




Emergency Management &  
Safety Solutions

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Our Greatest Threat?  
What are you doing to get ready?  
The Importance of Planning

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## Planning Assumptions

- Business Continuity Planning generally has two assumptions:
  - Back to “business as usual” in 30 days or less
  - Go from the “affected” site to the “unaffected site” and resume business

***Neither apply with Pandemic Influenza***

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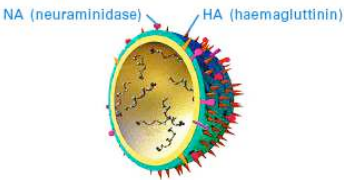


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- Influenza is a **highly contagious** respiratory disease dating back to the 16th century.
- During any given year, 10-20% of the world's population gets influenza.
  - 500,000 to 1,000,000 deaths worldwide.
  - 36,000 deaths in the US.
- Influenza A has two subtypes determined by proteins on the outer surface of the virus
  - Hemagglutinin (H) – helps virus attach to respiratory cells (H 1 - 16).
  - Neuraminidase (N) – helps virus penetrate into the cells once it is attached (N 1 - 10).
  - 144 different H and N combinations
  - An example a description of a subtype would be the H3N2 virus.


## Influenza A - Tutorial



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# Course of Influenza in Adults



0      1      2      3      4      5      6      7      8      9

Day 0	Become infected
Day 1 - 4	Disease Incubation (average 2 days)
Day 1 - 6	Contagious (one day before symptoms to 5 days after symptom onset)
Day 2 - 9	Symptomatic (usual 2 - 5 days)
Day 4 to ?	Decreased energy (one week or more)

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# Influenza Symptoms

- Sudden onset of illness
- Fever higher than 100.4° F (38° C)
- Chills
- Cough
- Headache
- Sore throat
- Stuffy nose
- Muscle aches
- Feeling of weakness and/or exhaustion
- Diarrhea, vomiting, abdominal pain (occur more commonly in children)



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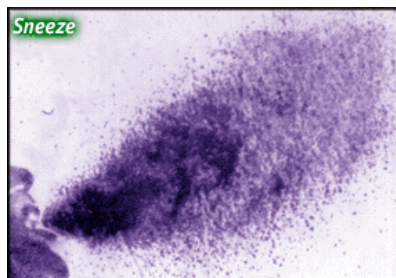


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# How You Become Infected

- When you breath, talk, cough or sneeze, tiny particles containing droplet nuclei are expelled into the air.
  - 1 - 5 microns in size.
  - Spread within 3 - 6 feet.
  - Droplet nuclei can remain suspended in the air for *several hours*.
  - “Close personal contact” is 3 to 6 feet



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## A Pandemic - Antigenic **Shift**

- Influenza has thrived over the millennia by adhering to one simple principal- **adapt or die**.
- An entirely new subtype of virus emerges through either:
  - **Recombination** of human and animal antigens (often swine and/or avian).
  - **Adaptation** - Direct leap to humans

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## Spanish Flu 1918-1919

- The virus first manifested on March 10 at Camp Riley, Kansas. It affected young people in the prime of their life, often killing them within a day.
  - Average age - 20-29 years old
- United States cities experienced:
  - City quarantines
  - Required masks while on the street
  - Severe shortage of nurses (up to 75%)
  - Shortage of casket & mass burials
  - School and business closures
  - Panic and widespread fear
- Some of what was happening
  - 851 New Yorkers die of influenza in a single day.
  - In Philadelphia, the city's death rate for one single week is 700 times higher than normal.
  - The crime rate in Chicago drops 43%.
  - October 1918 was the deadliest month in the nation's history - 195,000 die from the flu.



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# The Toll of Spanish Influenza

- 50 million deaths worldwide
  - Global numbers range from 50 - 100 million
  - (17 million in India alone)
  - World population 1.75 billion
- 550,000 deaths in the United States
  - Total death toll in Philadelphia 13,000 with 150,000 cases



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# 1957 and 1968 Pandemics

- Asian Flu 1957
  - In May 1957 - the World Health Organization (WHO) reported a new H2N2 subtype from Singapore.
  - Infection rates were reported to range from 20% to 70%.
  - Death toll 70,000 excess mortality. World population was 2.75 billion
- Hong Kong Flu 1968
  - In mid July 1968 a new subtype - H3N2 emerged in Hong Kong.
  - Mortality rates were similar in magnitude to those caused by Asian influenza. Age-specific mortality was highest for those over the age of 65 years.
  - Death toll 31,000 excess mortality. World population was 3.65 billion

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### Why such a difference?

- Why less deaths in 1957 & 1968?
  - Less virulent viruses.
    - Caused by **recombination** - human flu viruses that acquired 2 or 3 key genes from bird flu virus strains.
  - Antibiotic treatment for secondary infections.
  - Improved supportive care.
- The 1918 virus acted much differently from other pandemics
  - Created a cytokine storm in its victims - overactive immune response.
  - Entirely a bird flu and a direct leap (**adaptation**) from birds to humans.

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### World Health Organization Phases

- **Phase 1 & Two** No new influenza virus subtypes have been detected in humans.
- **Phase 3. Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.**
- **Phase 4.** Small cluster(s) with *limited human-to-human transmission*.
- **Phase 5.** Larger cluster(s) but human-to-human spread *still localized*,
- **Phase 6. Pandemic:** increased and sustained transmission in general population.
  - Pandemics usually last approximately 18 months
  - Three distinct waves.

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- These summary of cases and deaths is as of June 17, 2007
  - Indonesia 100/80 (77%) \*\*
  - Vietnam 93/42 (45.2%) \*\*
  - Thailand 25/17 (63.6%) \*\*
  - Egypt 36/15 (60%)
  - Cambodia 7/7 (100%)
  - China 25/16 (66.7%)
  - Turkey 12/4 (33.3%)
  - Iraq 3/2 (100%)
  - Azerbaijan 8/5 (62.5%)
  - Djibouti 1/0 (0%)
  - Nigeria 1/1 (100%)
  - Laos 2/2
  - Total 313 cases / 191 deaths
  - 60% fatality
- The total number of cases/deaths includes **only** WHO laboratory confirmed cases.

\*\* Areas that have had documented human to human transmission


## Current Human Cases & Death Toll



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## Indonesia - The Hot Spot



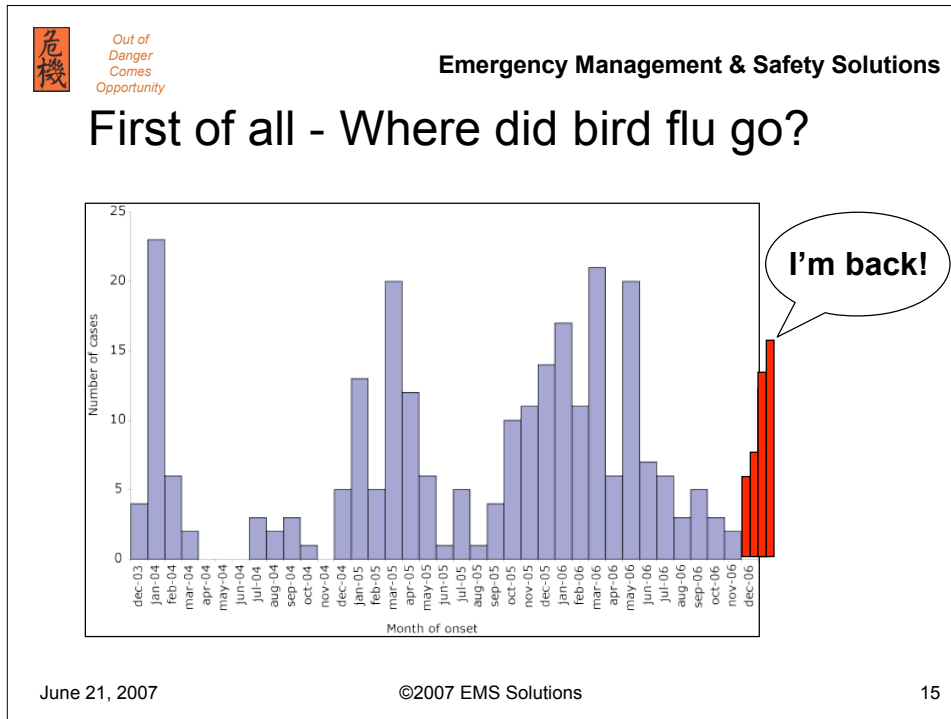
- 18,108 islands (6,000 inhabited)
- 242 million people
  - Jakarta - 12 million people
- Case statistics
  - 2007 - 25 cases, 22 fatalities
  - 2006- 55 cases, 45 fatalities
  - 2005- 20 cases, 13 fatalities
- 9+ significant family clusters
  - One family cluster in North Sumatra resulting in 7 deaths
  - 3 weeks from index case to the last death (2 times maximum incubation)
  - Cikelet - new hot spot


The Jakarta Post quoted several local health experts as saying that "the government was not disclosing how widespread the disease was or how many times human-to-human transmission might have occurred." NY Times 6.16.06

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## Uphill Battle



AP / Said Abu el-Enein

- Convinced that her own pigeons are healthy, a poultry trader in the Nile delta in Egypt feeds corn by mouth to the birds.
- *H5N1 avian flu has killed 13 people in Egypt.*

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### Who has been affected?



- Who?
  - Median age was 18 years old.
  - 52 per cent were younger than 20 years old and 89 per cent were under age 40.
  - Men and women made up virtually an equal number of cases.
- The death rate was highest among cases aged 10 to 19
  - 76 per cent of cases in that group died
- Lowest death rate?
  - Cases over 50 (40 per cent)
  - Followed by children under age 5 (44 per cent) and children aged 5-9 (49 per cent).
- The total case fatality rate was 60 per cent.

*From 25 Nov 2003 and 24 Nov 2006*

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### Limited Medical Options

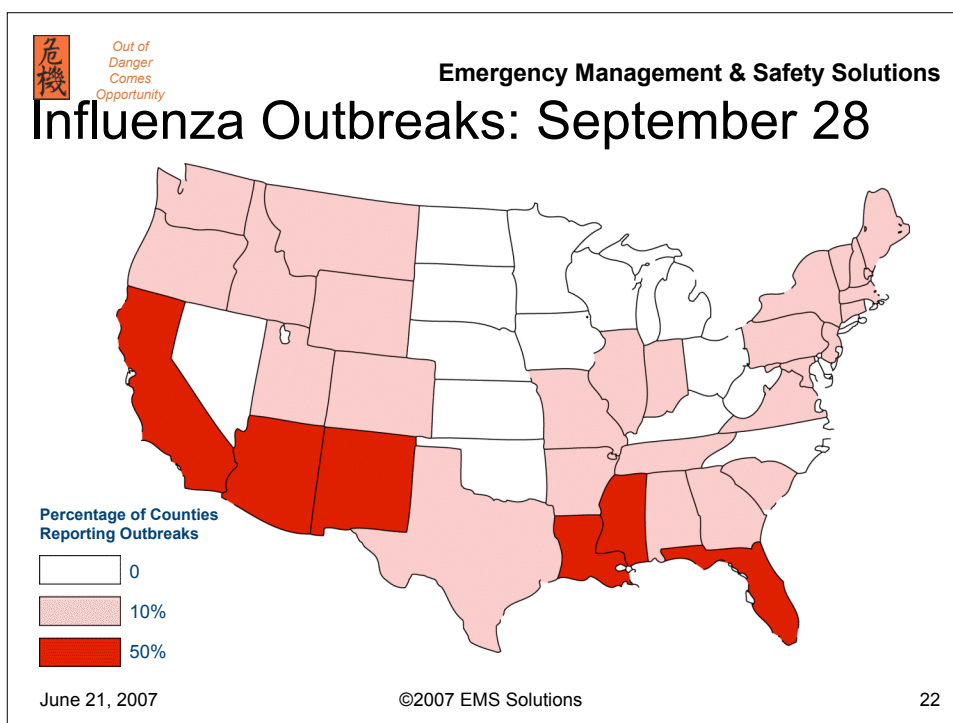
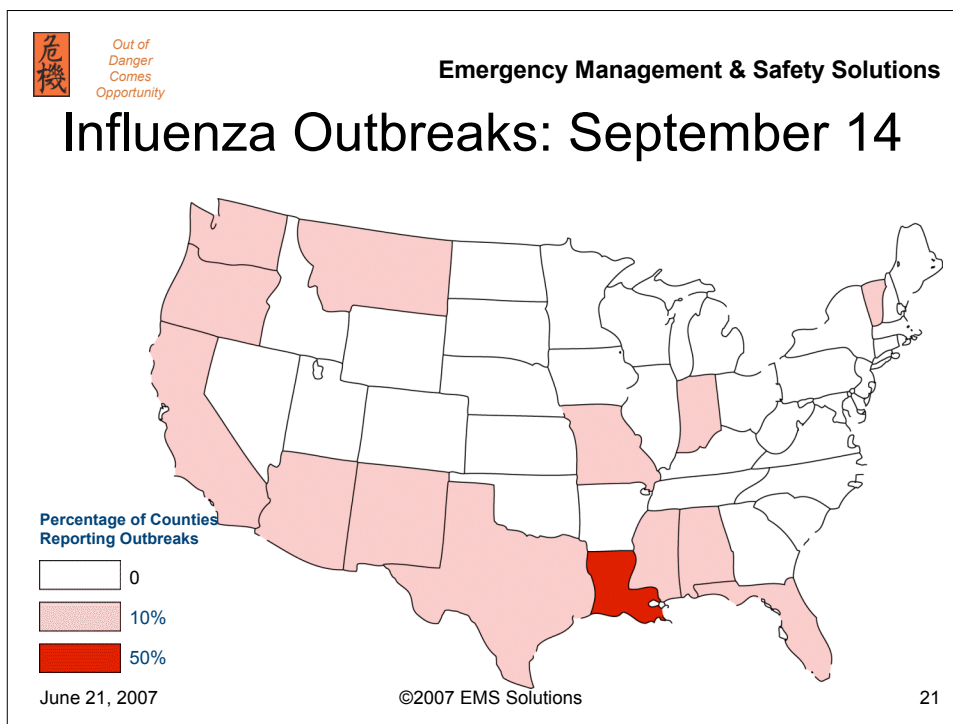
- Antivirals
  - Tamiflu (Oseltamivir) approved 1999, made by Roche
    - Neuraminidase (N) inhibitor, preventing the virus from penetrating the respiratory cells.
    - Some H5N1 cases have exhibited drug resistance to Tamiflu.
    - Should you use it in your response plan?
- Flu Vaccines
  - Grown in eggs
    - Takes 8-10 months to produce.
    - May take two doses to confer immunity.
  - Manufacturers worldwide can only produce 250 - 300 million doses at a rate of 5 million a week
    - Enough to vaccinate just 1 percent of the U.S. population a week.

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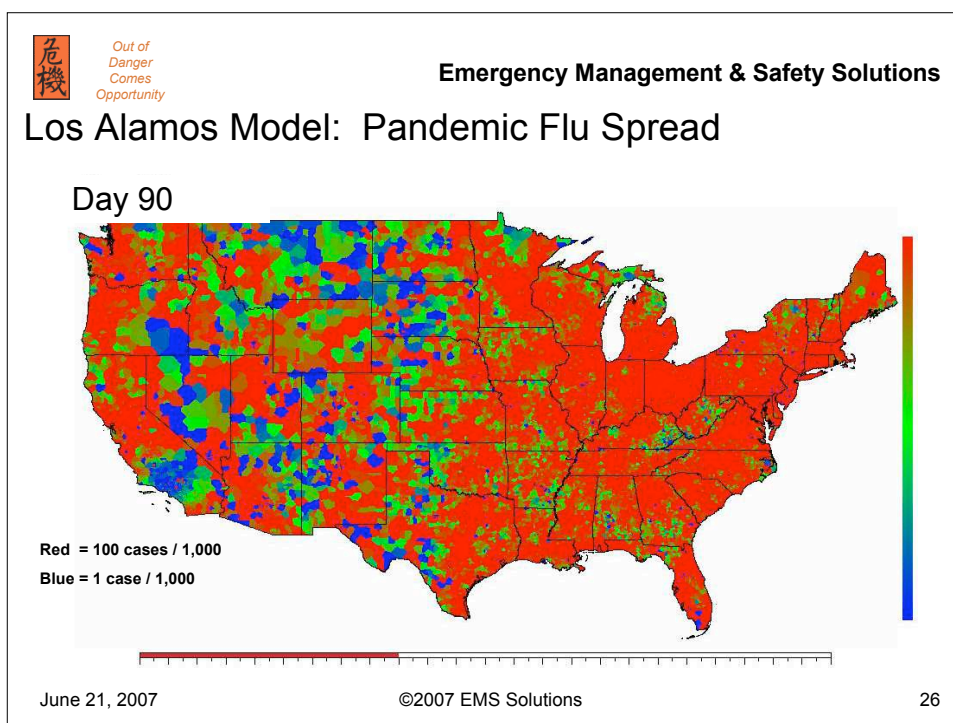
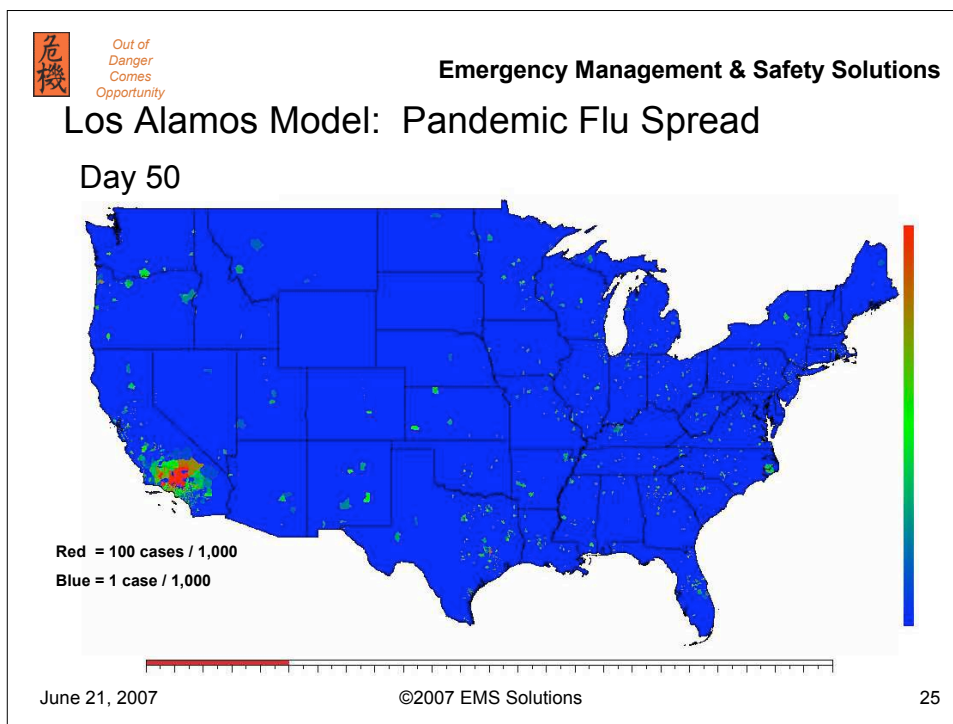
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## Flu Spread Linked to Airline Travel

- Researchers compared timing and number of flu deaths in 122 American cities with the volume of airline travel for 10 years.
  - Changes in the rate of spread and timing of peak mortality correlated with fluctuations in monthly airline passenger volume.
- This effect was *particularly pronounced* after the Sept. 11 attacks, with the temporary flight ban in the United States and airline travel volume was lower than in any other season from 1996 to 2005.
  - Flu arrived two months late!

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PLoS Medicine

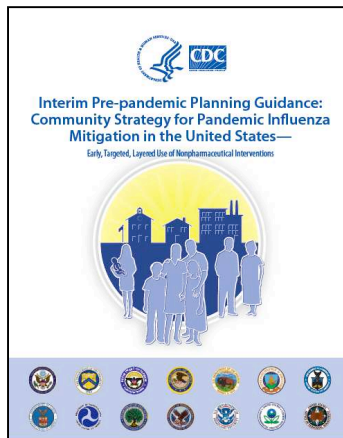
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## Community Strategy for Pandemics




January 2007

[http://www.pandemicflu.gov/plan/community/community\\_mitigation.pdf](http://www.pandemicflu.gov/plan/community/community_mitigation.pdf)

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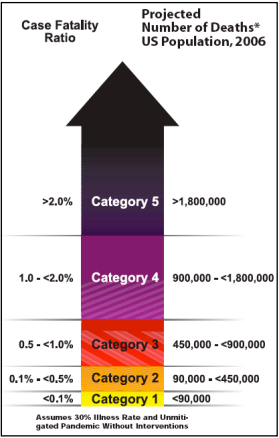
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## Pandemic Categorization

- Based on Hurricane ratings but using case-fatality ratios (deaths)
  - Category One - CFR of less than 0.1%
  - Category Two - CFR 0.1% to 0.5% (1957 and 1968)
  - Category Three - CFR 0.5% to 1%
  - Category Four - 1% to 2%
  - Category Five - 2% or higher (1918)
- Estimated school closures in the first wave
  - Category 2 & 3 - Up to 4 weeks
  - Category 4 & 5- Up to 12 weeks




Case Fatality Ratio	Category	Projected Number of Deaths* US Population, 2006
>2.0%	Category 5	>1,800,000
1.0 - <2.0%	Category 4	900,000 - <1,800,000
0.5 - <1.0%	Category 3	450,000 - <900,000
0.1% - <0.5%	Category 2	90,000 - <450,000
<0.1%	Category 1	<90,000

Assumes 30% Illness Rate and Unmitigated Pandemic Without Interventions

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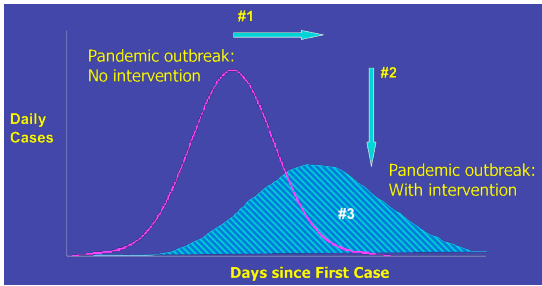
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## Community-Based Interventions

1. Delay outbreak peak
2. Decompress peak burden on hospitals & infrastructure
3. Diminish overall cases and health impacts



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## State by State Review of the Economic Impact



<http://healthyamericans.org/reports/flurecession/>

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## Planning Assumptions

1. 30% absenteeism of staff, vendors, services within the community such as health care, police, fire, etc.
2. The pandemic may last as long as eighteen months in three separate waves; mortality and morbidity will increase and decrease in spurts.
  1. The first three to four months (90-120 days) will likely produce the greatest deaths and illnesses.
3. Critical functions carried out by contractors, consultants and vendors cannot be guaranteed.
4. Civil society infrastructure will be stressed, but remain functional.
5. Potential closure of gathering places in the community including schools, churches, events, malls, etc.

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# Planning Assumptions

6. Will likely have less than six weeks of warning from the time the pandemic is announced before it reaches the United States.
7. No remedies will be immediately available. Antivirals may be in very limited supply once the pandemic starts.
  - Vaccinations will take 9-10 months
  - Antibiotics are only for the treatment of secondary bacterial infections.
8. Current WHO Alert Levels do not provide any indication regarding the time interval between levels.
  - It may take a significant amount of time for a virus to reach Level 4 however the time interval between Alert Levels 4, 5 and 6 may be rapid (ranging from weeks to months).
9. Phases One - Three is for planning; Four - Six plan execution.
10. Universal susceptibility for all.

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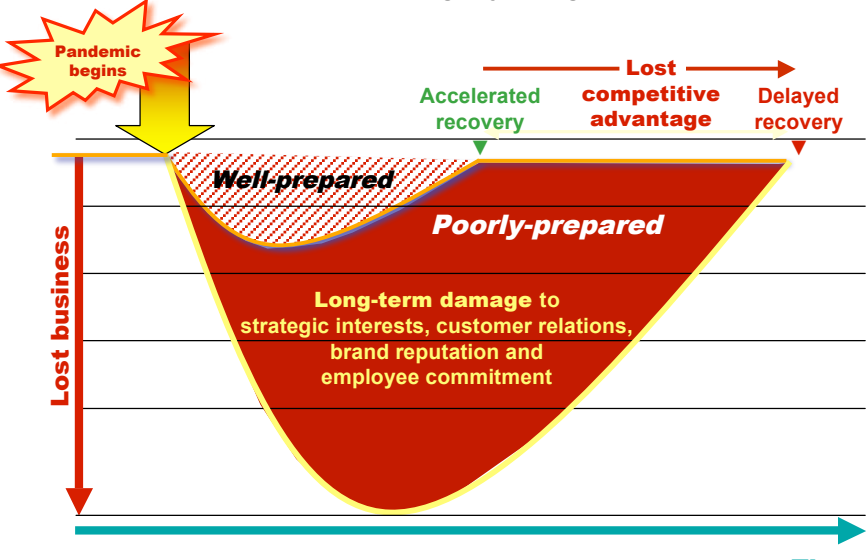
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**Capture the competitive advantage by acting now**



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Dave Kieffer, Mercer Consulting



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# Where does a company begin?

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# Pandemic Task Force

- Business Continuity Planning
- Security
- Safety
- Human Resources
- Travel
- Key lines of business
- Corporate Communications
- Purchasing
- Legal
- Telecommunications
- Technology
- Risk Management

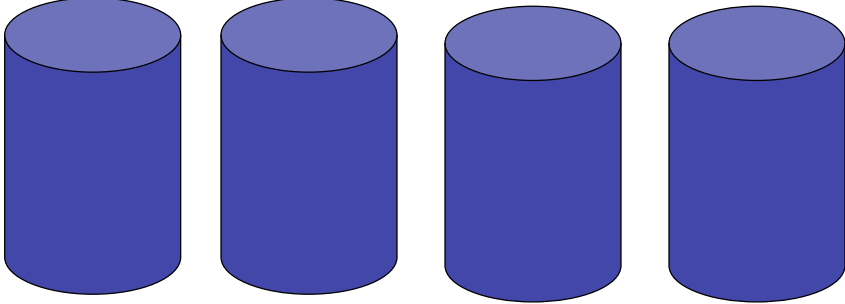
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## Human Resources




**Category One**  
"Must" be @ work

**Category Two**  
"Must" work & can work @ home

**Category Three**  
Can work @ home but not essential


**Category Four**  
Not essential- no need for them to work

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## Human Resources

- Category One:
  - Social Distancing
  - Masks
  - Health education on handwashing
  - Spread people out on different shifts to spread them out
  - Employee cleans area frequently
  - Eliminate all face-to-face meetings




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## Social Distancing

- When around people, keep your distance by at least 3 - 6 feet
- Avoid meeting people face-to-face
  - Use the telephone and NetMeeting as much as possible
- Avoid the following
  - Any unnecessary travel
  - Crowded public places
  - Public transportation
- Personal alternatives might include:
  - Shop at smaller stores with smaller lines and fewer people
  - Shop at off hours to avoid large crowds
  - Arrange to pay bills by mail, online or over the phone
  - Cancel or postpone family gatherings, outings or trips



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## Human Resources

- Category Two: install a robust work from home program
  - Broadband connection
  - Company sponsored computer and all necessary peripherals
  - Work from home at least one day a month
  - Demonstrate in advance that can work from home
  - Desktop support for the home

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### Human Resources

- Category Three and Four:
  - How long do you pay those who aren't working?
    - Pay partially?
    - How long do you continue benefits?
- Other HR issues
  - What if they refuse to come to work?
  - What if a family member is sick but the employee is well - do you have them come in?
  - If a person comes down with the flu after being at work it is a workers comp issue?
  - What if schools are closed?

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### How Do You Serve Customers Differently?

- Teller lines
- Distribution of cash to ATM's
- Handling cash
- Safe deposit boxes
- Call centers
- Loans
- Investments



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### Manufacturing - **How** do you or **do** you do it differently?



- Supply chain disruption
- Infrastructure challenges
- How can you make it safe for employees to still come to work?

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### Communication

- Develop a strong communication strategy.
- Update employee information including all forms of home contact
  - Home cell and home email
  - Emergency contact information
- Develop communication strategies if the phones are overloaded
  - Text messaging
  - VoIP [www.skype](http://www.skype.com)
  - Instant messaging

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### Communication

- 800 employee hotline
- Customer hotline
- Website
- Email
- Newspapers

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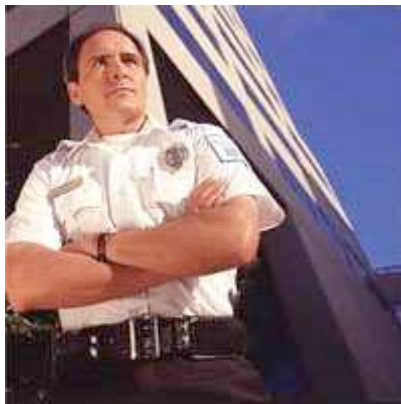
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### Security



- Visitor and customer restrictions:
  - When?
  - How?
  - Exceptions?
  - Who can authorize?
- Visitor/vendor/customer screening:
  - When?
  - How?
- Training
  - PPE

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### Stricken Employees at Work



- How to handle a sick employee at work
  - Mask
  - Isolate
  - Trained responders at work
- What if 9-1-1 doesn't come?

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### Facilities



- Janitorial
  - Cleaning procedures
  - PPE
  - Disinfectants
- HVAC system
  - How often to change filters
  - Changing filters
  - How much recycled air?

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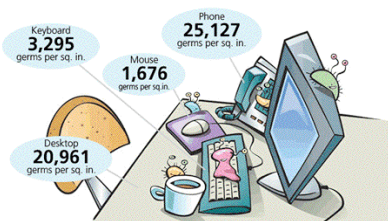




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### Infection Control at Work



- Cleaning work areas
  - What are the top four germiest office work areas?
- What about in a plant? Truck? Ship?
- What type of cleaning agents?

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### Hand Sanitizers



- Work by stripping away the outer layer of oil on the skin.
  - Must be at least 60% alcohol.
- 99.9% effective
  - Not exactly, tested on inanimate objects, not human hands.
  - Good alternative when you can't wash your hands but NO substitute for good hand washing.

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### Purchasing

- Procure necessary equipment: masks, antiseptic solutions, hand gel, gloves
- Supply chain analysis - where do your critical supplies come from?
  - What if ports are closed 90 - 120 days?

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### CDC Mask Guidelines May 07



- CDC new guidelines
  - Masks “**could** be helpful”
  - No proof of effectiveness
  - Should be used in combination with other actions: hand washing, social distancing, antiviral medications, and encouraging people to avoid crowded places and large gatherings.
- [www.cdc.gov/niosh/npptl/topics/respirators/](http://www.cdc.gov/niosh/npptl/topics/respirators/)
- Gloves?
  - No guidelines yet...most believe only really appropriate for care of those ill or dealing with bodily fluids only.

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### Risk Management

- Insurance
  - Do you have coverage?
  - If not, do you need/want to acquire it?
- Assess impact to company
  - Do modeling showing reductions in revenue by 10-20-30% for 90-120 days; up to 18 months.

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### Travel



- Do you restrict travel?
  - If so, when?
- Can you make travel safe?
  - PPE
- What about personal travel?
- Strategies could include:
  - Home quarantine for 10 days
  - Work from home
- What if a countries borders are closed?
- Do you have a relationship with an international medical provider?
  - Medical evacuation
  - Evacuation of remains

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### Expatriate Employees & Families



- Do you bring them back?
  - When?
  - Families earlier?
- What if they want to come back and you don't think it is appropriate?

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### Incident/Crisis Management Team

- Virtual EOC
  - Conference bridge
  - Web meetings
- Succession planning
  - For the Incident/Crisis Team
  - Senior executives

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## “How To” Hand Washing

1. Wet hands with **warm water**.
2. Apply a generous amount of **soap** & lather hands well.
3. Rub hands together for **20 seconds**, paying special attention to the areas between fingers & under nails.
4. Rinse hands thoroughly with warm water.
5. Dry hands with a disposable towel
6. Use the disposable towel to turn off the faucet & open the door.



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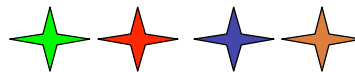


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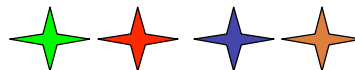
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## What is 20 seconds?

- Songs suggested by the CDC or “approved” to sing while washing for 20 seconds include...
    - Twinkle, Twinkle Little Star
- OR**
- Happy Birthday



- Twinkle, twinkle, little star,
- How I wonder what you are.
- Up above the world so high,
- Like a diamond in the sky.
- Twinkle, twinkle, little star,
- How I wonder what you are!



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“It's not business as usual, but it's not like the house is on fire — it's somewhere in between.”

*Keiji Fukuda MD MPH  
World Health Organization*

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Out of  
Danger  
Comes  
Opportunity

## Emergency Management & Safety Solutions

### Build a Resilient Organization



- The good news...
  - All of the pandemic planning will make your organization a much more resilient organization.

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Out of  
Danger  
Comes  
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## Emergency Management & Safety Solutions

# THANK YOU!

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Out of  
Danger  
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## Emergency Management & Safety Solutions

### ***Profile - Emergency Management & Safety Solutions - Regina Phelps, CEM, RN, BSN, MPA***



Since 1982

Areas of expertise include:

- Incident/Crisis Management teams development
- Emergency operations centers design (physical and virtual)
- Design and facilitate emergency exercises
- Pandemic plan development
- Business Impact Analysis
- Business Continuity Plans

Clients in four continents. Include: Visa, World Bank, Northern Trust, Aegon, Roche, Terra Industrials, BMI, Lam Research, Caltech, Stanford University, PMI, Wells Fargo, Macy's, Liberty Mutual, Intuit, Roche, IFC, IBM, Chiron and Social Security.

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