with those opinions.

This is a common phenomenon. It's also possible that some people actually are very concerned about the pandemic threat but say they aren't. (Yes, they'll even say it's not possible to have another 1918-scale pandemic.) There may be different reasons for this, including: (1) Their denial is a coping mechanism against something that truly scares them. (2) They're afraid of scaring others; "we don't want to cause panic." (Risk communications experts like Peter Sandman and Jody Lanard understand these human dynamics far better than I.)

Banking on probabilities and modern medicine

Usually, the pandemic naysayers mistakenly dismiss the pandemic risk by two lines of reasoning:

(1) If asked, "Will a pandemic happen?" they say, "After several years, the much-talked-about pandemic still hasn't happened and very likely won't." In other words, the probabilities are very much in our favor.

We must remember that pandemics are "low probability, high impact" events. They are uncommon and, at any particular time, unlikely. But pandemics do happen from time to time - and when they happen, they're awful. Unfortunately, the pandemic naysayers overly rely on the "low probability" half of the risk assessment. They need to remember that "low probability" does not mean "never happens." Take 1918, for instance. We can't let ourselves be seduced by the comfort of "low probability." If we do, we leave ourselves vulnerable. Because "high impact" means "brace yourselves." If asked, "Assuming we have a flu pandemic, how severe will it be?" they say, "If a pandemic does happen, it can't be nearly as serious as the 1918 pandemic because of the medical resources available today." In other words, modern medicine is very much in our favor. This rationale - other pandemics will happen but "can't be of 1918 severity" - is what we need to talk about in more depth.

As we'll see, the naysayers reach some of their conclusions based on how the world was different in 1918. So it might be useful to remind ourselves of what the world was like in 1918 (a few examples, at least). Back then, movies had no soundtracks (that came in 1926), penicillin had not been discovered (1928), there was no DPT vaccine for diphtheria, pertussis, and tetanus (1923-27), the first influenza vaccine had not been developed (1945), the Great Depression had not occurred (1929), and Charles Lindbergh and Amelia Earhart had not made their non-stop solo flights across the Atlantic Ocean (1927, 1935). There was no television (1923-25), no computers (1930), no FM radio (1933), no stereo records (1933), no ballpoint pen (1938), no helicopter (1939), no calculators (1930s), no Leica cameras (1925), the "planet" Pluto had not been discovered (1930), and U.S. women did not have the right to vote (Nineteenth Amendment, 1920). By comparison, we certainly benefit from much greater scientific and medical knowledge (including veterinary knowledge), many new vaccines and medicines, laboratory resources, faster communications, computing resources, and products such as respirators, latex gloves, and various sanitizers. With that in mind, let's continue ...The second line of reasoning the naysayers offer, noted above, is that we're protected from a severe pandemic by today's medical safety net and healthy living conditions. Specifically, the pandemic doubters say there won't be another 1918-level pandemic because:

- The 1918 flu pandemic occurred "in a different period of medical history" (as another doctor wrote). Today's medical and scientific knowledge and tools supposedly will enable us to fare much better compared to the medical science of 1918. For example: Unlike 1918, today we have flu vaccines to innoculate us against catching the flu. We have antivirals like Tamiflu and Relenza to treat flu (and even prevent flu).
- We have critical care resources for people who have pneumonia and respiratory failure - things like oxygen supplies, ventilators, sterile IV fluids, etc.
- While flu is caused by a virus, the main way the disease kills is by making people vulnerable to secondary bacterial infections. Unlike 1918, today we have antibiotics to treat bacterial infections.
- Flu hits the elderly the hardest, but the elderly today are healthier, stronger, and better nourished than ever before.
- In 1918, the spread of the flu virus was aided by crowded, unsanitary conditions.

There's an extremely fundamental flaw in assuming we can mute a severe pandemic with vaccines, respiratory products, and antibiotics - namely, we don't have enough of those things. A pandemic brings a surge of illness onto a population. We don't have enough "surge capacity" to meet such extraordinary demand. Not enough hospital beds and not enough medicines and medical supplies. Hospital administrators are frank about it; their facilities would be overwhelmed. See comments here and here, for example. In some cases, remedying the shortages experienced during a surge event is not practical. For example, how do you solve the temporary need for more medical staff during a pandemic? (One idea: reactivate retired medical professionals. Would that be enough?) In some cases, time is against us. It would take years to manufacture enough of some products.

Pandemic flu vaccines: a math lesson

To illustrate the quandaries, look at vaccines. A vaccine is probably the best defense against an infectious virus. Each vaccine is developed to match a particular strain of virus. Since flu viruses frequently develop new strains, we have to wait until a human-adapted strain emerges before we know what to target with a vaccine. In other words, a new human flu virus is circulating - a pandemic is underway - before we can begin making a vaccine matched to that virus. Not that it matters. Because we can't make enough anyway.

The Center for Infectious Disease Research & Policy (CIDRAP), citing the World Health Organization and published research, reports that in a "best case scenario" we could produce about 750 million doses of pandemic vaccine per year worldwide. (That assumes a single-dose monovalent vaccine containing 15 micrograms of antigen per dose - the same as for seasonal flu. More about that assumption in a moment.) As it turns out, that production figure is too high, because current egg-based production methods are less efficient for H5N1 flu vaccines. So WHO estimates the maximum capacity is actually more like 500 million. But that's not how many people we could vaccinate. For effective immunization against a new virus, it's widely assumed each person needs two doses instead of one (a primer shot + the regular shot). So 500 million doses would vaccinate 250 million people each year. On top of that, some research indicates that each dose of a pandemic vaccine may need more antigen in order to elicit an adequate immune response - maybe 30 to 90 mcg instead of the standard 15 mcg. Obviously, if each dose uses more of the available antigen, you can't make as many total doses.

So maybe we would only have enough vaccine for 75 million people per year. Whatever the actual production, whether 750 million or 75 million, there are 6.5 billion people. You do the math.

Even if we worked some magic and had 13 billion doses on hand within a few months (two vaccines each for 6.5 billion people), how are we going to administer them? We would need 13 billion syringes, plus enough medical personnel and logistical planning to distribute and administer, let's say, 25,000 shots per MINUTE for a YEAR. (Which actually sounds doable to me. Coming up with enough vaccine and syringes is the problem.) So what do we do? Here are two possibilities:

- Develop some new kind of "universal" flu vaccine which protects against all strains of flu and which is produced using a faster manufacturing process. There are researchers working on that, although they aren't expected to have tested and approved products ready for a few years. (Then you have to manufacture 13 billion doses.)
- Make as much vaccine as you can as fast as you can after the pandemic begins ... and allocate it to priority groups. Those groups might include: health care workers, law enforcement officers, fire fighters, military, truck drivers, utility workers, employees in the food production chain, people in certain age groups or with certain health conditions, and so forth. That makes sense. And that's what we expect will happen. But it means the vast majority of us will not get vaccinated. The World Health Organization and others have expressly stated that.

"Inadequate supplies of vaccines are of particular concern, as vaccines are considered the first line of defense for protecting populations. On present trends, many developing countries will have no access to vaccines throughout the duration of a pandemic." -WHO

With no less an authority than the WHO saying vaccines will be of only partial help during a pandemic, why do the pandemic naysayers try to assure us otherwise? Ironically, with respect to flu vaccines, most of us would be no better off than people living in 1918 (when flu vaccines didn't even exist). It doesn't matter that we know how to make flu vaccines if we can't provide enough vaccine when and where it's needed. Generally speaking, the same supply problem exists with other medical tools mentioned by the pandemic naysayers. We don't have enough oxygen supplies, ventilators, respirators, face masks, etc. For example, Dr. Michael Osterholm of CIDRAP noted in the July/August 2005 issue of Foreign Affairs that of the United States' 105,000 mechanical ventilators, some 100,000 are used during a routine influenza season. "In an influenza pandemic, the United States may need as many as several hundred thousand additional ventilators," Dr. Osterholm says. Antiviral drugs like Tamiflu and Relenza are certainly valuable resources. But, here again, you run into the problem of having adequate supplies during a pandemic surge. Whatever supplies are available probably will be allocated to critical workers and the medically vulnerable. In addition, as I've explained in discussing personal Tamiflu stockpiles, the medicine must be administered quickly, perhaps within 24 hours. Timely distribution of the medicine may be a logistical problem. In sum, for many medical products and treatments, "surge capacity" is the Achilles heel of pandemic response.

(Sidenote: The above vaccine estimates are rough because there are uncertain variables. For instance, how much H5N1 antigen will be needed per dose? Can we stretch the supply of vaccines by adding adjuvants, as some researchers are exploring? There are tradeoffs to consider, also. For example, if all flu vaccine production is shifted to producing a vaccine against a pandemic strain, we won't have vaccine for the non-pandemic strains that cause the usual annual flu. Pandemic scenarios are complicated.)

1918 influenza was a direct killer

What about the statement that the 1918 flu mainly killed by secondary bacterial infections which today can be treated with antibiotics? That's only partially true. According to the World Health Organization, "As expected, many of the deaths in 1918 were from pneumonia caused by secondary bacterial infections. But Spanish flu also caused a form of primary viral pneumonia, with extensive haemorrhaging of the lungs, that could kill the perfectly fit within 48 hours or less." As for today's H5N1 "bird flu" virus, the WHO also notes, "So far, most fatal pneumonia seen in cases of H5N1 infection has resulted from the effects of the virus, and cannot be treated with antibiotics." However, the WHO goes on to say there certainly may be a role for antibiotics in late-onset pneumonia: "...since influenza is often complicated by secondary bacterial infection of the lungs, antibiotics could be life-saving in the case of late-onset pneumonia. WHO regards it as prudent for countries to ensure adequate supplies of antibiotics in advance."

Note that last phrase: "adequate supplies of antibiotics in advance." Even for those cases where antibiotics could help, we again face the question of whether we'd have adequate supplies. Would there be enough antibiotics to treat so many sick people at once?

The bottom line on antibiotics: Yes, I suppose we should stockpile antibiotics; it sounds like we probably would need them. But treating secondary bacterial infections isn't the big worry in my mind. The big worry is this: What if we're faced with a flu virus that is so virulent it can DIRECTLY kill via viral pneumonia (not treatable with antibiotics)? Right now, that's what influenza A (H5N1) does to chickens. As prominent virologist Dr. Robert Webster describes it, "...this is the worst influenza I've ever seen in terms of its killing capacity in animals. You put it into chickens this afternoon, they're all dead tomorrow." (IMPORTANT NOTE: That's the effect from avian/bird strains of H5N1 in birds. We don't know what any future human strain of H5N1 might do. But the fact we're starting with such a virulent strain in birds is not encouraging. And the bird strain has killed more than half of the 250+ people it is known to have infected. Related: I explain the difference between "bird flu in birds" and "bird flu in humans" here.)

Thinking outside the norms; mortality among young adults

Next is the statement that flu hits the elderly the hardest, but the elderly today are healthier, stronger, and better nourished than ever before. The pandemic doubters are thinking out of context. So they miss the point and come up with wrong conclusions. There are probably two instances of this in their comment about the elderly.

First, they seem oblivious (maybe they are) that one of the most noted traits of the 1918 pandemic was the unusual age distribution of its victims. While influenza mortality usually is highest among young children and the elderly, the 1918 flu pandemic had a dramatically high peak of deaths among young adults. For example, the mortality rate for the 20-29 age group in Boston was 175 times greater than normal! I've discussed this in more detail here. Normally, young children and the elderly are more likely to die from the flu. But flu pandemics aren't normal. (Isn't that THE core message in all discussions about pandemics?) Coincidentally, this shift is seen in the current H5N1 cases (although this is not a pandemic). In June, a WHO epidemiological analysis of all H5N1 cases since December 2003 showed the case-fatality rate was highest in persons aged 10 to 39 years. (By the way, some economists wonder what the economic impact would be should a modern pandemic kill a large number of young adults in their productive prime.)

The second "out of context" aspect to the comment about the elderly concerns our tendency to think that developed countries are the norm. To say the elderly are healthier and better nourished today may be true in developed countries. But what about elsewhere? A new report in The Lancet estimates that 96% of the pandemic-related deaths from a 1918-scale pandemic today would take place in the developing world. (I don't know how accurate that is, but it effectively highlights the risk in developing nations.) A related thought: "elderly" is a relative concept. Life expectancy for white males born in the United States back in 1920 was 56 years.

The world's no bigger, but the population has tripled

The pandemic naysayers say the spread of the flu virus in 1918 was aided by crowded, unsanitary conditions. Those of us in the more developed countries may not realize it, but crowded, unsanitary conditions very much exist in many places today. After the 1918 pandemic, the world population tripled in about 75 years. In 1918, there were 1.8 billion people. Today there are 6.5 billion. According to the United Nations, 3.25 billion people live in urban areas. There are more than 425 city urban areas with a population of one million or more. As to sanitation: in 2002, 1.1 billion people lacked access to improved water sources and 2.6 billion people lacked access to improved sanitation, according to WHO.

So we have 6.5 billion people, half living in urban areas, 17% of whom don't have clean water, and 42% don't have sanitary bathroom facilities. That can't aid the spread of a modern flu pandemic? A related claim is sometimes put forth, namely, World War I had brought hunger, poor sanitation, and stress - conditions which fostered the spread of the flu pandemic. This ignores the fact that the vast majority of the world's territories and populations were untouched by the Great War. (The war was fought primarily in Central Europe, western Russia, and the Caucasus, with relatively limited activities in a few other places.)

Misunderstanding the risk of a severe pandemic

So the pandemic naysayers are using doubtful logic. Here are some balancing counterpoints:

- It doesn't matter if we have vaccine technology, oxygen supplies, ventilators, and other modern medical tools, if we can't deliver enough of these when and where needed. Our "surge capacity" is limited.
- Especially virulent new flu viruses like the 1918 H1N1 can kill directly by primary viral pneumonia, not simply by secondary bacterial pneumonia. Antibiotics can't treat viral infections.
- The 1918 H1N1 amazingly killed a very large number of young adults, leaving the elderly relatively unscathed.
- Since 1918, the world population has more than tripled. We still have billions of people living in crowded, unsanitary conditions.

1918 was not necessarily a worst case

As I've reported elsewhere, a leading risk modeling company says its probabilistic model indicates the 1918 Spanish Flu pandemic was not a worst case. In fact, the model developed by Risk Management Solutions suggests there's a one in five chance we could see a pandemic even more severe than 1918. Is the extremely virulent H5N1 bird flu getting a running start on becoming such a human pandemic? No one knows.

Taking a too-simple view of a complicated threat

With respect to the pandemic threat, the naysayers seem to assume that conditions - from medical and scientific to economic and societal conditions - are markedly more advantageous today than in 1918. I'm not sure that's the case (at least, they've failed to persuade me) and I think the situation is far more complicated than these observers understand or admit. In particular, I don't think they appreciate how the "surge capacity" bottleneck will hamper our pandemic response.

I also think we can't afford to make big mistakes in comparing 1918 with today. Our assumptions and assessments frame our pandemic planning and preparation activities (and determine whether we even think we need such preparations). Don't fall into the trap of thinking we're beyond the reach of a severe pandemic. We aren't.

An ordinary world, an extraordinary event

There's an overriding principle which is key to understanding the need for pandemic planning: our ordinary way of life isn't made for such an extraordinary event. Stated differently, in normal circumstances we're geared for a certain level or capacity of activity. Within typical ranges, every day we accomplish a certain amount of work, manufacture a certain amount of product, have a certain number of employees in the office or plant or school or field, interact with a certain number of people, travel from Point A to Point B in a certain amount of time, fly a certain number of planes in and out of a certain airport, and so forth. This is the ordinary flow of daily life.

How well will our structured lives fare in the possible mayhem of a flu pandemic? When the next pandemic "stresses the system," how well will the system respond? That will be determined, in great part, by the degree to which we are flexible and resilient, can cushion ourselves, can adjust our capacity ("surge capacity"), and can reallocate resources in near real-time (days, not weeks).

Basically, the naysayers only talk about the direct medical possibilities. That's as deep as they go. It's logical that they look no further because they don't think there is any "further." Why give any thought to what to do in a flood if you think there's no chance of getting more than three inches of rain (at most)? They stop short because they think there's no real potential for any serious pandemic. But there is. There's even more medical impact than they acknowledge.

In the event of a major flu pandemic, who keeps the kids?

When making contingency plans for a possible major flu pandemic (i.e., a pandemic on the scale of the 1918 Spanish flu), employers need to think about what impact societal changes might have on how we cope. For example, compared with society in 1918, consider today's huge number of single-parent households and two-parent households with working mothers. Also consider: Children usually have a higher infection rate than the general population. They don't practice the level of personal hygiene that adults do. They are in close quarters with other children in school and daycare settings.

In the event of a major flu pandemic, it is VERY possible that schools will be closed - perhaps for an extended period. Many daycare centers and after-school programs possibly would close too - either by government mandate or because the business owners wish to or must (for various reasons). Where do all of these children go - especially if there's only one parent in the household and/or the mother is engaged in work outside the home? Will businesses who don't offer daycare services for employees suddenly decide to make some arrangement for children at their workplace? Are they able to? Are they willing to? What about staffing, facilities, equipment, potential liabilities, etc.?

Is this something businesses can pre-arrange with daycare providers - assuming those providers have enough excess capacity and remained open during a pandemic? By comparison, in continuity plans, businesses sometimes contract with outside service providers - e.g., telecommunications, IT, and real estate management firms - to immediately provide backup resources at alternate locations in the event of a disaster. Is something similar available for child care or other human resource needs during a flu pandemic? As another approach, companies might also consider modifying their leave policies in order to give employees flexibility to care for children in such circumstances.

In an interview on National Public Radio in the United States, Stephen Flynn, author of The Edge of Disaster, says that the United States medical system is unprepared to handle a catastrophic emergency such as a flu pandemic or a major terrorist attack.

The problem, Flynn says, is that hospitals have been trying to cut costs. **"The medical community has been moving in the direction of much of our economy, which is wringing out the extra capacity in order to essentially focus on the bottom line." The efforts to essentially try to keep costs down and to ultimately make ... our medical care system as efficient as possible, stands in opposition to the need to have surge capacity when things go very wrong."**

Also from the NPR interview:

Flynn worries that a medical system that can barely meet day-to-day demands will be caught unprepared by an onslaught of emergency cases. He says that investing in a medical system that can handle a potential surge is **"something that we can't afford not to do. The reason it is inexcusable to be unprepared: we leave the ripple effects free to do their harm**." Natural disasters will happen, and not all terrorist attacks can be prevented. However, what is preventable is the cascading effects that flow from these disasters and attacks. The loss of life and economic fallout that disasters reap will always be magnified by our lack of preparedness to manage the risk actively and to respond effectively when things go wrong. That's the critical question for us all: How do we manage the consequences of a pandemic? How can we mitigate or weaken the impact?

Why waiting till the last minute to prepare is dangerous

There are two problems with waiting until the last minute to prepare for a possible flu pandemic:

- Short notice.
- Limited shelf space.

If you think a pandemic could happen, but you're putting off getting prepared, I assume it's because of just one thing: you expect to have enough time to get ready when the virus, in fact, does emerge. (And you're willing to take a chance on that.) OK. Let's assume it takes two months for a pandemic flu to spread to population centers around the world. You have two months to prepare. You and everyone else who's waited. You and everyone-else-who's-waited will be vying to snap up extra food and household supplies (as long as supplies last). (Those who sense a need for larger supplies probably have already done most of their preparation as you read this.)

As you and everyone-else-who's-waited hit the stores, some people are buying a week's worth, some a month's worth, some more. (I don't want one box of cereal, I want 10 ... not three cans of soup, but 30 ... not one package of diapers, but 15.) With everyone making such large purchases, shelves might empty very quickly, don't you think? Even if stores quickly pull from their stockrooms to refill shelves, there's only so much in the stockrooms. What then? Many will be wanting a personal supply of Tamiflu or other medicines and medical supplies.

Businesses will be wanting to stock up on office supplies and other necessities for running their operations. Plus, getting equipment and services for telecommuting. Plus, stocking up on N95 respirators or surgical face masks, hand sanitizers, disinfectants - anything that might keep employees healthy and willing to come to work. Plus getting anything that might facilitate reconfiguring workplaces and reassigning employees. Of course, in those cities reached by the disease in less than two months, residents will have correspondingly less time to prepare. Why do you want to put yourself in that vulnerable position? Why take that risk? If you do, in fact, think there's a pandemic risk, at least do some baseline preparation now. Don't be caught completely exposed.

Evacuation Kit

In the event you need to evacuate at a moment's notice and take essentials with you, you probably will not have the opportunity to shop or search for the supplies you and your family will need. Every household should assemble a disaster supplies kit and keep it up to date. Disaster supplies kit items should be stored in a portable container(s) near, or as close as possible to, the exit door. Review the contents of your kit at least once per year or as your family needs change. Also, consider having emergency supplies in each vehicle and at your place of employment. The following should be included in your basic disaster supplies kit:

- Three-day supply of nonperishable food and manual can opener.
- Three-day supply of water (one gallon of water per person, per day).
- Portable, battery-powered radio or television, and extra batteries.
- Flashlight and extra batteries. Whistle.
- First aid kit and manual. Sanitation and hygiene items (hand sanitizer, moist towelettes, and toilet paper).
- Matches in waterproof container.
- Extra clothing and blankets.
- Kitchen accessories and cooking utensils.
- Photocopies of identification and credit cards. Cash and coins.
- Special needs items such as prescription medications, eyeglasses, contact lens solution, and hearing aid batteries. Items for infants, such as formula, diapers, bottles, and pacifiers.
- Tools, pet supplies, a map of the local area, and other items to meet your unique family needs.

General Supplies

This is a suggested list of supplies and items to have on hand or you can gather together, of course, you'll add to this list depending on your preferences, but this is a start. You may need to think about a back-up heating source. Get any thing else that you think you might need. Imagine all stores being closed for at least 2 months.

- ► Take an inventory of the non-grocery commodity items in your kitchen, bathroom, laundry room, and garage. Determine how much of each item your family needs per month or per year. Based upon the estimated consumption rates, establish a stocking level of your essential and desirable household supplies. Be sure it is adequate to see your family through several months of economic disruption.
- ► Acquire both over-the-counter and prescription medications for as many common medical conditions as possible, even if you are perfectly healthy right now.
- ► Acquire personal protection equipment, such as respirators, disposable gloves, sanitation supplies, and any items that will help you care for someone with the flu.
- ► Assume that you will not leave your home to go shopping for several months. Even if you choose to shop, assume that a pandemic will make everything scarce.
- ► Hospitals are not prepared to care for the vast numbers of people who will become sick, so you must accept the fact that it will be completely up to you to provide medical care in your home for every family member who becomes sick. Assume that you will not have access to a medical care facility for several months.

Suggested List Of Supplies to Stockpile

Cleaning & Laundry		
Clorox, plain kind (lots)	Dishwashing detergent	Small scrubber
Paper Towels	Clothespins	Clothes line rope
Mop bucket & wringer	Clothes detergent	Plunger (for laundry)
Plastic barrel (laundry)	Liquid Plumber (drains)	
Food & Water		
Non-electric can opener	Disposable plates	Hot and cold cups
Plastic utensils	Hand beater, manual	Coffee pot, non-electric
Pots, pans and lids	Dutch oven	Aluminum foil & plastic wrap
Camp stove & fuel	Water containers	Water purification filter
Ice chests	Baby food	Multi vitamins
Light, Heat & Fuel		
Candles	Matches	Long-snout type lighters
Oil lamps & fuel	Firewood	Portable heater & fuel
Charcoal & fluid	Flashlights & spare bulbs	Chemical light sticks
Firestarter flint & steel	Gasoline & kerosene containers	Sterno fuel
Tools		
Duct tape (several rolls)	Sheet plastic (roll)	Scissors
Rope	Work gloves	Shovel / folding shovel
Drill (manual) & screws	Automotive tools	Ax or hatchet
Hammer & nails	Hand saw	Crowbar
Leatherman multi tool	Hunting knife	Goggles
Personal Hygiene		
Deodorant	Skin Lotions	Birth control
Shoe covers	Towels & washcloths	Soap (bar or liquid)
Extra eye glasses	Nailbrush	No water wipes
Sunscreen / sun block	Shaving cream	Nail clippers
Toothpaste	Mouthwash	Dental floss
Tampons	Shampoo	Vitamin C, Ester-C
Denture adhesive	Eye glass repair kit	Contact lens solution
No-rinse face wash	Tweezers	Toilet paper (lots of it)
Tissues	Tooth numbing jel	Paper Towels
Utility Items		
Games, playing cards	Sunglasses	Plastic tarps
Hobby supplies	Charcoal grill	Crank operated radio
Needle & thread	Compass	5 gal plastic buckets
Pet food	Paper and pen	Camping toilet
Waterproof marker	Magnifier	Non-electric clock
Bug repellent, skin type	Hand mirror	Metal can to burn trash
Baby diapers	Printer paper	Plastic bags (multi sizes)
Cell phone batteries	Ink cartridges	Ziploc bags
AM/FM/SW radio	Extension cords	Sleeping bags
Cell phone charger	Inventory of valuables	Solar panels
Batteries (Lots of them)	Fishing equipment	Steel wool
TV (battery)	Emergency flares	Paper bags
Thermos	Wax paper	Vegetable seeds
Pump pot (insulated)	Glass cleaner	Seed sprouting kit
CB / SW radio	Cell phone	Sewing supplies
Solar battery charger	Walkie talkies	
House Security		
2×4 wood (windows)	Light bulbs	Wasp spray
Plywood (windows)	Good locks on doors	Black paint (windows)
Fire extinguisher (ABC)	Good locks on windows	Solar shower
Firearms and ammo	Hose adapter for sink	Portable toilet
Copies financial papers	Water hose	Smoke detector
Automotive		**Documents**
Fuses & bulbs	Extra set of car keys	Photocopies of important documents such as birth certificates, drivers' licenses and so on for the entire family. Put in a waterproof bag.
Wiper & Brake fluid	Good spare tire & jack	
Maps or atlas	Tire pump (manual)	
Oil & transmission fluid	Full tank of gas (always)	
Emergency kit & flares		
5 gal container of gas		

Medical Supplies

Medical Items		
Spray bottles	Rubbing alcohol	Nasal spray
Clorox, plain kind	Advil or Motrin	Aprons
N95 face masks	Plastic barrel with lid	Alcohol hand cleaner
Surgical type gloves	Aspirin	Tylenol
Pedialyte	Hydrogen peroxide	Cotton balls
Q-tips	Benedryl	Milk of magnesia
Goggles	Antibacterial spray	Pepto-Bismol
Nyquil	First aid book	Prescription medication
Thermometer	Vaseline	Theraflu drink mix
Allergy meds	Soothe eye drops	Plastic sheet for bed
Gowns	Bed pan	Fan and tape
Hand Basin	Tums	Anti itch cream
Triple antibiotic cream	Scrub brushes	Ossillococcinum
Zicam	Sambucol	Sponges
Plastic wrap	Toilet cleaner	Clorox wipes
Shoe covers	CPR course	First aid course
Medical first aid kit	Vaccinations	Medical checkup
Dental work	Nicotine gum	Paper cups
Medical Items		
Hot & cold packs	Sterile 4" adhesive bandages	Sterile 4" x 4" gauze pads
Band aids, various sizes	Sterile 2” x 2” gauze pads	Adhesive tape, various sizes
4" rolled gauze bandages	Butterfly bandages	Disposable & heavy duty gloves
Large triangular bandages	Sanitary pads	Hydrogen peroxide
Alcohol	Betadine, several large bottles	Syringe to irrigate wounds
Antibiotic ointment	Moistened towelettes	Splinting materials
Scissors and tweezers	Anti-diarrhea medication	Magnifying glass
Aspirin & non-aspirin pain reliever	Antacid	CPR mask
Decongestant	Eye wash	Ace bandages
Hand moisturizer	Safety pins	Safety razor
Plastic bags	Instant hot & cold packs	Eye Wash 4oz
1"x3" Woven (Swift Brand)	Character Strips 3/4"x3"	Fingertip "8" Woven (Swift Brand)
3" Cotton Tip Applicators Sterile	Co-Flex 3"	First Aid Book
3"x4" Non-Ad Pad	Cold Pack	Flexicon 2"
4x4 Gauze	Cough Drops Menthol Eucalyptus	Flexicon 4"
7/8" Plastic Spot (Swift Brand)	Dermicel Tape 1"	Flexicon 6"
Sun Block SPF 30	Dermicel Tape 2"	Paper Cups
Acetaminophen	Dramamine	Gloves Nitrile (Blue) Large PR's
Benadryl Caps 25mg	Ear Plugs Max (NRR 33) Pr's	Golf Towels ultra Compressed
Betadine Pads	Elastic Bandage 2"	Hydrocortisone 1% Foil Pack
Betadine Solution 1/2oz	Elastic Bandage 4"	Imodium AD
Blistex	Elastic Bandage 6"	Kleenex
Buffered Aspirin	Electrolyte Tablets	Knuckle Woven (Swift Brand)
Ibuprofen) 200mg	Nu-Tears 1/2oz	Moleskin 4"x12"
Mosquito Hemostat 4"	Pepto Bismol Tablets	Liquid Children's Tylenol 2oz
Natrapel (deet free repellent) 2oz	Porous Cloth Tape 1"	Mastisol
Porous Cloth Tape	Burn Away	Vionex No Rinse Jell 4oz
Safety Pins Assorted	Tongue Blade (non-sterile) 3/4"	Wash Up Towelettes
Sam Splint	Trash Bags 20qt	Zip Lock Bags 12" x 15"
Scalpel Blade #10	Triangle Bandage	Steri-strips 1/4x3 (Envelope of 3)
Small EMT Shears	Urine/puke bag (#1 Travel John)	Steri-strips 1/8x3 (Envelope of 5)
Steri-strips 1/4x1-1/2	Vacuum Packed Wash Cloths	Sterile Needles 18guage

Last Minute Preparations

This list is based upon what you should attempt to accomplish in the VERY unfortunate "last-minute" trips – when everyone else will be "panic shopping" beside you after WHO declares a pandemic is in progress. Please sit down for 5 minutes and make a plan of action. You will not be able to get everything you need for a 3-month quarantine in one shopping trip. Focus your energy on grabbing foods that provide the most nutrition. Pull the children out of school immediately and start the family plan into action. Cell phones may come in handy - communication would be handy as you pick everything up around the stores and around town.

If you own multiple cars, have a family member drive each car (single-file, caravan style) to the same store. Each of you takes a cart and a portion of this list. Meet back at the checkout and load all of the cars. If the store has run out of an item you need, move on. It will not be the end of the world. Do not waste time in this situation. Go to another store until you get it.

You will need cash! Some stores may no longer accept credit or debit in this situation. In others, the lines may be down. Don't risk your survival because you do not have adequate cash on hand. And be prepared to spend considerably more than you would at any other grocery store run. If the electricity is down, the ATM's will be down, and ATM's are manually filled with money by workers.

From home: call to renew your prescriptions for pick-up. Call doctor to arrange for more.

Last Minute Supplies

Supplies To Buy From Local Stores		
N95 masks	Disposable gloves (latex or vinyl)	Tylenol / acetaminophen, 3 bottles
Aspirin/ ibuprofen, 3 bottles	Band-Aids	Prescription refills
Fill up on tank of gas	Extra gas in portable containers	Soap, shampoo and conditioner
Toothpaste, mouthwash, dental floss	Water purification tablets	Vitamin C and multivitamins
Omega-3, antioxidants	Meds for diarrhea	Candles and/or tea lights
Battery-operated radio	Tools; rope; tape	8 packages of 12-rolls toilet paper
5 boxes Kleenex	2 boxes matches; 10 lighters	Batteries (at least 10 packs)
Tampons if needed	Bag onions	Bag / boxes of mixed nuts
As many bags rice you can afford	Box sugar (biggest you can find)	Boxes macaroni and cheese
20 cans beans, Bags dried beans	Chocolate	Coffee, teas
10 cans vegetables	20 cans tuna/chicken/fish	20 bags pasta
3 jars jam, 5 jars peanut butter	10 jars pasta sauce	30–60 jugs water
Frozen meat	5 large bottles vegetable oil	2 big bags potatoes
Bleach	Disinfectant hand sanitizer	Liquid dish detergent
Big jug white vinegar	Energy bars; protein drinks	Paper plates, plastic utensils
Paper towels	20 cans tomato paste	Spices you use
Bags of oatmeal	Fresh fruit and veggies	Box salt (biggest you can find)
Soups that don't need water	Flashlights (3)	Bottles Gatorade
Garbage bags	Propane cooking stove	Propane fuel, fire starters
Q-tips, rubbing alcohol	Ready-made first-aid kit	Shaving cream and razors
Laundry soap	Extra manual can-opener	Extra scissors
3 loaves bread	Boxes powdered milk	10 bars/tubs butter
10 bricks cheese	Boxes crackers	Bag cookies