

**PANDEMIC  
INFLUENZA**

**INDIVIDUAL & FAMILY PLANNING**

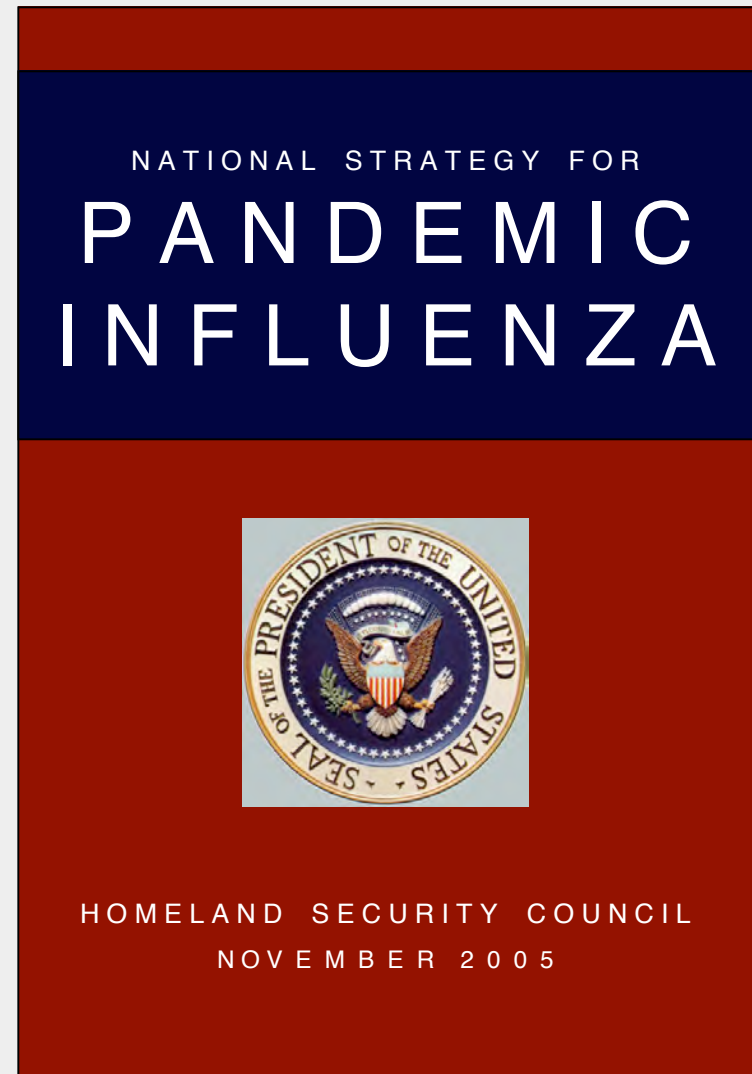
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JUNE 2006

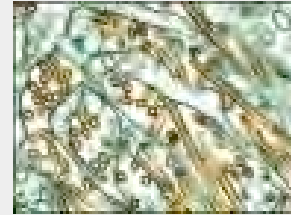
# MULTI-FACETED ISSUE

- **The Virus Itself**
- **Political Fallout**
- **Economic Impact**
- **Individual Responsibilities**



# THE PERFECT STORM

- We have evolved into a dependent society
- Our economy is a highly efficient “*just-in-time*” infrastructure
- Governments and individuals no longer stockpile food and medicine
- We have successfully suppressed pandemics for 40+ years
- The world’s population has quadrupled in last 100 yrs (6.5 billion)



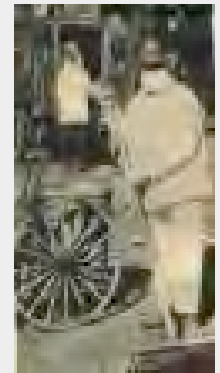
# FLU STRAINS

- **Three Types A, B, and C**
  - Avian is type A
- **Classed by hemagglutinin (H) and neuraminidase (N) surface proteins**
  - Only 6-H and 3-N's infect humans
  - 1918 Spanish Flu was H1N1
  - Avian Flu is H5N1
- **Over 2,000 distinct avian viruses**
  - Two cause the cytokine storm - H1N1 and H5N1

Influenza Classes	
<b>H1</b>	<b>N1</b>
<b>H2</b>	<b>N2</b>
<b>H3</b>	N3
H4	N4
<b>H5</b>	N5
H6	N6
<b>H7</b>	<b>N7</b>
H8	N9
<b>H9</b>	
H10	
H11	
H12	
H13	
H14	
H15	
H16	

# CYTOKINE STORM

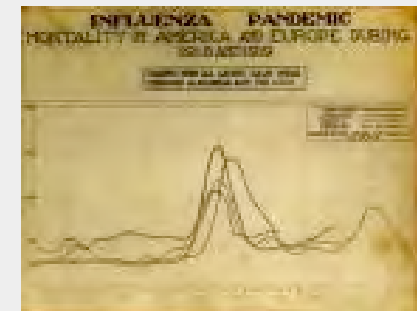
- The 1918 Pandemic was so deadly because of the body's response
- Majority who died were healthy young adults
  - They had the strongest immune systems
  - Spanish Flu killed more soldiers in World War I than did guns
- Spanish Flu **versus** Avian Flu
  - Animals given very low doses of the Spanish Flu all die within 24 hours (unprecedented in flu strains)
  - At **much** lower doses, the Avian Flu is more fatal
  - **H5N1 is the most powerful flu virus in modern history**



# FLU ATTENUATION

- **1918 Pandemic came in two waves**
  - 50% of the world's population was infected
  - 5% of those infected died (2.5% of the world's population)
  - 500,000+ Americans died, (20-50 million world wide)
- **The mortality rate for Avian Flu is 55%**
- **Flu virus's usually attenuate – weaken as they spread**
  - Attenuations of even a few percent are huge
- **By the time H5N1 mutates to a form that spreads easily from human to human it may attenuate significantly ...or maybe not**

In Indonesia  
one person died  
of H5N1 every  
2\_ days in the  
month of May



# CAUSE AND EFFECT

**“ Much of the human toll in death, hysteria, and anarchy would be exacted not by infection but by the wide-scale breakdown of global supply chains and just-in-time delivery systems for vital goods and services.”**

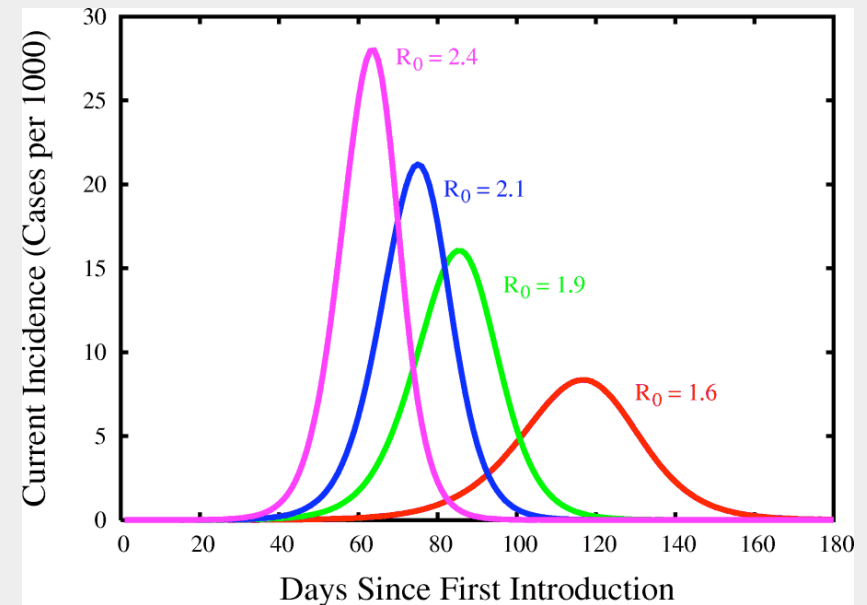
Dr. M. Osterholm, U. of MN Center for Infectious Disease Research and Policy



# CAN IT BE CONTROLLED?

## Pandemic Parameters

- Attack rate (estimated at 30%)
- Reproductive rate ( $R_0$ )
- Mortality rate
- Morbidity rate
- Attenuation rate

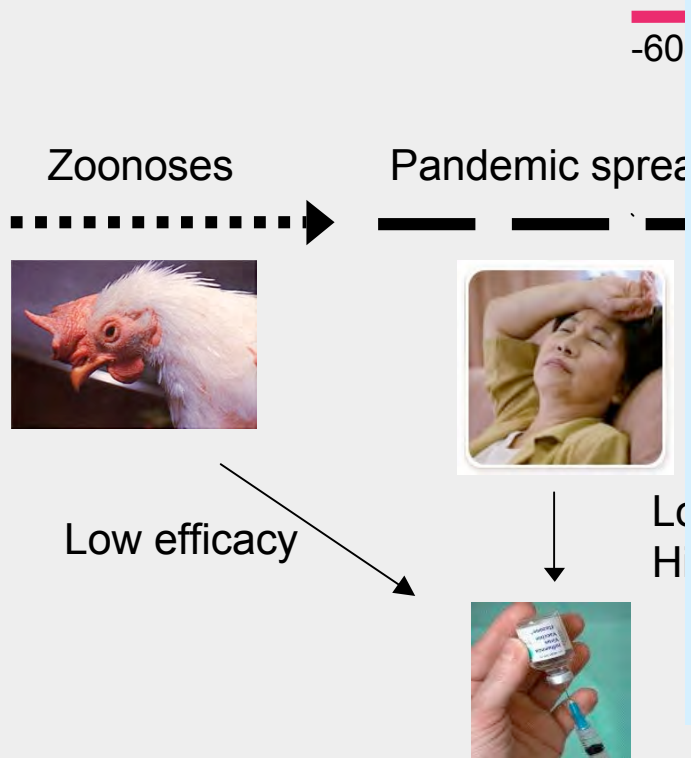


For  $R_0 \leq 1.6$ , the virus spread could be controlled if a pandemic vaccine could be distributed nationally at rate of 10 million doses per week for 25 weeks initiated within 2 weeks of pandemic alert.

# VACCINATION OPTION

- Production capacity 4/10/20M doses per week
- Dose (and efficacy) of vaccine - 1 vs. 2 doses
- Timing of vaccination - relative to start of pandemic

## VACCINE DISTRIBUTION STRATEGY



- Random distribution to the entire (eligible) population?
- Distribute (preferentially) to children first, then any remaining supply to the adult population?
- Targeted Antiviral Prophylaxis (TAP)

### Sophie's Choice . . .

- Which adults on what basis?
- Who decides who is eligible?

# WHAT YOU CAN EXPECT

- **Worst-case (Government planning):**
  - ➔ **Crisis lasts 18 months**
  - ➔ **Three waves**
  - ➔ **1.9 million Americans dead (>100 million worldwide)**
- **Food shortages**
- **Disruption of services - heating fuel, water, food, medicine, and the internet**
- **Sick and dying family members treated at home**
- **You will be expected to help in your community**

# WHAT YOU CAN EXPECT

It may take 6 months to develop a vaccine once the pandemic begins - even longer to manufacture and distribute it

National stockpile has 5.1 million courses of Tamiflu

- Goal is 51 million by late 2008
- There are >330 million U.S. and NonU.S. people in America

Officials reluctant to confront the “Sophie's Choice” of who gets the limited courses of vaccine and medicine

“States are responsible for the management of the antiviral drugs they receive from the SNS” HHS

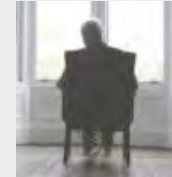


300mil vaccine doses require 900mil eggs but flocks will be culled



# WHAT YOU CAN DO

- **Social Distancing - the only mitigation strategy**
  - Work from home – if you work at all
  - Keep kids home



- **Stockpile**
  - Food
  - Medication
  - Water
  - Equipment



# WHOSE YOUR CALVARY?

## **Federal priorities are**

- **Continuity of government**
- **Keeping internet up**
- **Squelching insurrection**

**... YOU ARE YOUR CALVARY!**

**“Communities that expect the federal government can come to the rescue will be tragically wrong”**

National Strategy for Pandemic Influenza

# WHOSE YOUR CALVARY?

## **State and Local priorities are**

- **Continuity of government** (police, fire, utilities)
- **Managing health care** (mass care pods)
- **Managing food and meds distribution** (if possible)
- **Managing funeral services** (if necessary)

**Every county is required to submit a Pandemic Plan to the state...likely through your Local Emergency Planning Committee (LEPC)**

**... YOU ARE YOUR CALVARY!**

# PLANING ASSUMPTIONS

- **50% or more of those who become ill will seek medical care**
- **Number of hospitalizations and deaths will depend on the virulence of the virus**

	<b>Moderate (1957-like)</b>	<b>Severe (1918-like)</b>
<b>Illness</b> (attack rate)	90 million (30%)	90 million (30%)
<b>Outpatient medical care</b>	45 million (50%)	45 million (50%)
<b>Hospitalization</b>	865,000	9,900,000
<b>ICU care</b>	128,750	1,485,000
<b>Mechanical ventilation</b>	64,875	745,500
<b>Deaths</b>	209,000	1,903,000 (2.5%*)

**Note: There are 2.9 million hospital beds in the US**

\* Avian virus death rate is currently 55%

# PANDEMIC SCENARIO

## AT THE PANDEMIC'S PEAK

- Oil deliveries are delayed so home heat is intermittent
- Food and pharmacy supplies are strained (unobtainable?)
- Banks close. Paying for basic essentials is problematic
- Lack of fuel, payment, and safety keep truckers home
- Manufacturing infrastructure collapses – no work, no goods
- Lack of goods and services leads to increased shootings and robberies – even insurrection in places
- Federal, state, and local government assistance is unavailable
- Funeral services are unavailable

# FOOD DELIVERY SYSTEM

- **Food supply is a complex infrastructure of production, processing, transportation, storage, and marketing**
- **One in eight Americans is involved in the food industry**
- **Transportation sector is the weakest link**
  - Food items travel ~1,300 miles to get to our table
  - Pandemic will cause fuel shortages and infrastructure problems
  - Transportation workers may be unwilling to leave their families
- **Historically, we are the only age of people who do not store enough food to get through winter and spring**

# NATIONAL FOOD SUPPLY

- In 1938 Congress created an “ever-normal granary”
  - Based on Biblical advice to store surplus crops for lean years.
- Congress then incrementally eliminated it.
  - 1966 Farm Bill did away with paying farmers to store grain
  - In the 1980’s, government stopped stockpiling grain
  - During the 1988 drought the U.S. had 6.6 billion bushels of corn to meet demand. In 2002, corn stocks were 1.6 billion bushels.
- Since the pandemic will be worldwide, other nations will face food shortages as well – no international help
- Farmers have a small window in which to plant crops
  - What if they’re too sick to plant?
  - What if there is no fuel....no fertilizer?

# CASCADING EFFECTS

- **80% of non-flu medicines use ingredients manufactured offshore**
- **Private sector provides 85% of goods and services**
  - It will take federal intervention to avoid "a domino effect" of failed services if one private sector cog breaks down.
- **Refineries can't operate if 30% of their workers are out**
- **Trucker can't make deliveries if there is no fuel**
- **Grocery stores will close when there is no food**
- **People will "politely" go without when stores close**  
**...for a little while**

# CHECKLIST FOR BUSINESS

- P Do you need to stay open**
- P Who will do the work**
- P Can you afford to stay open**
- P How will you stay open**

# CHECKLIST FOR BUSINESS

## **P Critical activities**

- Contractual obligations
- Safety/hazard considerations
- Needs assessment – products part of a critical supply chain
- Develop a resource re-allocated matrix

## **P Critical employees**

- Skills and depth – need to be “many-deep” in essential skills
- Develop employee cross-training plans – bring retirees back
- Identify work contractors can do

## **P Critical inputs**

- Identify materials likely to become scarce as supply lines dry up
- Plan maintenance and estimate spare part needs
- Define subcontractor tasks you can take over

# CHECKLIST FOR BUSINESS

## **P Can you afford to stay open**

- Banking may be interrupted
- You may not have customers or way to collect revenue
- Cost of supplies may spike
- You may not have insurance

## **P Communication platforms**

- Email distributions
- Website (employee and customer)
- Phone (cell, landline, satellite)

## **P Define limited travel Ops Plan**

- Assume travel interruptions will occur
- Set up buy/sell transactions for phone/internet business

# CHECKLIST FOR BUSINESS

## **P Real Reality**

- Some workers cannot (will not) come to work
- Some may not be able to (e.g., no fuel)
- You cannot fault workers for putting families first

## **P Employee benefits**

- Sick leave and vacation policies
- Telecommuting plan – what if the internet is down
- “Live-in” option – can you house workers? How will the sick be treated

## **P Job site precautions**

- What are you liable for...can you afford the risk
- How will you protect employees from the virus

# BEING PREPARED

## YOU CAN'T CONTROL WHAT HAPPENS, BUT YOU CAN BE PREPARED

- **Have enough food and water**
- **Stockpile medicine:** we need to change prescription and insurance laws to allow individuals to stockpile medications – maybe a year out.
- **Limit your exposure**
- **Plan your captivity**

# DISASTER PLANNING

**NO ELECTRICITY...NO REFRIGERATOR...LIMITED WATER  
NO GAS...NO INTERNET...LIMITED ACCESS TO MEDICINE**

- **Food:**

- Store foods you like and can be eaten with limited preparation.
- Select serving sizes that can be fully eaten once opened.
- Rotate stored food - use regularly and replace.
- No food should be kept longer than a year.

- **Water:** \_\_ gallon/person/day for drinking and food preparation.

- **Medication:** how long can your medications be stored.

- **Non-food Items:** paper plates, cups and towels, a can opener, matches, eating utensils, candles.

# FAMILY FOOD NEEDS

Kind of Food	Amount / Person / Day	Suggested Food
Milk	Equivalent of 2 glasses (fluid)	Powdered nonfat milk (3 oz = 1 quart milk) Evaporated canned milk (18 oz = 1 quart milk)
Canned meat, poultry, fish, beans and peas	2 servings	Canned meat, poultry, fish, and meat mixtures Canned or dry beans Canned spaghetti and rice products Condensed soups containing meat or Beans Peanut butter
Fruits and vegetables	3 to 4 servings	All types of canned vegetables and fruit Dry fruit and canned fruit juice
Cereal and baked goods	3 to 4 servings	Ready-to-eat cold and hot cereal (1 oz/serving)
Spreads for bread	According to family tastes	
Fats and vegetable oil	1 ounce	
Sugars, sweets	1 ounce	Candy and cookies are moral boosters
Miscellaneous	According to tastes and extent of cooking	Coffee, tea, powdered or canned beverage products, soda, flavorings, soft drinks

Adapted from Safe Handling of Food During Emergencies, Coop. Ext. Service, Purdue Univ., West Lafayette, IN.

# FAMILY FOOD RESERVE

## SIX-MONTH SUPPLY List (per adult):

ITEM	AMOUNT NEEDED	COST
Tuna or salmon	180 cans	\$270.00
Fruits and vegetables	200 cans	\$200.00
Powdered milk	25 lbs	\$ 56.25
Powdered eggs	5 lbs	\$ 20.00
Grain (corn, rice, wheat)	200 lbs	\$ 75.00
Sugar	25 lbs	\$ 12.50
Salt	10 lbs	\$ 5.00
Yeast	2 lbs	\$ 30.00
Oil	5 gals	\$ 50.00
Water	100 gals	\$ 60.00
multivitamin	180 tablets	\$ 15.00
<b>APPROXIMATE COST:</b>		<b>\$ 800.00</b>

All dry food should be vacuum sealed

Other foods to consider:

Dry fruits

Nuts

Jello and pudding

Energy bars

Dry cereal

Instant food (mash potatoes, etc)

Pringles and pop corn

Raisins

Chocolate bars

Coffee, tea, hot chocolate

Juice (fruit and vegetable)

Jerky

Six months of pre-packaged "wilderness" food costs ~\$600 (dry) - \$2000 (canned) per person  
[www.alpinesurvival.com](http://www.alpinesurvival.com)

# **STOCKPILING FOOD – 1 YEAR**

- **If farmers fail to plant, we're one crop cycle without food**
- **Food production and distribution may not function**
- **Recurrent problems with food supply may last 3-5 yrs**
- **Know the intended storage life of items**
  - **Food in plastic, cellophane, boxes, or other containers that contain air have a limited shelf life**
  - **Vacuum-packed products are good long-term, e.g., coffee, nuts, jerky, junk food.**
- **Store grain (corn, wheat, rice, pinto beans) in cool dry place**
- **Learn to mill and to bake.**

# STORING WATER

- **HEAT TREATMENT**

- Canning water (ask Grandma): Fill jar with water (leaving 1"). Hand tighten and put in boiling water for 20 minutes. Tighten lids.

- **CHLORINE TREATMENT**

- $\frac{1}{2}$  teaspoon of liquid chlorine bleach per gal. (~16 drops/gal)
- Store non-metal container. If cloudiness or odor occur, replace.

- **EMERGENCY WATER DISINFECTION**

- **Heat Treatment:** Boil water vigorously for 5 minutes.
  - Taste improves if you pour water back and forth between containers to re-incorporate air.
- **Chlorine Treatment:** Less desirable than boiling.
  - After treatment, let stand for 30 minutes before using.
  - If there is not a slight chlorine odor, repeat treatment and let stand for 15 more minutes
- **Purification Tablets:** Follow manufacture's directions
  - Most tablets last 2 to 5 years if unopened

# ON OUR OWN TOGETHER

## EMBRACE YOUR CONSCRIPTION

- **Plan:** Have a Plan – Food/meds, sick/dying, etc.
- **Prepare:** An informed public is prepared
- **Protect:** You are your own Calvary
- **Prostilize:** I am available to speak to any company, club, church, organization, etc.