



危機

# Emergency Management & Safety Solutions

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Getting Ready -  
Pandemic Influenza

August 2008



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# Agenda

- The disease threat...
- Current pandemic Status
- Defining the pandemic threat
- Employee and community protection planning issues



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# Diseases are in the News...



- Train quarantined in Canada; one dead, others hospitalized - May 9, 2008
- Mumps outbreak Western Canada - May - June 2008
- Measles outbreak - downtown Toronto - Spring 2008
- SARS - 2003

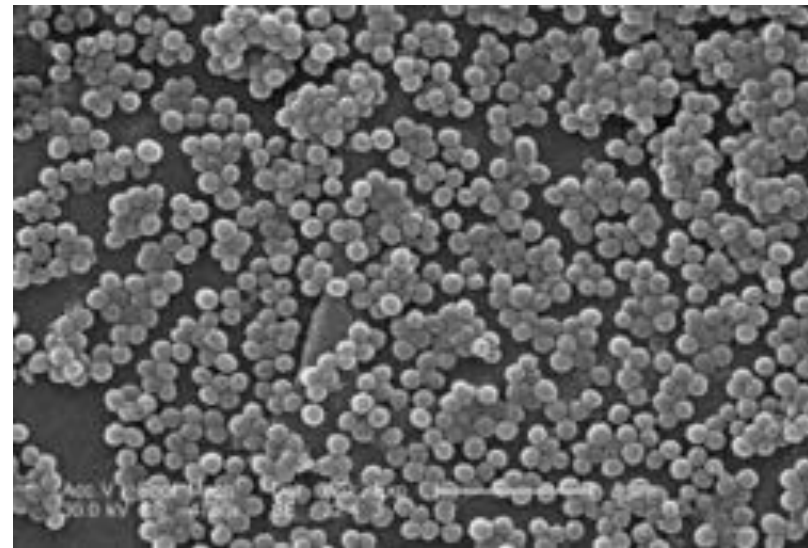


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# And there are more...

- Methicillin-resistant *Staphylococcus aureus* - MRSA
- Drug Resistant Tuberculosis
- Spread of “unusual illnesses” such as Chikungunya previously only in Asia and Africa, now in Europe
- Malaria





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# But none can top Influenza...the flu!





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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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# Why is influenza so different?

- 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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# Influenza - A Primer...

- Influenza is a **highly contagious** respiratory disease. Spread by droplet nuclei (1-5 microns size within 3-6 feet).
  - Moisture particles are expelled when you breath, talk sneeze or cough.
  - Droplet nuclei can remain suspended in the air for *several hours*.
  - Remain on surfaces for 24 hours, sometimes longer.
- Every year 10-20% of the world's population gets influenza.
  - Influenza is associated with 500,000 to 1,000,000 deaths worldwide each year.
  - In the US, annual seasonal influenza results in approximately 36,000 deaths and 120,000 hospitalizations.
- Influenza has thrived over the millennia by adhering to one simple principal- **adapt or die** - it is constantly changing.





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# Current Human Cases & Death Toll

- These summary of cases and deaths as of August 8, 2008
  1. Indonesia 135/110 (81%) \*\*
  2. Vietnam 106/52 (47%) \*\*
  3. Thailand 25/17 (63.6%) \*\*
  4. Pakistan 1/1 (100%) \*\*
  5. Egypt 50/22 (60%)
  6. Cambodia 7/7 (100%)
  7. China 30/20 (66.7%) \*\*
  8. Turkey 12/4 (33.3%)
  9. Iraq 3/2 (100%)
  10. Azerbaijan 8/5 (62.5%)
  11. Djibouti 1/0 (0%)
  12. Nigeria 1/1 (100%)
  13. Laos 2/2
  14. Myanmar 1/0
  15. Bangladesh 1/0
- Total 385 cases / 243 deaths
- 63% fatality
- The total number of cases/deaths includes **only** WHO laboratory confirmed cases.



AP / Rafiq Maqbool

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




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# Who has been affected?



- Who is affected?
  - 52 per cent were younger than 20 years old
  - 89 per cent were under age 40.
  - Men and women made up virtually an equal number of cases.
- Lowest death rate?
  - Over the age of 50
  - Followed by children:
    - Under age 5
    - Ages 5-9
- The total case fatality (CFR) rate was 60 per cent 2003 - 2006
  - 2007-2008 CFR has increased to 87%. 



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# Indonesia: Remains Ground Zero



- Indonesia
  - 17,000 islands
  - 220 million people
  - Jakarta - 12 million people
- A country of exceptions:
  - Most cases
  - Most deaths
  - Endemic and widespread
  - Numerous cases with no exposure to sick poultry
  - Cases of human-to-human transmission
  - Not sharing data OR blood samples



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# Uphill Battle in Impacted Countries



AP / Said Abu el-Einein

- 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 22 people in Egypt.*



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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.”

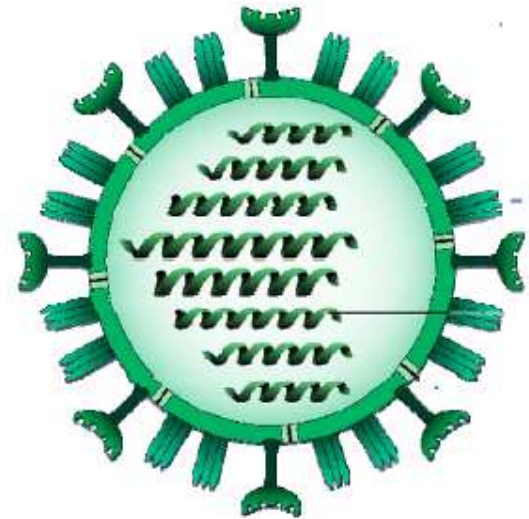
*Keiji Fukuda MD MPH  
World Health Organization*



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# H5N1...A Real Risk

- Mutates constantly
- Has a history
- Virus is adapting
- Virus is spreading
- Has completed three of the four requirements for a pandemic
  - New influenza virus ✓
  - Ability of new virus to infect humans ✓
  - Ability to cause serious illness ✓
  - Ability to spread easily among humans



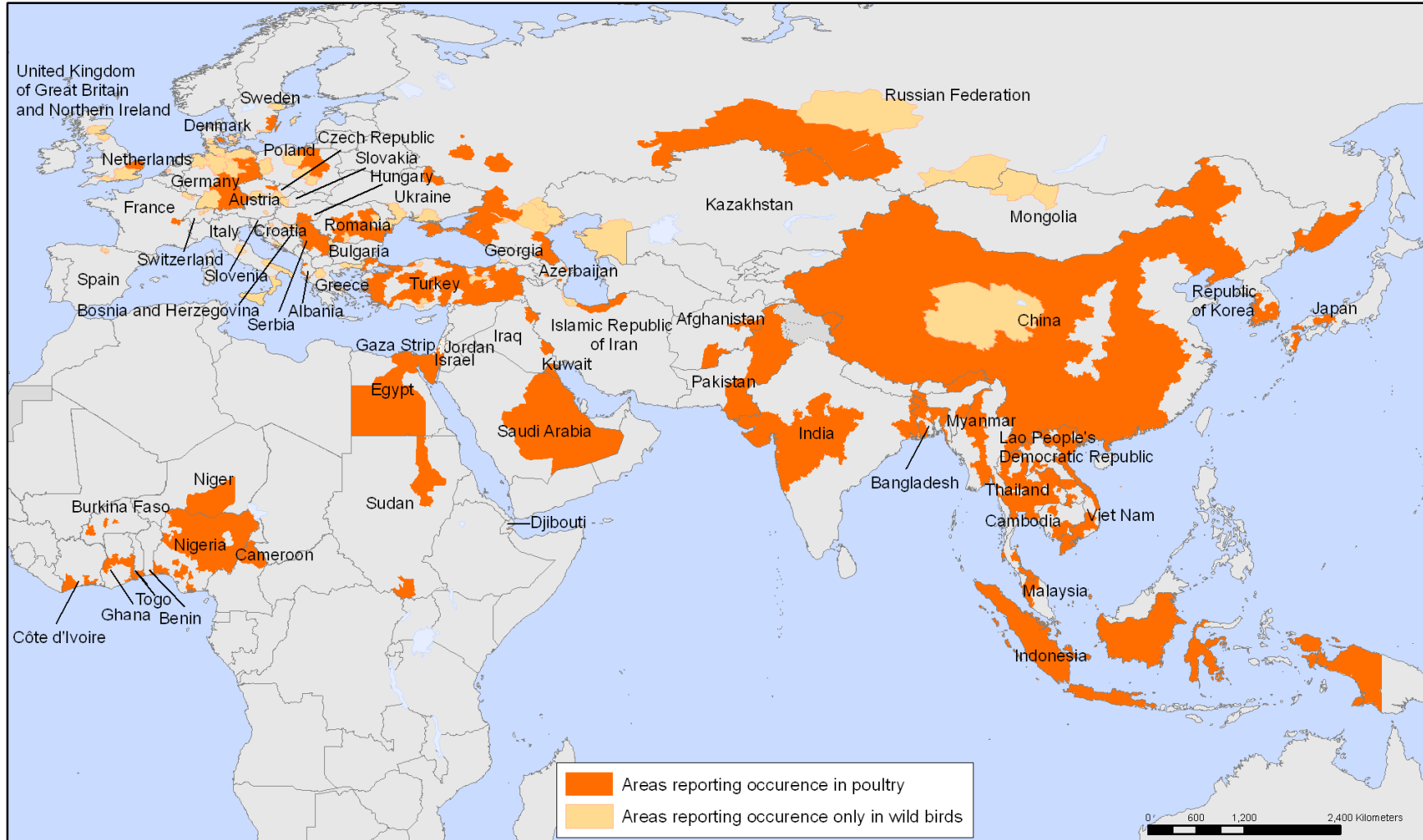


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Status as of 14 April 2008  
Latest available update

Areas reporting confirmed occurrence of H5N1 avian influenza in poultry and wild birds since 2003



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Data Source: World Organisation for Animal Health (OIE) and national governments  
Map Production: Public Health Mapping and GIS  
World Health Organization

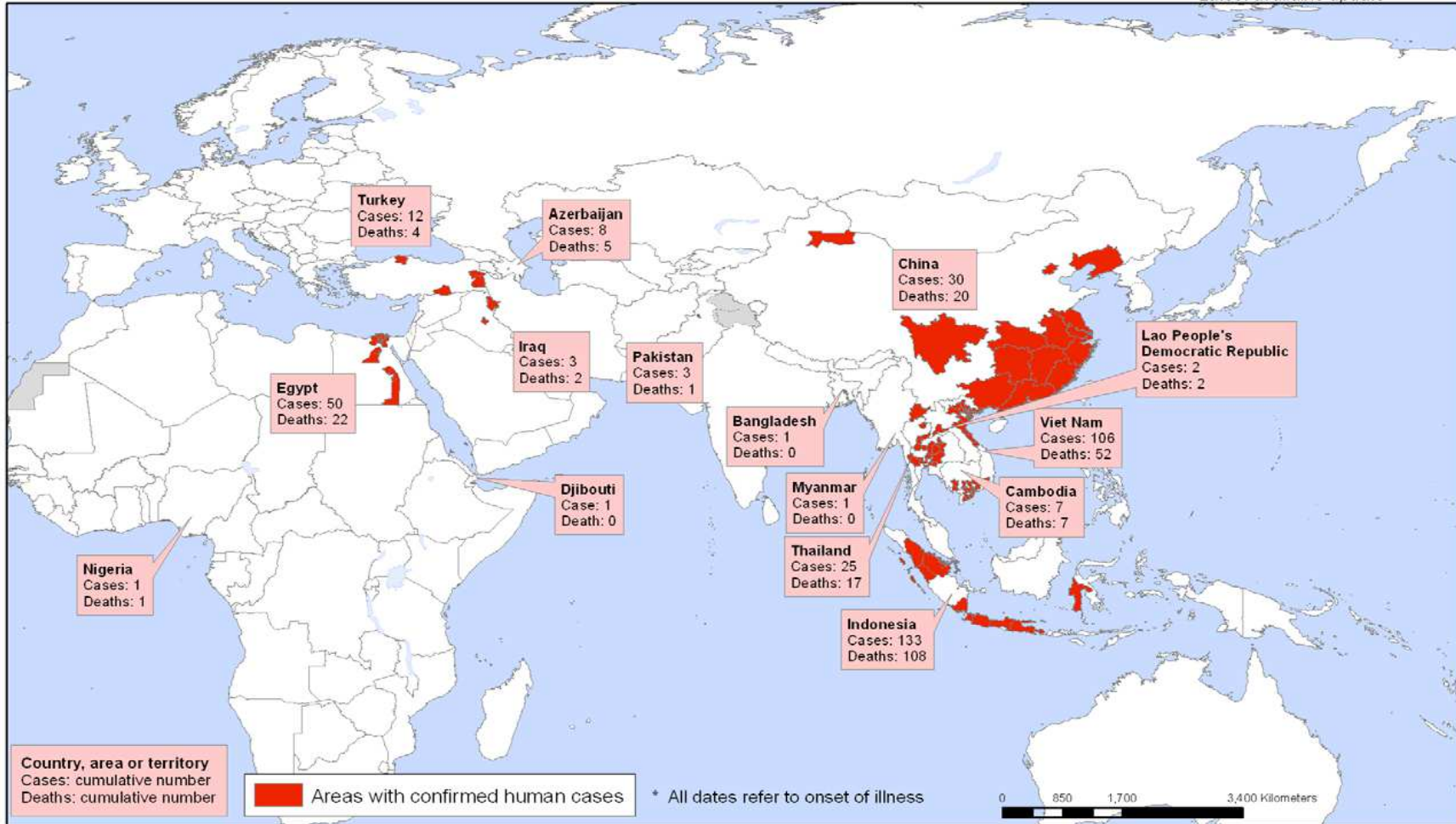


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Areas with confirmed human cases of H5N1 avian influenza since 2003 \*

Status as of 28 May 2008  
Latest available update



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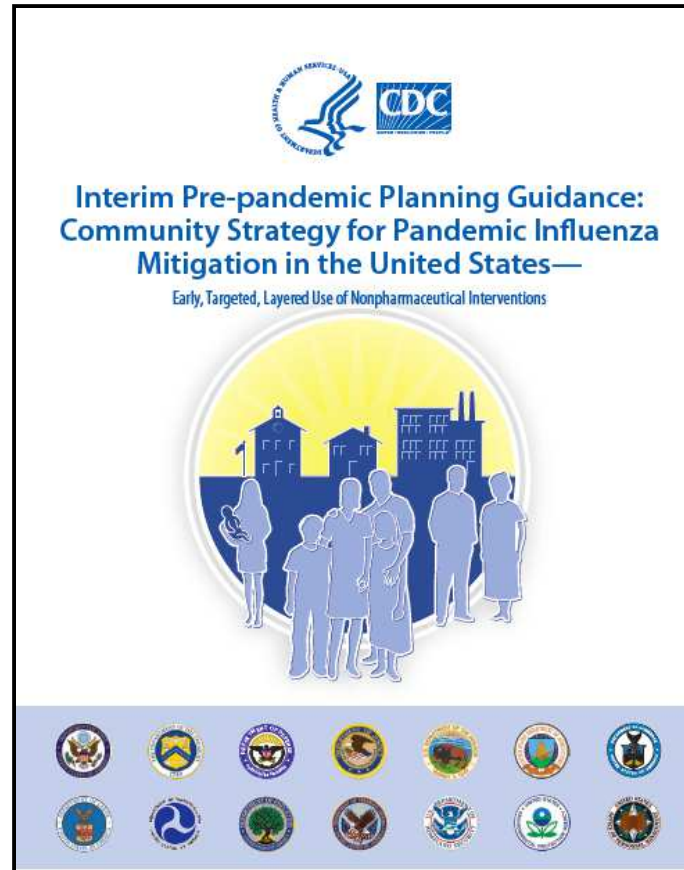




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# Community Strategy for Pandemics



*January 2007*

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

August 2008

17

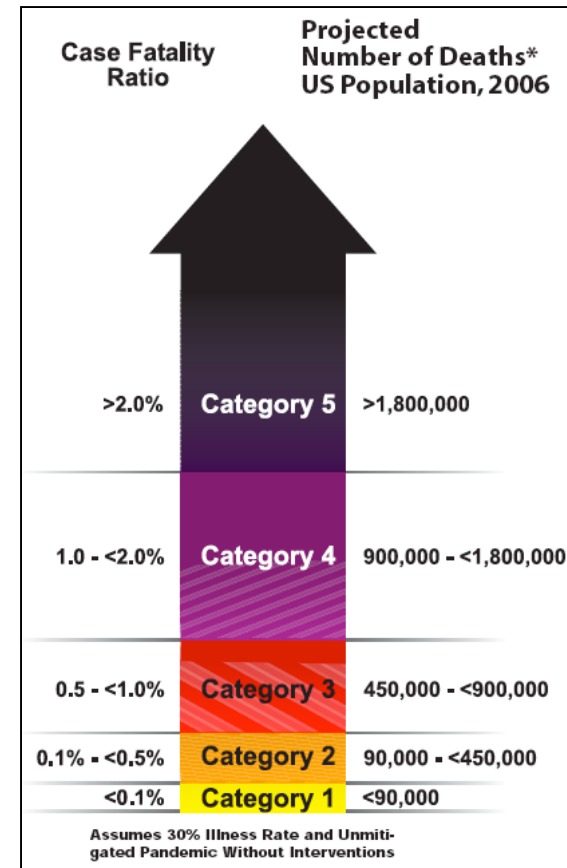


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# Pandemic Categorization

- 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





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# Building a Resilient Organization



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# Building a Resilient Organization

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

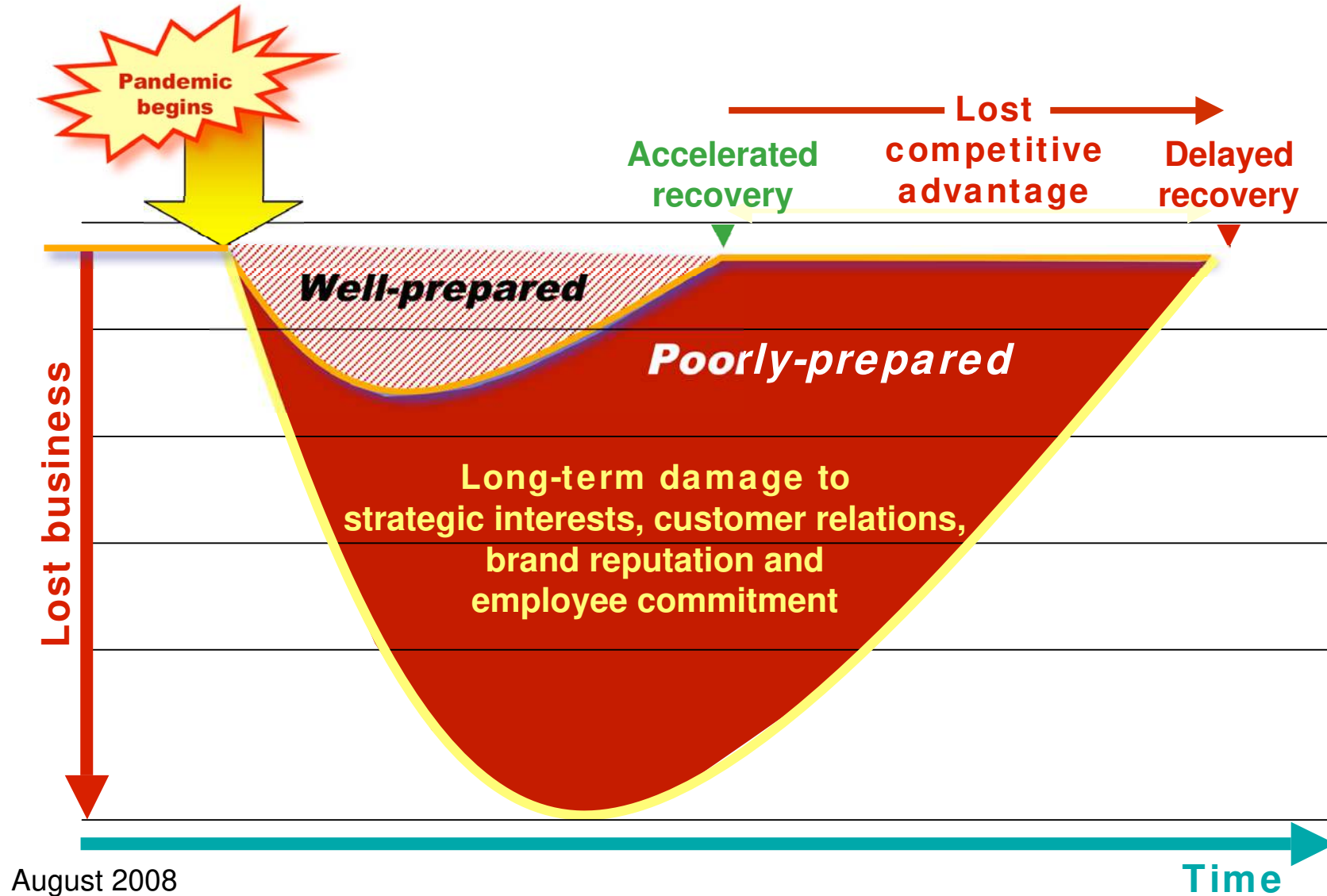




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Capture the competitive advantage by acting now





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# Planning Assumptions

1. 40% 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.
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. Tamiflu and other antivirals will be in very limited supply.
  - Vaccinations will take 9-10 months and antibiotics are only for the treatment of a secondary bacterial infection.
8. Current WHO Alert Levels do not provide any indication regarding the time interval between levels.
  - Current thinking among experts is that while it may take a significant amount of time for a virus to reach Alert Level 4 (small clusters of human to human viral spread), the time interval between Alert Levels 4, 5 and 6 may be rapid (ranging from days, to weeks, to months).
9. Phases One - Three are planning; Phases Four - Six execution.
10. Susceptibility will be universal.



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# Planning Triggers





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# WHO Phases

- **Phase 1 & 2** 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 historically last approximately 18 months.



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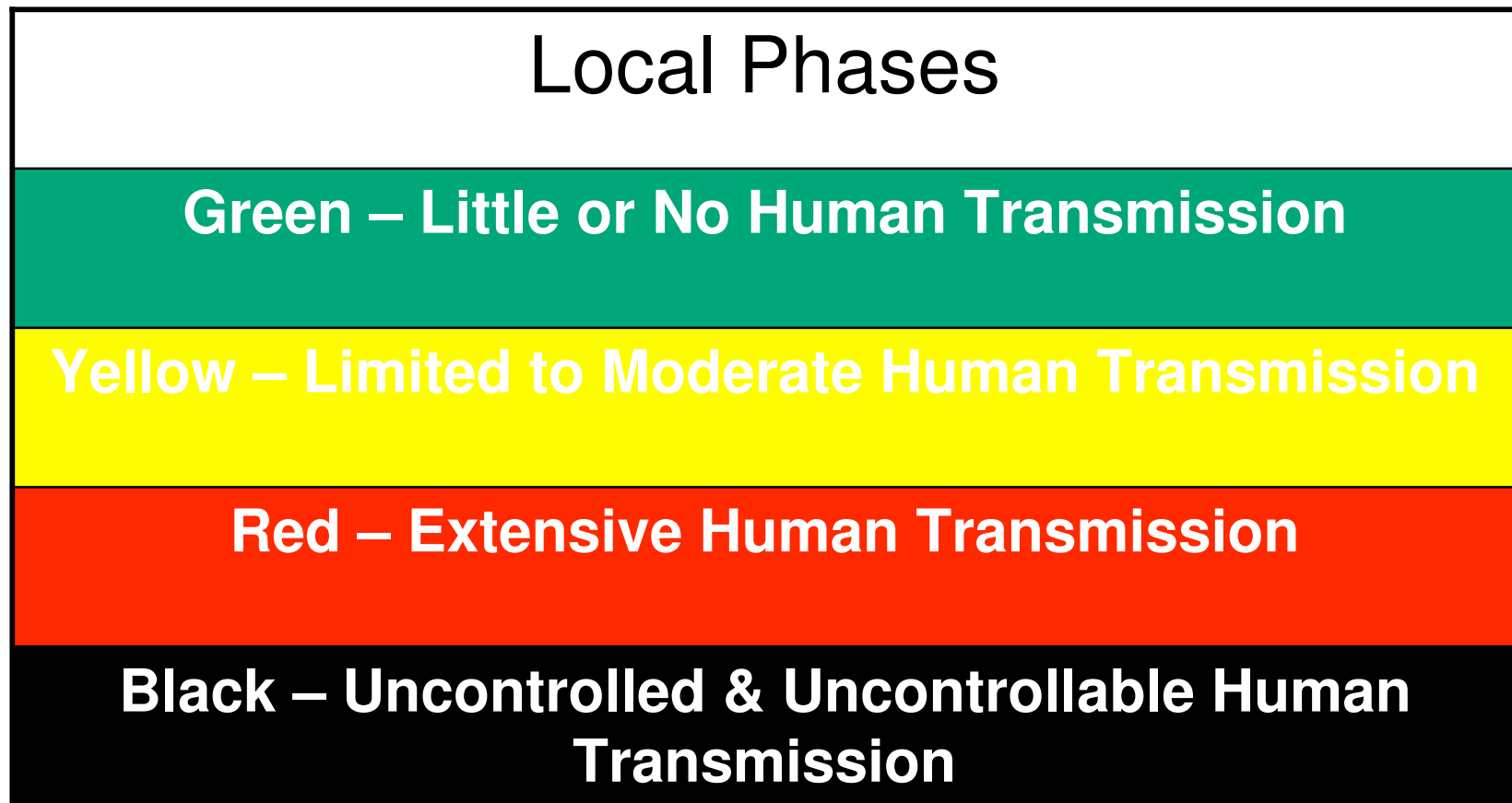
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# Plan Execution Triggers



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# Plan Globally Act Locally





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# Pandemic Plan Strategies



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# Two Strategies to Consider

- There are basically two strategies to consider:
  - Non-Pharmalogical Interventions
  - Pharmacological Interventions

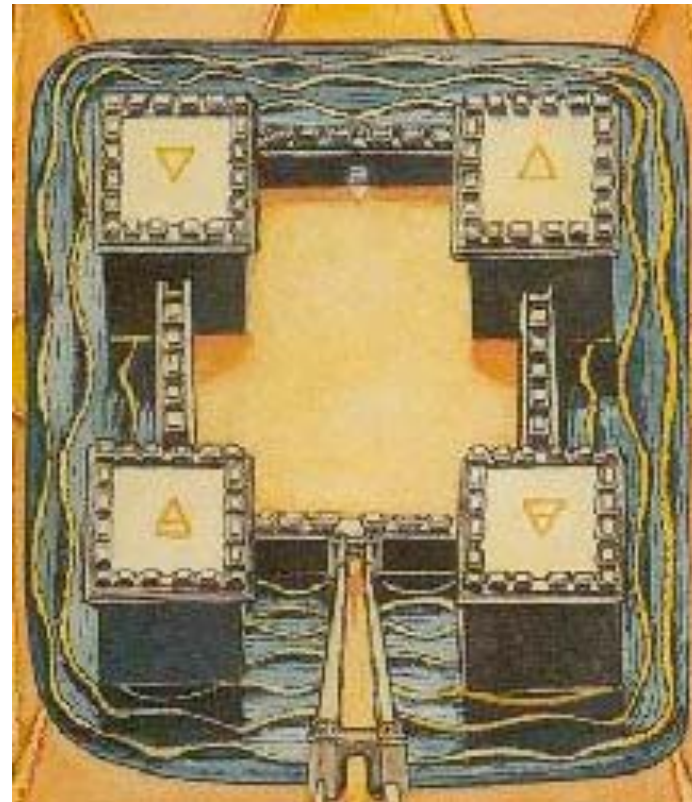


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# Non-Pharmalogical Interventions

- Administrative Controls
- Environmental Controls
- Engineering Controls
- Personal Protective Equipment

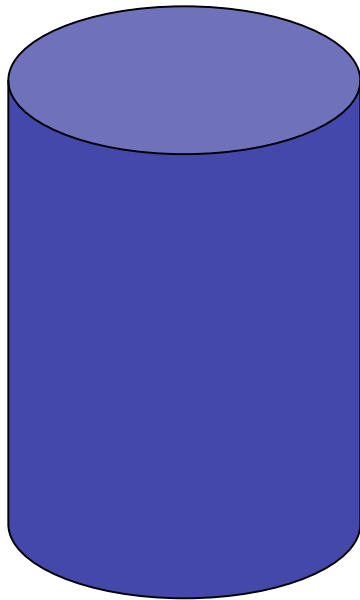




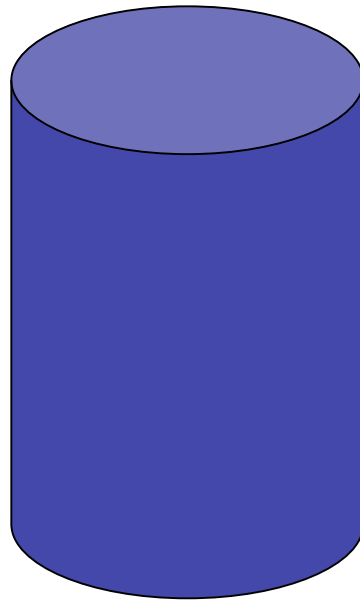
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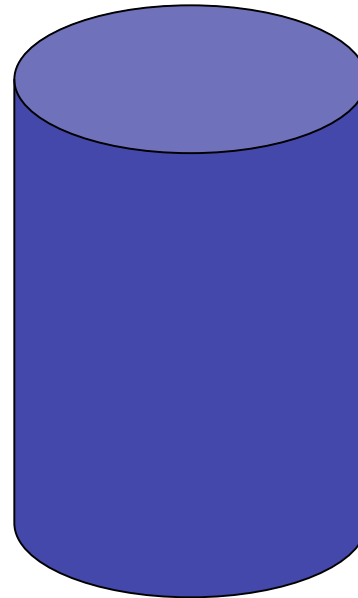
# Administrative Controls Human Resources



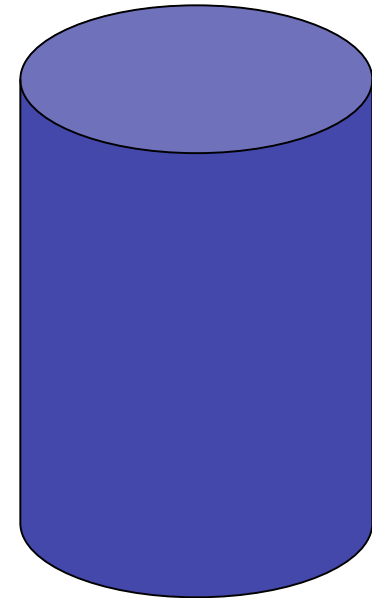
**Category One**  
“Must” be  
@ work



**Category Two**  
“Must” work  
& can work  
remotely



**Category Three**  
Can work  
remotely but not  
essential



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



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# Human Resources

- Must be work (Category 1):
  - 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
  - Antivirals?







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# Human Resources

- Remote Staff: install a robust work from home program (Category 2):
  - High-speed 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
  - Plan for what to do if working remotely fails



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# Human Resources

- Not necessary to work (Category 3 and 4):
  - 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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# Expatriate Employees & Families



Chronicle / Michael Macor

- 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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# Stricken Employees at Work

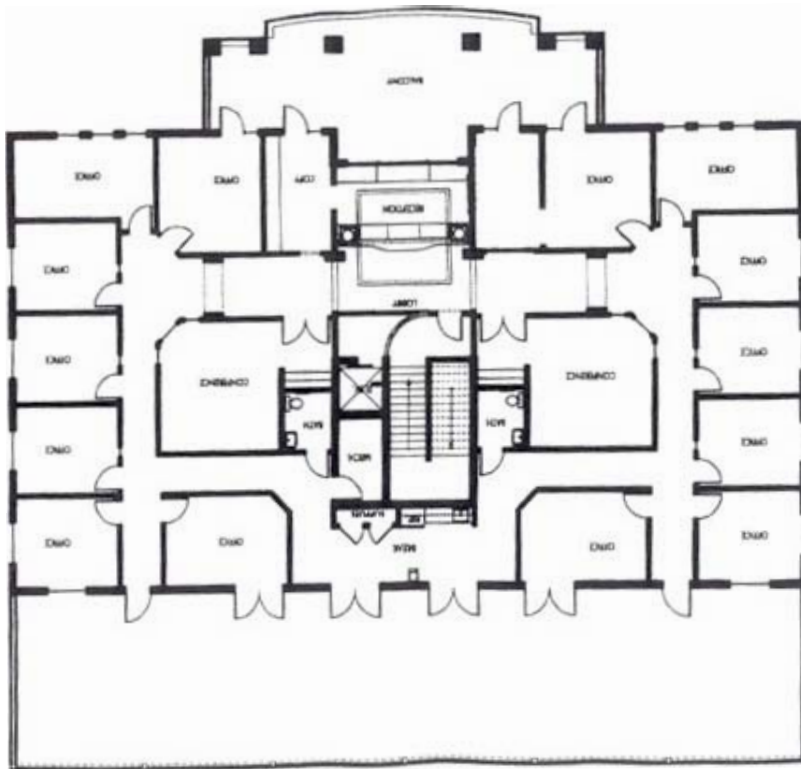


- How to handle a sick employee at work
  - Mask
  - Isolate
  - Trained responders at work
- What if 9-1-1 doesn't come?



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# Administrative Controls - Social Distancing



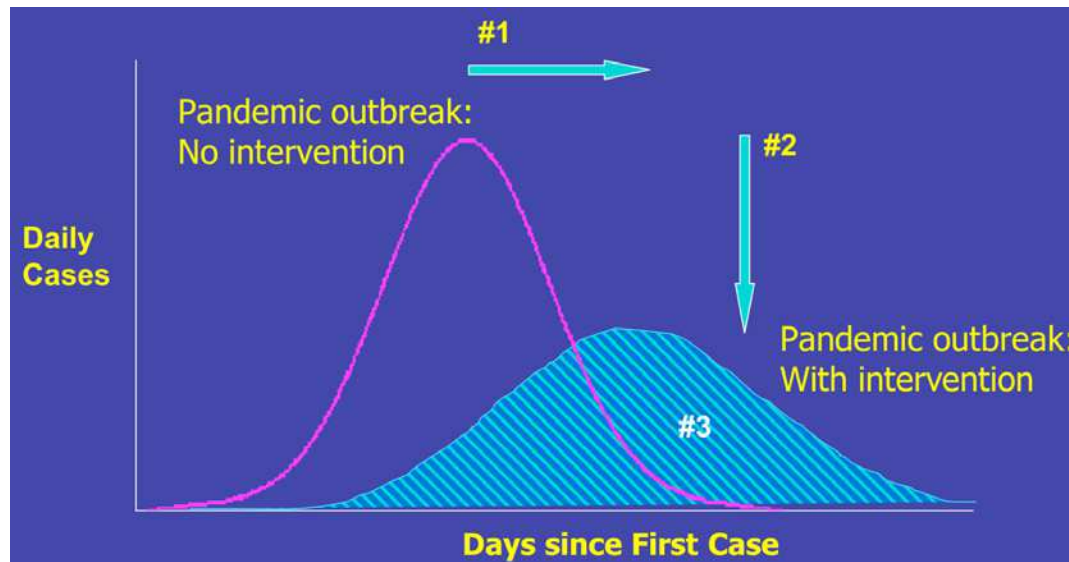
- Develop guidelines for social distancing.
  - Floor plans for spreading staff out at least six feet from each other.
  - Look at shift work.



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# Community-Based Interventions - The Impact of Social Distancing

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





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# Administrative Controls - 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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# Administrative Controls - Communication

- Communication plan including template communications, strategies and tools.
- Update employee information including all forms of contact
  - Work and personal cell, office and personal email
- Develop strategies if the phones are overloaded
  - Text messaging
  - VoIP ([www.skype](http://www.skype.com))
  - Instant messaging (skype, yahoo, aol)

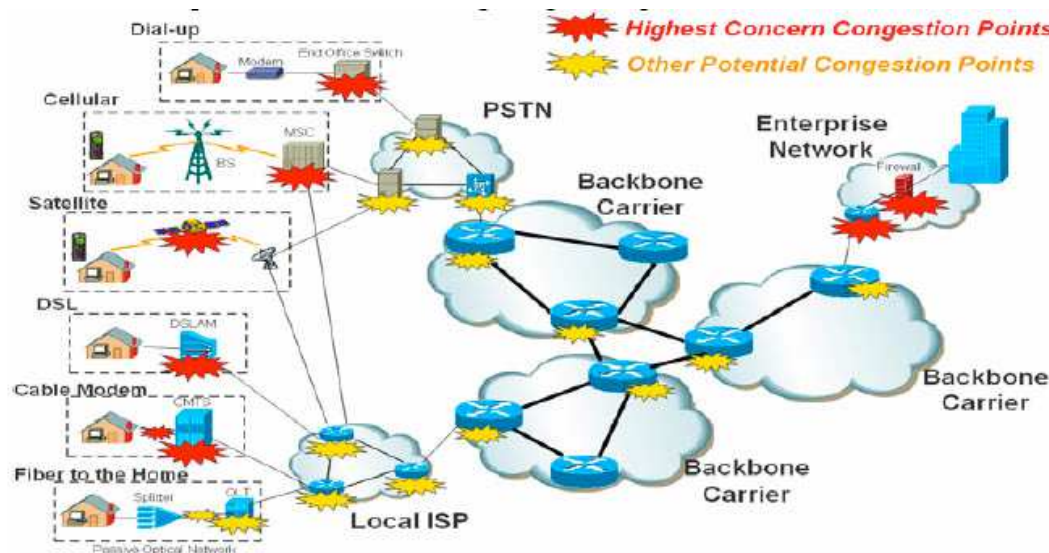




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# DHS Study: Pandemic Influenza Impact on Communications Networks



- Page 4: Telecommuters – “Employees who plan to telecommute during a pandemic and are truly critical to business operations should not rely on best effort, residential Internet access.”
  - Released December 2007



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# Administrative Controls - Security



- Visitor restrictions:
  - When?
  - How?
  - Exceptions?
  - Who can authorize?
- Visitor/vendor screening:
  - When?
  - How?
- Training
  - Personal Protective Equip.
  - Procedures



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# Administrative Controls - Education

- Influenza Basics
- Workplace cleaning
- Hand washing technique
- “Cover Your Cough” campaign
- Polite social distancing
- Stay Home if you are sick policy
- Virtual meeting techniques and strategies
- Strategies to minimize face to face contact with customers





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# Engineering Controls - HVAC

- HVAC system
  - How often to change filters
  - Changing filters
  - How much recycled air?

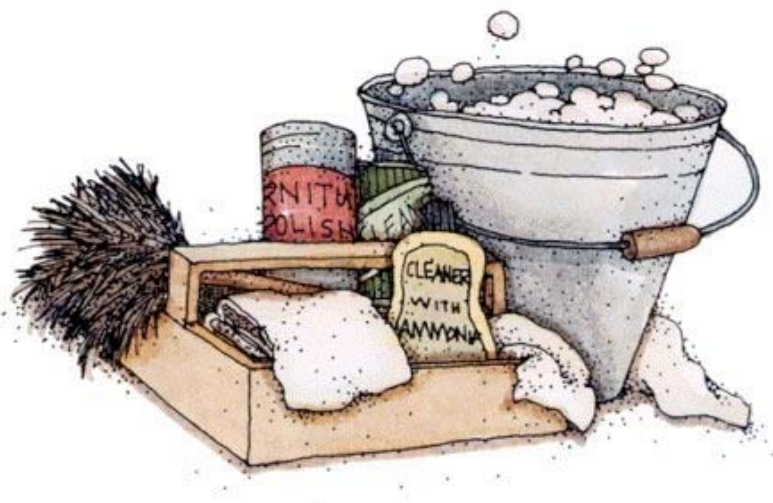




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# Engineering Controls - Janitorial



- Janitorial
  - Cleaning procedures
  - Disinfectants that match the surface needs.
- Virus survival:
  - Virus lives on hard non-porous surfaces > 24 hours
  - On porous surfaces 24 - 48 hours
  - Swiss banknotes up to 17 days!



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## Emergency Management & Safety Solutions

# Engineering Controls - Janitorial



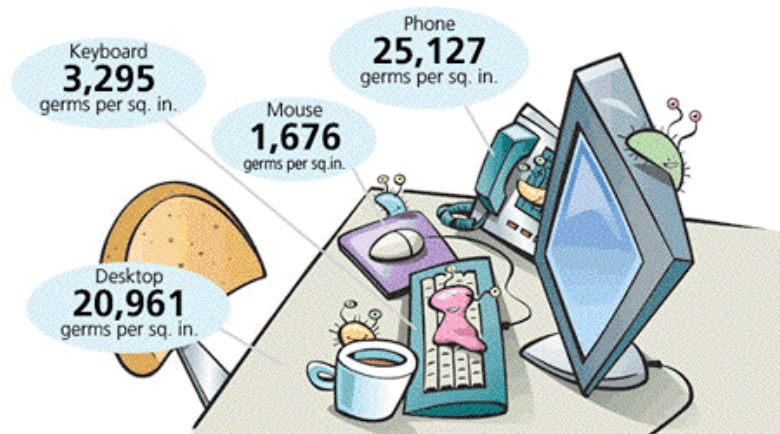
- Surface cleaning and disinfecting
- High Touch Areas require increased cleaning
  - Doorbells
  - Intercoms
  - Handrails
  - Door handles
  - Elevator buttons



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# Engineering Controls - Infection Control at Work

- Cleaning work areas
  - What are the top four germy office work areas?





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# Engineering Controls - 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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# Personal Protective Equipment (PPE)



- Should you wear PPE?
  - When
  - Why?
- Masks
  - N95
  - Surgical masks
- Gloves
  - Latex
  - Nitrile



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# Facemask Recommendations

- Encourages employers to stockpile respirators and facemasks so they can protect employees during a pandemic.
- Discusses various types of respirators and facemasks available for use.
- Provides estimates of the quantity of N95 respirators and/or facemasks employers should stockpile.



AP / Lai Seng Sin



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# Tool to Estimate Mask Use

Occupational setting	Proportion of medium or higher risk employees	Number of respirators or facemasks per employee per work shift		Number of respirators or facemasks per employee for a pandemic (120 work days)	
		N95 Respirators (high or very high risk)	Facemasks (medium risk)	N95 Respirators (high or very high risk)	Facemasks (medium risk)
<b>Healthcare</b>					
Hospital	67%	2	0	240	0
Outpatient office/clinic	67%	4	0	480	0
Long term care	25%	1	3	120	360
Home healthcare	90%	2	4	240	480
Emergency medical services	100%	8	0	960	0
<b>First responders</b>					
Law enforcement	90%	2	2	240	240
Corrections	90%	1	3	120	360
Fire department (non-EMS, career and volunteer)	90%	2	2	240	240
<b>Medium risk employees</b>	NA	0	2	0	240



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# Estimates for High Risk Areas

Occupational setting	Facemasks needed
<b>Healthcare</b>	
<b>Hospital (inpatient)</b>	<b>2 per patient per day</b>
<b>Essential visitors</b>	<b>3 per visitor per day</b>
<b>Emergency Rooms</b>	<b>1 per ill person</b>
<b>Outpatient office/clinic</b>	<b>2 per patient visit</b>
<b>Long term care</b>	<b>1 per patient per day</b>
<b>Home healthcare</b>	<b>1 per patient visit</b>
<b>Emergency medical services</b>	<b>1 per ill person</b>
<b>First responders</b>	
<b>Law enforcement</b>	<b>1 per ill person</b>
<b>Corrections</b>	<b>2 per ill inmate per day</b>
<b>Fire department</b>	<b>1 per ill person</b>



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# Pharmacological Interventions

- Vaccination
- Antiviral Prophylaxis and Therapy



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# Vaccinations



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- The best method of preventing and reducing the impact of the flu on the population is the timely development, distribution, and administration of influenza vaccine
- Key target groups for **seasonal** influenza include persons at increased risk for complications:
  - Health care workers
  - People 50-64 years
  - Children 6-23 months
  - Pregnant women
- The Federal Pandemic Plan advocates pandemic vaccination for:
  - Those essential to the pandemic response and provide care for persons who are ill.
  - Those who maintain essential community services.
  - Children.
  - Workers who are at greater risk of infection due to their job.



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# Pre Pandemic and Pandemic Vaccines

- Pre-pandemic vaccines (H5N1)
  - Could provide earlier protection
  - Won't match pandemic flu strain exactly
  - First shots given before a pandemic
  - Likely to require 2 doses 21 days apart
- Pandemic vaccine best option
  - Directly matches circulating flu strain
  - Up to 6 months to develop
  - May require 1 dose or 2 doses 3-4 weeks apart



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# Antiviral Therapy



- Two antivirals are being used for treatment in H5N1:
  - Tamiflu (Oseltamivir) - Roche.
  - Relenza (Zanamivir) - GlaxoSmithKline
- These drugs work as a Neuraminidase (N) inhibitor
  - Prevent the virus from spreading in your body.
- Questions to consider:
  - How is it administered?
  - What is the shelf life?
  - Prophylaxis vs. Treatment?
  - How to set up a program?





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## Emergency Management & Safety Solutions

# **Proposed Considerations for Antiviral Drug Stockpiling by Employers In Preparation for an Influenza Pandemic**

### Draft Guidance for Stakeholder Discussion

The “Proposed Considerations for Antiviral Drug Stockpiling by Employers in Preparation for an Influenza Pandemic” was developed by a Federal working group to provide information to employers to inform planning and implementation decisions on antiviral drug stockpiling and, if drugs are stockpiled, to assure that they are maintained and used optimally.



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# Potential Role of Antivirals in a Pandemic

- The WHO recommends antivirals for the prevention of the spread of pandemic influenza disease through household contacts.
- The CDC encourages the private sector to consider stockpiling in advance of a pandemic as part of comprehensive pandemic planning program.
- Mathematical modeling suggests that antivirals could delay the spread of a pandemic influenza virus thus gaining time to augment vaccine supplies.



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# Employers and Stockpiling Antivirals

- May elect to stockpile for several reasons:
  - Assure early treatment for those who are ill.
  - Provide pre-exposure prophylaxis for employees.
    - Probably occupational exposure/risk to ill persons
    - Essential to business operations
    - Certain critical infrastructure workers and/or
    - All workforce
  - Provide post exposure prophylaxis following household or workplace exposure.
  - Protect overseas employees and operations.



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# Key issues in Antiviral Stockpiling

- Plan for collaboration with state and local health departments
- Comply with State dispensing laws.
- Consider the ethical and equity concerns.
- Develop a stockpiling and dispensing model
  - Utilize existing health care providers or pharmacy's
  - Contract with a wholesale drug distributor
  - Stockpile onsite
  - Dispense pre-pandemic
- Educate employees and families



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## **Emergency Management & Safety Solutions**

**Personal Preparedness...**



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## Emergency Management & Safety Solutions

# Home and Family Preparedness



- WASH your hands.
- Avoid touching your eyes, ears and mouth.
- DON'T cough into your hands!
- If sick, stay home.
- Get an annual flu shot.
- Stock up!
  - Practice personal preparedness, have enough basic supplies at home for a week.



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## Emergency Management & Safety Solutions

# “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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## Emergency Management & Safety Solutions

# 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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## Emergency Management & Safety Solutions

# THANK YOU!

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**Regina Phelps, CEM, RN, BSN, MPA**

Emergency Management & Safety Solutions

San Francisco, California

415-643-4300

[www.ems-solutionsinc.com](http://www.ems-solutionsinc.com)