

# **The Fallacies of “Surge” During Pandemics**

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## **The Fallacies of “Surge” During Pandemics**

- Can History help us?
- Surge Planning for physical disasters
- Surge issues for pandemics
- Overcoming the challenges

## Can history help us?

- What has not changed in the past 91 years
- Review public health responses  
Philadelphia vs.. Saint Louis
- What changed in the past 91 years?

## What hasn't changed in the past 91 years?

World population vulnerable to a novel strain of influenza--a disease for which there is neither vaccination nor specific treatment,

## **What hasn't changed in the past 91 years?**

- Tried and true public health disease control measures will be central to management of a novel agent disease.

## **Philadelphia vs.. Saint Louis**

## Excess Influenza Death Rates /1000

1918

1918

Philadelphia 7.4

Saint Louis 1.8

## What was different

- Philadelphia
  - Patronage based civic/PH leadership
  - Slow to impose "social distancing"
  - Inappropriate "Risk Communication"
  - Slow to get community buy-in
- Saint Louis
  - Highly competent civic/PH leadership
  - Preemptive and enforced "social distancing"
  - Optimal risk communication
  - Community buy-in from the start

## What's changed?

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TIFF (Uncompressed) decompressor  
are needed to see this picture.

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- 1918 Around the world in 80 days
- 2009 Anywhere in the world four flights < 36 hrs

## What's Changed?

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- 1918 Medical supplies made at site of use
- 2009 Nothing's made here any more

## What's changed

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- Well stocked larders common in 1918
- Material essential to businesses stored on site
- Well worn path to supermarket common in 2009
- All things consumable driven by JIT

## What's changed?

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- 1918- All Mothers, Nanas, Aunties were nurses
- 2009 Only Mothers, Nanas and Aunties with a nursing license are nurses
- 2009 Nursing so specialized that many nurses have no experience with care for person with an infectious disease

## What's changed?

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- 1918 Critically ill housed in converted buildings
- 2008 Current plans for “surge” -- House the critically ill in converted buildings

## Surge planning for physical disasters

Physical disasters are:

**sudden in onset; time-limited  
in duration**

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**geographically limited**

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## relatively rapid situational awareness

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## relatively limited number of individuals affected



# effect limited by laws of physics

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# Surge Issues and Pandemic Planning

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## definitions

- Epidemic: widespread occurrence of an infectious disease in a community at a particular time
- Pandemic: epidemic prevalent over a region/country or the world.

## Surge planning for pandemics is complicated by problematic situational awareness

- Gradual onset may delay recognition
- ? Mode of transmission
- ? Incubation period
- ? Geographic range
- ? Speed of Spread
- ? What is best treatment
- ? Who will die regardless of Rx

## Surge planning for pandemics is complicated by disease transmission characteristics

- Droplet
- Airborne
- Fomites
- Body fluids

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## Surge planning affected by population affected

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**Surge planning for  
pandemics is complicated by  
duration of pandemic**

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**Surge planning for  
pandemics is complicated by  
regional or national  
involvement**

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## **Surge planning for pandemics is complicated by impact on healthcare providers**

- SARS
  - Majority of cases HCW
  - Toronto EMS 50% exposed

## **Surge planning for pandemics is complicated by JIT Supply chain policies**

# Fallacies in Pandemic Planning

## HHS Pandemic Planning Assumptions

	Moderate (1968-like)	Severe (1918-like)
Illness	90 million (30%)	90 million (30%)
Outpatient medical care	45 million (50%)	45 million (50%)
Hospitalization	865,000	9,900,000
ICU care	128,750	1,485,000
Mechanical ventilation	64,875	745,500
Deaths	209,000	1,903,000

## Assumptions vs.. Total US Capacity

	Moderate (1968-like)	Severe (1918-like)	Total U.S. Hospital Capacity
Illness	90 million	90 million	
Outpatient	45 million	45 million	
Hospitalization	865,000	9,900,000	946,997 beds
ICU care	128,750	1,485,000	87,400 ICU beds
Mechanical ventilation	64,875	745,500	53,000- 105,000 ventilators (5000→7500 in SNS)
Deaths	209,000	1,903,000	

## Influenza Pandemic's impact on Avg. U.S. Hospital

- Flu Surge model (CDC)
- HHS planning assumptions
- At peak (week 5 of 8) with 25% attack rate

Moderate Scenario (1968-like)	Severe Scenario (1918-like)
19% of non-ICU beds	191% of non-ICU beds
46% of ICU beds	461% of ICU beds
20% of ventilators	198% of ventilators

## Capacity

- Physical space limitations
- Facility Infrastructure limitations
  - Space
  - Oxygen
  - Electrical outlets
  - Food
  - Waste
  - Morgue

## Trained Staff

- Professional staff
- Infrastructure staff
- Volunteers

## Supply Chain issues

- Fuel
- Oxygen
- IV Fluids
- Needles and syringes
- Laundry
- Medications
- Food

**Overcoming the  
challenges**

## Start the Dialogue

- First we may not be able to help everyone
- Surge management begins with Mom
  - Patient directed triage
  - Home care algorithms
  - Plan to support home care
  - Supplies

## Re-think Disposable

- Discussions with staff about smart use of supplies
- What to stockpile
- What can be sterilized and reused

## Cultural Changes

- No more opting out of vaccinations
- If you go to work sick you are a bioterrorist
- Plan to enforce social distancing for children
- Medicine is not magic

## Protect the workforce

- Prevention is paramount
- Change the mask culture
- Insist on vaccinations
- Cross train as much as possible
- Rethink who needs to be at work
- Establish clearly defined social contract

## **Give yourself situational awareness**

- Real time syndromic surveillance
- Link surveillance to resource allocation

## **Apply the 5 P's**

- Evidence based planning
- History can help us
- Plans are not equal to preparedness
- Preparedness and surge management begins with the family unit
- It's all about relationships

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