

# **Pandemic Influenza - We're Not that Prepared**

ACOI 69th Annual Meeting

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Tucson, Az

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“Let me guess - he said we’re all gonna die!” .....C. Weston DO



# The Great Influenza

THE EPIC STORY OF THE DEADLIEST  
PLAGUE IN HISTORY



John M. Barry

author of *Rising Tide*

- [www.flu.gov/](http://www.flu.gov/)
- NEJM.org: the H1N1 Influenza Center

# Botsford Hospital

- 330 bed teaching hospital
- 17,000 admissions/yr
- 59,000 ER visits/yr
- 1st case of AIDS in MI (1981)
- 1st to report salmonella outbreak in local radio celebrity and staff (late Friday afternoon)
- 1st to report massive legionella outbreak in Farmington Hills (over a weekend)



- ~ **March 9**, 2009, 4 y.o. Edgar Hernandez of La Gloria, Veracruz, Mexico became the first known person to be infected w/ a novel strain of H1N1 influenza.
- Tuesday, **April 21 (~ 6 WEEKS LATER!!)**: MMWR Dispatch - Swine Influenza A (H1N1) in Two Children (in southern California)
- Wed., **April 22**: brief hallway discussion between myself and EH re above.

Other than awareness, no additional attention given at the time.

- Thursday, April 23: HAN Alert describing 5 infected children and 2 adults in California and Texas. Minimal attention paid (by me)
- Friday, April 24: additional HAN Alerts. Speculation as to where this might all go. MMWR Dispatch sent at 7:06 pm!!
- Friday night 11 o'clock local news: 1 sentence mentioning "Swine flu"

- Saturday, April 25 (5 DAYS after initial dispatch):
  - widespread news coverage, including link to Mexican outbreak
  - Events discussed briefly w/ Administration
  - **HAN Alert: .....“low importance”**  
**Sent at 8:50 p.m.!!!**

- Sunday, April 26:
  - Informal discussion w/ friend at U. of Mich.
  - Inability to arrange conference call w/ MIDS Leadership
  - Inability to reach Employee Health Service
- Monday, April 27:
  - Previously scheduled “Pharmacy” meeting modified
    - Survey of available antivirals: NONE on campus
    - List of concerns provided to Administration
      - Response: “we can’t address all these at this meeting...”

# Concerns

(Note: this was in face of unknown severity of disease)

- What will trigger closing of hospital to elective admissions, including elective surgery?
- What will trigger triage of pts outside of ER?
- Lodging for (exposed?) employees?
- What will trigger dedicated floors/staffing?
- Hospital personnel:
  - Absenteeism?
  - What if schools/day care close?
  - How does one prevent ill employees from coming to work?
- Optimal use of limited supply of antivirals?

- Subtle battles over who was in charge
- Tuesday, April 28:
  - Urgent Disaster Committee meeting called
    - only docs involved (other than myself), were ER docs
    - Intensivists, hospitalists never involved in discussions
- Wednesday, April 29 (8 days later):
  - “Leadership Conference” w/ further discussion, but.....
  - 5 pm survey of 5 nursing stations re any direct communication from upper or middle management?:
    - 11 nurses (1 recalled having seen “some sort of” notice posted)
    - 3 house staff
    - 2 ward clerks
    - 1 transporter
    - 1 aide

NONE reported ANY conversations w/ management

# What was so worrisome?

- Why now?
- Why Mexico? The time and location of a completely novel influenza virus was totally unexpected, moving throughout the world in a matter of weeks
- A novel strain
- High mortality rate in Mexico (4%: 19 of 473 “confirmed” cases)
- Of 19 reported deaths (source: msnbc news)
  - A 9, 12, and 13 y.o.
  - 9 deaths of persons between ages of 21 - 39

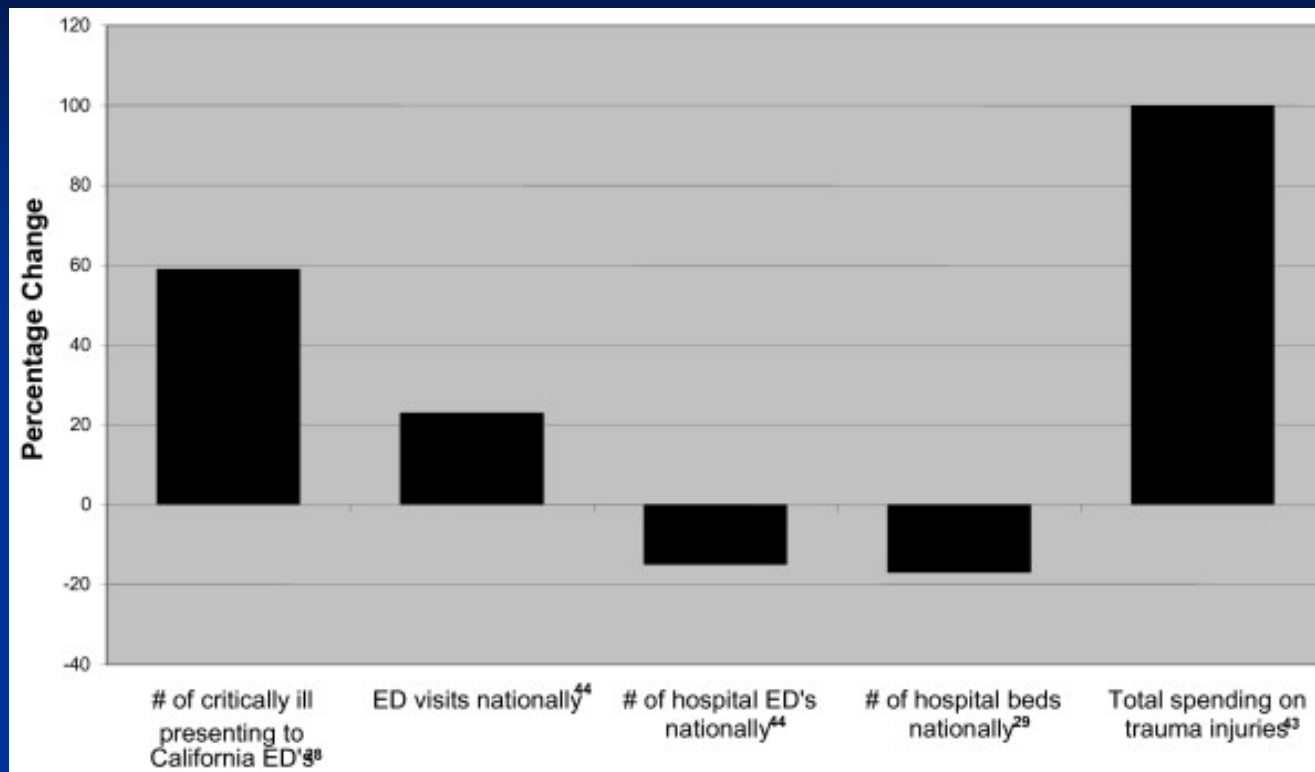
# So, why all the concern?

## Influenza - Related Mortality\*

	Worldwide Pop'n = 6.5 billion	U.S. Pop'n = 300 million
Non-pandemic (Mortality = .03-.06%)	4 - 800,000	36,000
“typical” pandemic (mortality = 2.5%)	30 - 55 million	1.5 - 2 million
H1N1 <u>if</u> 4% mortality**	80 million!!	4 million!!

\*assumes an attack rate of approximately 1/3rd of the population

\*\* based on reported mortality rates from Mexico 5/03/09 (reliability unknown)



From: Cherry RA and Trainer M; BMC Emergency Medicine 2008, 8:7

# Throughout a constantly changing situation....

- Mixed, sometimes conflicting, messages from various government officials re:
  - Travel
  - School closings/"disinfection"
  - PPE - surgical masks? N 95's?
- No mechanism currently in place for prompt and system-wide communication with our attending physicians, and, to some degree, our house staff
- Utility of rapid diagnostic tests unclear

- Multiple sources (e.g. CDC, HAN, APIC, IDSA, ASM, U. of M.) providing advice, recommendations, w/ some variation, at times inconsistent w/ others, and often not applicable to a particular hospital or situation
- **Unanticipated: E-mail overload**
  - **Solution? - quit reading any of it!!**

# Why we were so worried:

- H1N1 replicates well in the lungs
- Greater mortality in young healthy adults
- Future changes in virulence?
- Our hospitals have limited surge capacity
- Our HCWs are of a generation that have never really put themselves at risk
- Vaccine availability? Effectiveness? Safety?
- Anti-viral availability? Effectiveness? Pediatric formulations?
- Adequate supplies of antibiotics for secondary bacterial pneumonia?

- Thursday, April 30:
  - Very limited supplies of oseltamivir made available only to in-patients and only w/ approval of I.D.
  - Unknown if ANY zanamivir available
  - Botsford PCP sees recent traveler w/ probable H1N1
    - Confirmatory testing declined by MDCH because she did not meet strict criteria
    - Though a candidate for tx, none available through retail pharmacies - so where will he send him??!!
- From Administration (**Day 10**): “Ya know Jerry, I expect you to take charge of this.....”
- Friday, May 1: Novel H1N1 Task force convened (**Day 11 since first reported**)

# Concerns I

- Infection Control issues:
  - Who gets isolated (and/or treated) if rapid testing unavailable and/or insensitive?
    - Viral shedding begins 1 day before symptoms
    - Especially in children, other respiratory viruses act similarly
  - Appropriate isolation - surgical masks vs N95?
    - Clinics vs in-pts
  - Adequate PPE? Reuse of PPE?
  - Triage - Where? How? Will you be herding H1N1 pts together w/ other resp illnesses (especially true in peds)?
  - Should we not limit employee exposure as much as possible (lab, resp therapy, etc)?

# Concerns II

- **Rapid tests for diagnosing H1N1 may have a sensitivity of only 50%!!**
- **How good is rapid testing?**
  - What if it's not sensitive? Not specific?
  - What if it's not available?
  - When should confirmatory testing be done?
    - For treatment?
    - For Infection Control issues
    - For epidemiologic issues?

# Concerns III

- Hospital personnel:
  - 30-50% absenteeism
  - How does one prevent ill employees - and PHYSICIANS from continuing to work?? How would this be enforced?
  - What if schools/day care close?
- **RATIONING: Who gets vaccine?**
  - How much will be available? (80 % of vaccine production is outside of U.S.)
  - When?
  - 1 or 2 doses?
  - Safety?
- **RATIONING: Optimal use of limited supply of antivirals?**
  - Treatment?
  - Prophylaxis?

# Concerns IV

## ■ RATIONING:

- Who gets treated if high mortality, limited meds, rapid testing unavailable and/or insensitive?
- Traditional triage vs Army-style? Who decides?
  - Who gets placed on ventilatory support?

## ■ RATIONING:

- Adequate supplies of palliative care meds? Who will make the decision on these patients?
- Adequate supplies of antibiotics for 2ndary bacterial pneumonia?

- **Sunday, May 3:**

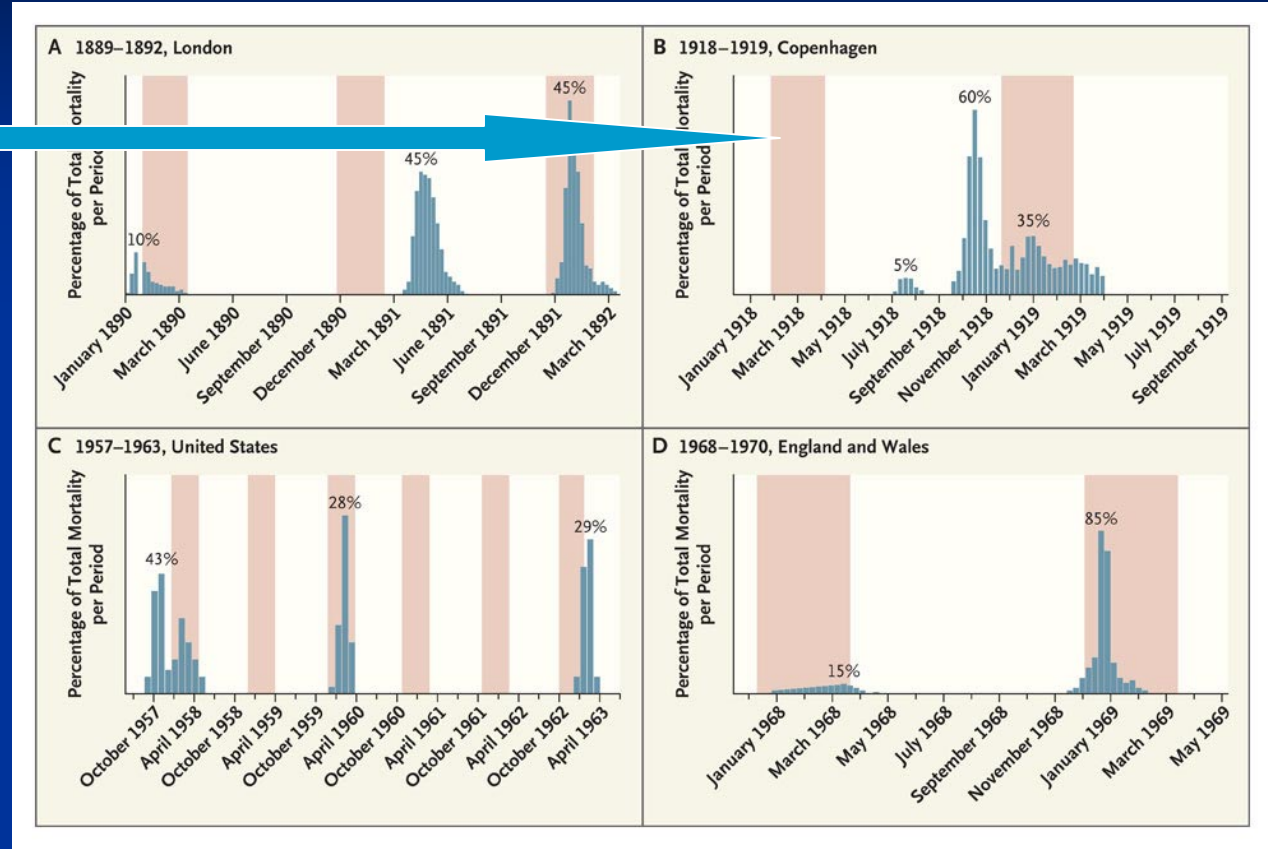
- 1st “creative” dose of Tamiflu® released to a pediatric ER pt

(Only ONE treatment course of pediatric formulation of oseltamivir available!!)

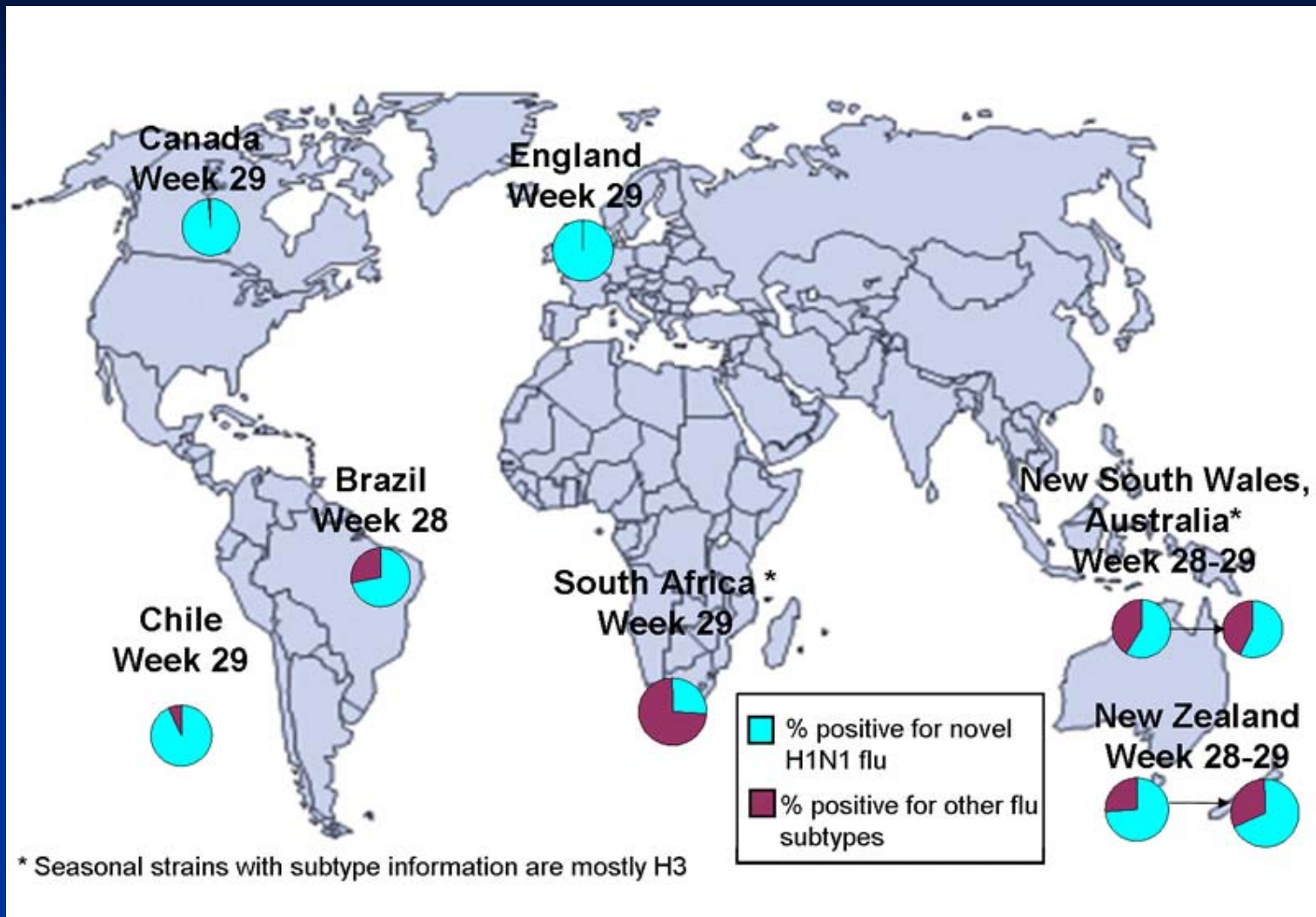
- Some local schools being closed
  - An employee-friendly absentee policy?
  - What if our day-care were to close?
- Again, unable to convene a MIDS conference call

# Mortality Distributions and Timing of Waves of Previous Influenza Pandemics

(Normal seasonal pattern of influenza)



Miller M et al. N Engl J Med 2009;360:2595-2598



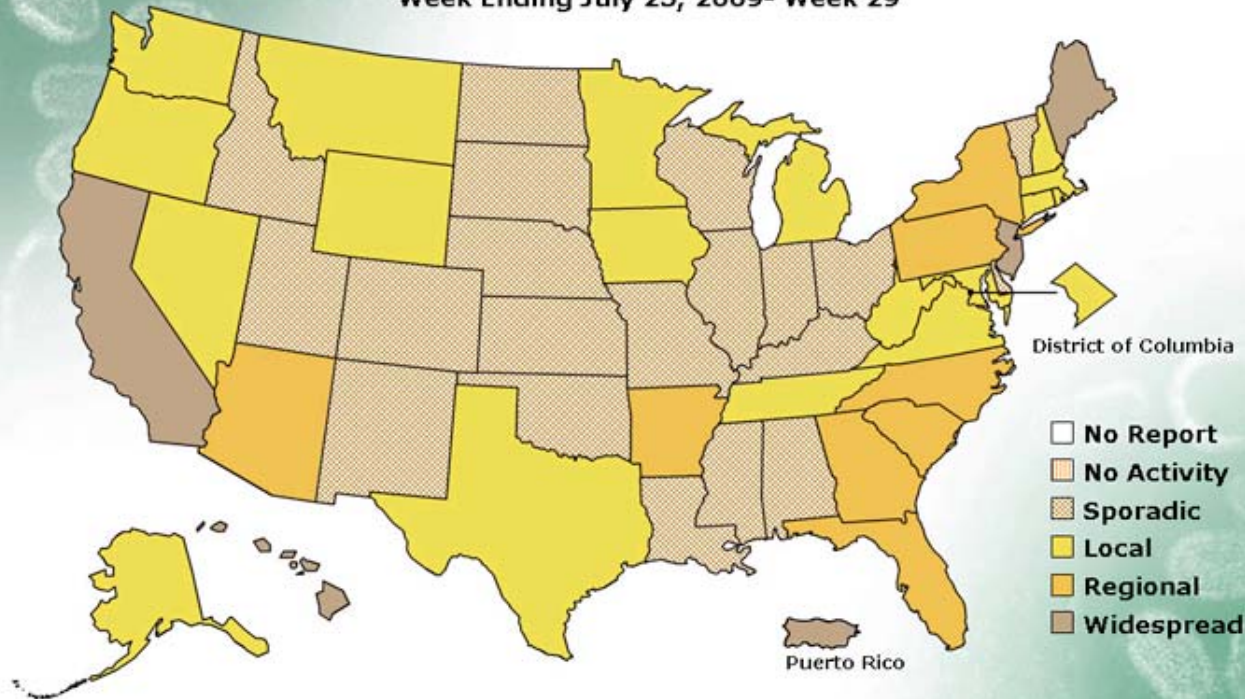
0.45 % mortality

# FLUVIEW



A Weekly Influenza Surveillance Report Prepared by the Influenza Division  
Weekly Influenza Activity Estimates Reported by State and Territorial Epidemiologists\*

Week Ending July 25, 2009- Week 29



\*This map indicates geographic spread and does not measure the severity of influenza activity.

37, 246 confirmed/probable cases - 211 deaths; 0.57 % mortality  
5514 hospitalized - 353 deaths; 6.4% mortality

# Did we learn anything?

## Electrical Blackout- August 14, 2003

- ~ 24 hrs
- 8 states + Ontario
- 50 million affected
- My hospital:
  - No A.C.
  - Minimal lab
  - No water
  - Back-up generators
  - No gas
  - No transportation
  - Traffic gridlock
  - No cell phones



# Post-influenza CA-MRSA pneumonia\*:

- 17 patients from 9 states
- All had influenza-like illness w/ abnormal CXRs
- 71% had laboratory confirmed influenza
- Median age: 21
- Respiratory symptoms 4 days prior to cultures
- 81% required admission to ICU
  - 62% intubated
  - 46% required chest tubes
- 5 deaths (30%); only 1 w/ underlying dx

\*Hageman et al. Emerg Infect Dis 2006;12(6):894-899

.....though there may be creative ways to protect ourselves...



# Worrisome....

- After declining to carry out any drill that significantly interrupts normal activities,  
“If it gets really bad, we’ll just have to make it up as we go along” .....anonymous Hospital Administrator
- Stating that post-exposure prophylaxis was not indicated for exposed HCW’s on the basis of “they knew the risks when they signed up for this job”  
.....Deputy Commissioner Dept. of Health (State unknown)
- “Who’s going to stop me from making rounds, even if I’m sick??”  
.....overheard in physician’s dining room

# Summary I: More ?'s than Answers

- Stuff happens - often going into a weekend
- Stuff may also happen first at a smaller hospital
- Hospital administrators' goals tend to conflict w/ the optimal management of a crisis
- In many hospitals, involved physicians goals may be in conflict w/ optimal management of H1N1
- Communication between critical personnel is still wanting
  - Within hospitals
  - Between hospitals and hospital systems
  - Between public health and practicing docs

# Summary II

- How does one utilize - if at all - a lousy screening test?
- How does one efficiently deal w/ multiple changing, and sometimes conflicting recommendations?
- How does one ethically and legally ration care of our work force and our patients?
- How does one prevent ill employees - and PHYSICIANS from continuing to work?? How would this be enforced?
- Although Public Health has done much, I remain unconvinced that we are adequately prepared for any outbreak that is highly contagious with significant mortality

**Thanks**