

## **Some of the individuals included in these emails**

### **Surgeon General of the United States.**

++ Dr. Jerome Adams

### **Homeland Security**

++ Dr. Duane Caneva, DHS Chief medical officer

++ Dr. David S Wade, medical officer, Department of Homeland Security, previously on NSC

++ Dr. Thomas Wilkinson, Medical Information Officer DHS

++ Herbert O. Wolfe director and acting chief of staff of the Office of the Chief Medical Officer at the U.S. Department of Homeland Security.

++ Dr. David Tarantino, senior medical adviser for CBP and coordinator of the protection part of CBP's response to the opioid crisis.

++ Dr. Gregory J. Martin, State Department

++ Dr. Alexander L. Eastman senior medical officer Homeland Security

++ Dr. Sangeeta Kaushik is an emergency medicine physician at DHS

### **STATE Department**

++ Dr. Larry G. Padget Jr. State Department

### **Health and Human Services and Centers for Disease Control and Prevention**

++ Brett Giroir, Assistant Secretary for Health at the U.S. Department of Health and Human Services

++ Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases

++ Dr. Robert Kadlec, Assistant Secretary of Health and Human Services

++ Dr. Richard Hunt, senior medical advisor

++ Dr. Robert R. Redfield, Director of the Centers for Disease Control and Prevention

++ Christian Hassell Senior Science Advisor at U.S. Department of Health and Human Services

++ Daniel Dodgen, director of ASPR Division for At-Risk Individuals, Behavioral Health, and Community Resilience.

++ Kristin L. DeBord, Director of Strategy Office of the Assistant Secretary for Preparedness and Response U.S. Department of Health and Human Services

++ Robert Johnson, Ph.D., is the Director of the Influenza and Emerging Infectious Diseases Division of Biomedical Advanced Research Development Authority

++ Kevin Yeskey, M.D. currently serves as the Principal Deputy Assistant Secretary to the Assistant Secretary for Preparedness and Response (ASPR) at the Department of Health and Human Services (HHS). The office leads the nation in preventing, responding to and recovering from the adverse health effects of manmade and naturally occurring disaster and public health emergencies.

++ Dr. Gary Disbrow is the Deputy Director (Acting) of the Biomedical Advanced Research and Development Authority

++ Dr. John T. Redd, a medical epidemiologist with the U.S. Centers for Disease Control and Prevention

### **Department of Defense**

++ Col. Matthew Hepburn, M.D., DARPA program manager, former director of Medical Preparedness on the White House National Security Staff.

### **Department of Veterans Affairs**

++ Dr. Carter E. Mecher, Senior Medical Advisor

++ Paul Kshemendra, chief data officer and executive director for data governance and analytics

### **ACADEMICS/Private Sector/Former Government Officials**

++ Eva K Lee: American operations researcher who applies combinatorial optimization and systems biology to the study of health care decision making at Georgia Tech

++ Tom Bossert former Homeland Security Advisor to U.S. President Donald Trump.

++ Dr. Dan Hanfling, MD, Clinical Professor of Emergency Medicine at George Washington University also with In-Q-Tel

++ Ralph Baric, PhD, Professor in the Department of Epidemiology UNC, leader in the study of coronaviruses  
++ Richard Hatchett CEO Coalition for Epidemic Preparedness. Served in the White Houses of Presidents George W. Bush and Barack Obama  
++ Dr. James Lawler, infectious disease doctor at University of Nebraska, served as a member of the Homeland Security Council for President George W. Bush and as a member of the National Security Council for President Barack Obama.  
++ Dr. David Marozzi, former senior advisor for Emergency Preparedness and Acute Care within the Centers of Medicare and Medicaid Services and member of White House National Security Council.  
+++ Michael Wargo is vice president of emergency preparedness at HCA Healthcare.  
++ Herbert O. Wolfe of Penn State, former National Security Council staff at the White House

#### **STATE OFFICIALS**

++ Dr. Charity A. Dean, California Department of Public Health  
+++ David Gruber Texas Department of State Health Services Mobile Associate Commissioner for Regional and Local Health Operations, Border Health, Emergency Preparedness and the Texas Center for Infectious Disease.  
++ Dr. Jeffrey S. Duchin, Health Officer and Chief, Communicable Disease Epidemiology & Immunization Section Public Health - Seattle and King County Professor in Medicine, Division of Infectious Diseases, University of Washington

#### **EMAILS**

From: Carter Mecher <[REDACTED]>

Sent: Tuesday, January 28, 2020 9:10 AM

To: Hepburn, Matthew J CIV USARMY (USA) [REDACTED] >; Caneva, Duane <Caution-Caution-mailto:[REDACTED]> >; Lawler, James V <[REDACTED]> >; Wargo Michael <Michael.Wargo@[REDACTED]> >; Richard Hatchett <[REDACTED]> >; brian.[REDACTED].cc >; HARVEY, MELISSA <[REDACTED]> >; Wade, Dave S. EOP/NSC <[REDACTED]> > Cc: Lisa Koonin: [REDACTED] >; Marozzi, David <[REDACTED]> >; WOLFE, HERBERT [REDACTED]

Subject: RE: [Non-DoD Source] RE: 2019-nCoV (UNCLASSIFIED)

Updated numbers. Changed things around to better compare current outbreak to SARS and H1N1.From:

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Richard Hatchett [Caution-mailto:[REDACTED]] <Caution-mailto:[REDACTED]> >]  
Sent: Tuesday, January 28, 2020 2:26 PM  
To: Carter Mecher <[REDACTED]>  
Cc: Hepburn, Matthew J CIV USARMY DOD JPEO CBRND (USA) <[REDACTED]> >; Caneva, Duane <[REDACTED]> >; Lawler, James V <[REDACTED]> >; Lisa Koonin <[REDACTED]> >; Marozzi, David <[REDACTED]> >  
Subject: Re: [Non-DoD Source] RE: 2019-nCoV (UNCLASSIFIED)

Carter,

Am going through an interesting exercise now of the "what will you wish you would have done if . . ." with two scenarios:

- 1) The virus lands in the range of 0.1-1.0% CFR, which seems the most likely severe scenario
- 2) The virus turns out, like H1N1, to be much more widespread than initially appreciated and thus be associated with a much lower mortality than initially thought (the crying wolf scenario)

In my case this boils down to three areas of concern:

- Status of vaccine development: how much, how fast?
- Organizational reputation/accusations of mismanagement of funds
- Potential political embarrassment for current and future donors

Grappling with both horns of the dilemma here - would welcome you wrapping your brain around how to proceed in the most prudent way . . .

Richard

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On 28 Jan 2020, at 18:04, Carter Mecher <[REDACTED]> wrote:

The chatter on the blogs is that WHO and CDC are behind the curve. I'm seeing comments from people asking why WHO and CDC seem to be downplaying this. I'm certainly no public health expert (just a dufus from the VA), but no matter how I look at this, it looks be bad. If we assume the same case ascertainment rate as the spring wave of 2009 H1N1, this looks nearly as transmissible as flu (but with a longer incubation period and greater  $R_0$ ). The projected size of the outbreak already seems hard to believe, but when I think of the actions being taken across China that are reminiscent of 1918 Philadelphia, perhaps those numbers are correct. And if we accept that level of transmissibility, the CFR is approaching the range of a severe flu pandemic. But if we assume the case ascertainment rate is better than H1N1 and transmissibility is less than flu (it is still much more transmissible than SARS), and the CFR goes accordingly (1918 pandemic range). And if we assume the case ascertainment rate is even worse than 2009 H1N1, this is really unbelievable (higher transmissibility than flu). Any way you cut it, this is going to be bad. You guys made fun of me screaming to close the schools. Now I'm screaming, close the colleges and universities.

Is CDC monitoring the blogs? One thing I'm checking each day is availability of respirators on amazon and ebay (just curious since this is an indirect way of taking the temperature of the country).

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From: Lawler, James V [mailto:[REDACTED]]  
Sent: Tuesday, January 28, 2020 8:56 PM  
To: Hepburn, Matthew J CIV USARMY DOD JPEO CBRND (USA) [REDACTED]; Richard Hatchett <[REDACTED]>; Carter Mecher <[REDACTED]>  
Cc: Caneva, Duane <[REDACTED]>; Lisa Koonin <[REDACTED]>; Marcozzi, David <[REDACTED]>  
Subject: Re: [Non-DoD Source] RE: 2019-nCoV (UNCLASSIFIED)

Great Understatements in History:  
Napoleon's retreat from Moscow - "just a little stroll gone bad"

Pompeii - "a bit of a dust storm"

Hiroshima - "a bad summer heat wave"

AND

Wuhan - "just a bad flu season"

James Lawler, MD, MPH, FIDSA  
Director, International Programs & Innovation Global Center for Health Security, and Associate Professor of Medicine  
Division of Infectious Diseases University of Nebraska Medical Center

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From: Hepburn, Matthew J CIV USARMY DOD JPEO CBRND (USA) <[REDACTED]>  
Sent: Tuesday, January 28, 2020 8:37:25 PM  
To: Richard Hatchett <[REDACTED]>; Carter Mecher <[REDACTED]>  
Cc: Caneva, Duane <[REDACTED]>; Lawler, James V <[REDACTED]>; Lisa Koonin <[REDACTED]>; Marcozzi, David <[REDACTED]>  
Subject: RE: [Non-DoD Source] RE: 2019-nCoV (UNCLASSIFIED)  
Non-UNMC email

CLASSIFICATION: UNCLASSIFIED

Team,

I am dealing with a very similar scenario, in terms of not trying to overreact and damage credibility. My argument is that we should treat this as the next pandemic for now, and we can always scale back if the outbreak dissipates, or is not as severe.

I also have clinicians saying 'it is like a bad flu year, but people don't overreact to that.' My thought is that maybe we should be more aggressive with flu as well. AND a bad flu year layered onto a bad flu is pretty awful for the world.

Matt

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On Jan 29, 2020, at 8:55 AM, Carter Mecher <[REDACTED]> wrote:  
You are correct. All this stuff is complicated and messy and imperfect for all those reasons. The early data is also a little goofy since the early deaths could have been picked up after somebody died (meaning that they went back and looked at recent resp deaths and then confirmed the death post mortem). As time goes on things start to even out but the throughout dynamics of screening and testing are complicated too just like you said.

This really underscores how all those tabletop exercises we do where we have a CFR built into them are really so artificial. I wish there was some better way of figuring this out quicker. I just am not smart enough to see how. The uncertainty and the fog are like the air around us—it is just a part of it all.

I suspect somebody who knows queuing theory could help unravel the issues you raise. The impacts are nonlinear. (Consider having an answering service with 10 operators to handle calls with an average call time of 3 minutes and a volume of 200 calls per hour, what amount of time do callers spend on hold waiting to get an operator? Most people would say you have just enough, however when the number of channels in the queue becomes saturated, waiting times rises dramatically. We use these concepts for clinic scheduling. Could do the same for testing. Just need to engage some smart mathematicians to help you understand impacts. That is at the core of the problem you are describing. It is a nonlinear affect that is huge. I would bet that Eva Lee could help unravel.)

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**From:** Carter Mecher <[REDACTED]>  
**Date:** Wednesday, January 29, 2020 at 9:04 AM  
**To:** "Lawler, James V" <[REDACTED]>  
**Cc:** "Hepburn, Matthew J CIV USARMY DOD JPEO CBRND (USA)" <[REDACTED]@mail.mil>, Richard Hatchett <[REDACTED]>, "Caneva, Duane" <[REDACTED]@hq.dhs.gov>, Lisa Koonin <[REDACTED]>, "Marcozzi, David" <[REDACTED]@umaryland.edu>  
**Subject:** Re: [Non-DoD Source] RE: 2019-nCoV (UNCLASSIFIED)

Non-UNMC email

Duane was watching Africa.

Zambia just confirmed a case.

UAE also confirmed a case today.  
Sent from my iPhone

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**From:** Carter Mecher  
**Sent:** Wednesday, January 29, 2020 10:39 AM  
**To:** Lawler, James V  
**Cc:** Hepburn, Matthew J CIV USARMY DOD JPEO CBRND (USA); Richard Hatchett; Caneva, Duane; Lisa Koonin; Marcozzi, David  
**Subject:** RE: [Non-DoD Source] RE: 2019-nCoV (UNCLASSIFIED)

Here is how I explain all this to myself (hope it makes sense) using queuing theory and the example of the phone callers, operators answering the calls, and number of callers on hold (and the amount of time they remain on hold).

Let's assume that anyone who becomes infected immediately is triggered to pick up their phone and call Lisa's telephone call center. The problem though, is the number works, but the phones are not manned (no operators are there to take the call). Think of reaching the operator as confirmatory testing. These callers just remain on the line, listening to horrible elevator music, with a recorded message that intermittently says, "Please remain on the line, your call is very important to us." So the callers just dutifully remain on the line, waiting for someone to answer. [In reality, the phone lines are also being clogged with people who have not been infected but have symptoms suggestive of

infection—that is why a simultaneous flu outbreak taking off will throw a monkey wrench into all of this (not to mention the usual background resp illness and other febrile illnesses we see without another outbreak to consider). If we look at the % of confirmatory tests that are negative we can get a sense of how important this group is. These callers tie up the operator time and prolong the amount of time infected callers wait on hold.]

But every two days the number of infected callers on hold listening to music doubles. After some period of time, a diagnostic test is developed (that might take weeks, in which case the number of callers on hold is staggering, increasing 10 fold each week until the test is ready and the operators are available to answer calls). The length of time on hold is pretty staggering too. Some of the callers hung up (died or recovered). When the operators begin to answer calls, they already have a massive backlog and they don't take the calls that have been hanging on the longest. They prioritize those calls that seem to be the most urgent (the equivalent of testing hospitalized patients, ER patients). Those with mild illness (who may have been waiting on the line for a very long time, just linger on hold). And as the operators begin to ramp up (increasing more capacity and more throughput), the number of people calling keeps increasing (doubling every 2 days and increasing by an order of magnitude of every week). The operator has to feel like a checker working the cashier at WalMart on Black Friday (no matter how hard they work, the line keeps getting longer and longer). Even if you add more operators, you will need to increase them at the same rate as the epidemic (doubling the number of operators every 2 days, increasing their number by 10 each week, just to stay where you are). Now you begin to understand the dynamics and the challenge. So as I thought about it, there is no way we are working down any backlog—we are growing the backlog exponentially.

Now think of how this translates to surge capacity for healthcare during an epidemic. The dynamics are totally different from a single point event like a bombing, a mass shooting, an earthquake, etc. Large disease outbreaks (pandemics) are in a class by themselves and they have dynamics that most people do not appreciate.

What I found interesting during the 2009 H1N1 spring wave in the US is that case ascertainment fell over time (the opposite of what I expected). We have a real hard time getting our heads around exponential growth and geometric progression—our minds are linear (just like people have a hard time with compound interest (why they get into debt trouble or are shocked what they pay for a house over the life of a loan), or what happens when I start with a penny and double it every day for a month and realize how many \$ that becomes, or take a piece of paper and fold it in half again and again (30 times) and hear how thick it is, etc.).

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**From:** "Dr. Eva K Lee" <[REDACTED]>  
**Reply-To:** "Dr. Eva K Lee" <[REDACTED]>  
**Date:** Friday, January 31, 2020 at 3:48 PM  
**To:** "Lawler, James V" <[REDACTED]>  
**Cc:** Carter Mecher <[REDACTED]>, "Broadhurst, Mara J" <[REDACTED]>, "Caneva, Duane" <[REDACTED]>, Lisa Koonin <[REDACTED]>, "Hepburn, Matthew J CIV USARMY DOD JPEO CBRND (USA)" <[REDACTED]>, Richard Hatchett <[REDACTED]>  
**Subject:** RE: [Non-DoD Source] RE: 2019-nCoV (UNCLASSIFIED)

#### Non-UNMC email

James, some reports that R0 for 2019-nCoV has increased significantly from 1.4-2.5 on Jan 1, 2020 to 3.3-5.37 (Jan 30, 2020). This huge value may be testing artifact as you mentioned. I did some lab experiments, when I slightly improved the assay process time distribution in the lab processing model that I built, the testing efficiency improves by 45% under the same labor availability. Hence I suspect you are going to see rapid uptake in total infectivity and slower growth in death confirmed. As it is now, with over 11,000 confirmed cases and over 220 deaths, CFR is still 2%, rather high, though much lower than 4% in the initial guess by some. I think even 1% is too much to bear.

What troubles me -- I believe there's human-to-human going on already efficiently within china. I have never seen those meat markets (only been to China 3 times in my life when GT sent me to Peking U), so everything on my mind is just by imagination regarding those markets. Can you believe over 50% of these cases come directly from animal contact? I don't believe it. I wonder if these animals are live or dead to begin with. The market workers destroyed so much valuable information, it is a puzzle still. But if it can transmit with so few cases in US, then it is going to transmit.

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**From:** Dr. Eva K Lee <[REDACTED]>  
**Sent:** Monday, February 3, 2020 1:45 AM  
**To:** Krohmer, Jon (NHTSA) <[REDACTED]@dot.gov>  
**Cc:** Caneva, Duane <[REDACTED]@hq.dhs.gov>; Carter Mecher <[REDACTED]>; Lisa Koonin <[REDACTED]>; David Marcozzi <[REDACTED]@umaryland.edu>; Chaney, Eric (NHTSA) <[REDACTED]@dot.gov>; WILKINSON, THOMAS <[REDACTED]@hq.dhs.gov>; Wargo Michael

[REDACTED]@hcahealthcare.com>; [REDACTED]n@uhc.com; Cormier, Scott  
<[REDACTED]@medxcellm.com>; [REDACTED]@gwu.edu; Firoved, Aaron <[REDACTED]@HQ.DHS.GOV>; Quitugua,  
Teresa <[REDACTED]@HQ.DHS.GOV>; [REDACTED]@va.gov; Eastman, Alexander  
[REDACTED]@hq.dhs.gov>; HARVEY, MELISSA [REDACTED]@hq.dhs.gov>; CHRISTOPHER ALLEN  
[REDACTED]@msn.com>; Luke, Stephen [REDACTED]@hq.dhs.gov>

**Subject:** [EXTERNAL] First set of results - National ED Overcrowding Study (NEDOCS) and the Medical/ Public Health Information Sharing Enterprise

Colleagues, I want to update you on the 2019-nCoV analysis. Please see 7 items below

1. **Transmission mechanism:** From my analysis on the vector-host interplay, and confirmed by a local investigator, the real transmission is probably jumped from bats (carrier) to other animals that are easier to transmit to human. In my calculation, about 80-88% of the reported cases are human-human transmission (by that, it includes direct droplets and indirect surface). News is that there's possibility of fecal-oral infection. We can't confirm since so little data is available.

2. **Incubation:** The current mean incubation is 5.2 days and 95th percentile 12.5days, based on on-the-ground data. [[shared by a local investigator.]]

3. **Testing kit:** The assays posted on WHO website (link below) takes about 2 hours to confirm. If it is positive, they will repeat 2 more times before confirming. So it takes about 1/2 day for a positive case to be announced (excluding the time it takes to send the sample to the lab). The assays are being sent to other countries for diagnostics. I hope to secure some for us in US. At some point, we need to compare if there's any difference in diagnosis in the confirmation process and threshold.

<https://academic.oup.com/clinchem/advance-article/doi/10.1093/clinchem/hvaa029/5719336>

4. **Quarantine (strict isolation):** I urge that the quarantine of those (evacuated) individuals coming back from China - should be 14 days. Since the military base is used, it is very important that every individual is isolated, and not be placed in groups. Tests can be done in later periods for multiple intervals, since in early stage there may not be enough viral counts to render it positive. So it could be a false negative.

I ran my models assuming 1,000 people staying in the military base, using a  $R_0=3$  (with mean incubation time 5.2. If there are 5 asymptomatic infection among them, without proper isolation, after 14 days, there could be as high as 160 people infected (no symptoms)! Even if there is only 1 infected, asymptomatic person, the total infected is over 11 people. So quarantine must be strategic and done properly with good individual separation. Or else it would result in undetected infected individuals spreading the disease at the end of the quarantine period.

5. **CFR:** From the news, 360 people have died with 17,205 infection, CFR remains at 2.1. Accounting for testing delay, my estimation of infection hovers over 110,000 (in line with Neil Ferguson from Imperial College). the CFR may be dropping down (~0.32%), still bad. I have derived several testing models and will run the large-scale disease propagation analysis. Will update you with my findings.

6. **Protection of operators:** I trust that healthcare providers will take every needed precaution to protect themselves. Screeners at ports of entry should use gloves (in addition to face masks).

7. **ED issues:** There is a real need and concern to treat these patients separately from hospital ED. Since most deaths reported have coexisting health conditions, these 2019-nCoV infected patients should stay far from hospital EDs for obvious reason of cross infection (or absolute isolation has to be ensured). The fact that China rapidly set up massive temporary hospitals may signal that we need to do the same - setup appendix outside hospitals for special care of these patients. This also ensures rapid learning and sharing of knowledge among workers as they take care of these patients.

More in 2nd round.

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On Thursday, February 6, 2020 3:19 PM, Dr. Eva K Lee <[REDACTED]@pm.me> wrote:

I checked out a few things last night. Item 3 really bothers me.

1. **CFR:** Richard, your CFR range of 0.1-1.0 seem to cover most possible bases, as they're aligned with what I am seeing in the analysis. Either we have 28,363 reported and confirmed infection as of last night, or it is in the order of 50,000 to 280,000 infection, counting asymptomatic cases or those not reported on purpose. We may never know.

Mortality could be even higher than 1.0. Base on the extremely static report of deaths (hovering over 2.0% every single day), it seems to me that they are only reporting those infected cases that result in deaths. They are missing all other cases in which patients did not seek medical attention, or simply die without any postmortem confirmation. It could be that they're overwhelmed, or simply, death rate is not reliably reported. Either way, we could have a higher than 1% (counting at least 50,000 of infection).

**2. Make-shift hospitals:** Carter, I saw the picture of the make-shift hospital tent, it looks very much like the shelters I helped the local health departments setup here to house the Haiti evacuees and also those came to Atlanta escaping the hurricanes in Houston. I got some on-the-ground clinical parameters and will optimize to identify how much resource and how to operate to get the best outcome. We need to know (hopefully CDC on-the-ground team) how people die, if it is because of lack of medical care, insufficient care process, ineffective ad-hoc treatment regiment, or simply the organs fail after all attempts. Everything that happens in the clinical side is of great importance.

**3. Transmission:** I am very bothered by the Japanese Cruise's findings and actions: The story is that a guest sailed from Yokohama on Jan. 20 before disembarking on Jan. 25. He showed no symptoms aboard the ship, but tested positive for coronavirus in a Hong Kong hospital six days later. Since then 300 people on board were tested with 20 positive cases. First, we can't tell how long this man was infectious while on board. But clearly from all my analysis, he cannot possibly be the only one who's infectious at that time. If he was, then it was not possible for 20 people to be tested positive (not from the 5 days he's on board and not from how rapid and infectious it is, I put in all outrageous values). So this is not a single point source. He can only be a single point-source if he is a super spreader – and that he's contagious by Jan 21 and then he spreads very effectively across with at least everyone else also becomes infectious after 24 hours upon infection (as in the German first case). I don't know if the Japanese intends to test all remaining passengers or not. But it could be a very good case to analyze in detail, if they can afford to do so. Regardless, I don't think 300 contact-tracing is sufficient. I think they need to sample more. If he's not a point source, all the more critical to test more passengers.

Best, Eva

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Monday, February 3, 2020 8:42 AM, Cormier, Scott <[REDACTED]@medxcelfm.com> wrote:

Thank you for the information! For our experience with the two confirmed cases in Chicago, I'm offering these additional comments:

**Incubation:** This data fits perfectly with the husband of US patient #2 (USP2). One of the issues we are facing is having to furlough employees. Along with PH and CDC, we tracked unprotected exposure to USP2, and divided into those that were to be home furloughed for 14 days, and those that had daily sx check. That resulted in 147 contact reviews, of which 61 were placed in active monitoring, 29 furloughed with monitoring (asymptomatic), 7 PUI (home quarantine), 1 PUI (admitted), and 49 resolved (no contact found). None of the furloughs or PUI's have converted, and their 14 days will end this week. For USP6 (husband of USP2), he was not initially placed on any restrictions by PH and CDC, and had visited a cardiology office as well as had visits to the hospital. Fortunately, we had decided to take extra precautions with USP6, so we only had 17 contact reviews, but 15 are furloughed with monitoring, and 2 are resolved. Of all the contact reviews, most were nursing with 2 registration and 1 biomed staff. The contact review criteria is changing (for the good), but I think it should be a standardized checklist for better support and process standardization. None of staff have converted, however, two were found to have strep.

**Testing Kit:** It is taking 3-5 days on average (some longer) to get test results from the CDC. They had not prioritized the confirmed cases over the PUI's. This is delaying our process to discharge or remove from furlough. We are told confirmed cases will now be a priority, but having local tests will be critical in moving people off of furlough/quarantine/PUI and keeping our health systems functioning.

**Protection of Operators:** Great point. We are using PPE monitors, who are stationed with our two confirmed cases, and ensure airborne precautions are properly instituted on entry and exit. It seems silly, since airborne is something we do every day, but unfortunately, we know that while it is done every day, it is many times done poorly. This has helped to boost the confidence of our staff caring for the patients. We are also using monitors for our admitted PUI's.

**ED Issues:** We have screened 20 community PUI's in three of our ED's, and we have a process of Prior notification and scheduling, exclusive entry and exit, masking PUI, and placement in a negative pressure room. It has worked well without any issues, but it has to be a formalized, trained process.

**Community Perception:** This has been interesting. Two of our nurse have been asked by their churches not to attend services (these are smaller community churches) while we have confirmed cases. They do not work with the

confirmed patients. Manor Care, a national long term care company, has notified us that they will not accept a patient from our hospital that has the two confirmed cases for 14 days. We have 7 patients ready for discharge, so that is tying up beds. Our attorneys are looking into this, but not sure if we can do anything. It hasn't affected our patient volume or procedures, which is good news.

Scott Cormier  
Vice President, Emergency Management, EC, & Safety  
Medxcel

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On Friday, February 7, 2020 2:36 PM, Dr. Eva K Lee <[REDACTED]@pm.me> wrote:

Hi James, I want to follow up more on last night's discussion. I have answered your questions below. After that I thought about strategies for community screening, what's the best way to do so. And I did a little optimization to cast a net on what we want to test and how to test across the community. This is very crude, but you can see the different strategies:

1. Assuming the 14-day period of incubation, we can reach out to the cohort travelers for the period Jan 24-Feb 7 [[note this last week is redundant, since 11 airports have started testing.]] through airline operators. Basically they only need to send a text to those who have traveled to at-risk areas. In this case, I will cover all international travellers where their flight of origin is China, not just Wuhan. Individuals who are willing to provide nasal swab and sputum samples can report to the nearest health department. We can also give them a little form to do contact tracing themselves. This is like population sampling, not everyone will be eager to do it. But some are willing and you will get a small sample size. Samples can be shared across all state labs that have the testing capability to ensure timely processed.

To capture potential cascading effect on the 2nd generation infection, we can move to Jan 17-Jan 24 cohort and so forth. Clearly they may not have any viral activities if they have already shed and passed it onto someone else. But the contact tracing form will be useful.

[[You can do the same for Cruises.]]

This is more of a global approach using travel and the risk factors as a means to prioritize screening.

2. For a regional-based approach, one can approach communities - e.g., schools, religious organizations, private businesses, etc, to promote testing among those who have recently traveled out of the country to China. Workforce travel is common in this connected world. My feeling is that it will be heterogeneous across the nation since some regions have more foreign students for example and others don't. But outreach via the university health service should be very feasible and easy. In the same token regarding private business. Although students/workers may fear that if they're tested positive, they would be forced into self-quarantine. My feeling is that we can frame the message in a positive way (as a means to protect their health) to promote their participation (or the organizational participation).

This approach leverages organizations' infrastructure to help systematically recruit the right type of high-risk individuals for testing.

3. On the ground, I do not know how much testing capability and capacity each state has. We do want to ensure that samples can be processed in a timely manner. Certainly one can optimize.

This is sort of a strategic systematic way to prioritize tests. We don't need to do it in every state, but strategically choose some with high passenger volumes, or those with connecting routes.

Just some thoughts. I understand you are probably busy with the evacuees testing now.

Best, Eva

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**From:** "Dr. Eva K Lee" <[REDACTED]@pm.me>  
**Reply-To:** "Dr. Eva K Lee" <[REDACTED]@pm.me>  
**Date:** Sunday, February 9, 2020 at 8:29 PM  
**To:** "Lawler, James V" <[REDACTED]@unmc.edu>  
**Cc:** Carter Mecher <[REDACTED]>, Richard Hatchett <[REDACTED]@cepi.net>, "Caneva, Duane"



<[REDACTED]@hq.dhs.gov>, "Hepburn, Matthew J CIV USARMY DOD JPEO CBRND (USA)"  
<[REDACTED]@mail.mil>

**Subject:** Re: [Non-DoD Source] RE: 2019-nCoV (UNCLASSIFIED) -- NPI, Flu vs 2019-nCoV, Scaling of testing throughput

**Non-UNMC email**

I understand all of you is an expert in this area. Just my 2 cents from the call -

1. **NPI** - Carter, I think we can strategically roll out some of the social distancing recommendations. This can be part of the public messaging. I think different communities have different willingness to start. It doesn't hurt them and provide them with a sense of comfort and awareness. Public health is already doing isolation and quarantine. This is a good time to test how well the digital infrastructure can support telework beyond the current capacities. Make it into part of the nation's health security response drills may allow for dual purpose (and secure of necessary government funds).

2. **Flu vs 2019-NCov.** Perhaps some simple statistics may put people in the right perception:

*Flu In US:* Roughly, 26 millions American affected, 200,000 hospitalization, and about 34,000 death. So it is 8.1% infectivity, 0.7% hospitalization (of those infected), and 0.13% mortality.

*2019-nCoV in Hubei (11 millions):* 16,902 reported confirmed cases, 3,400 severe/critical conditions, 699 deaths. That relates to 0.15% infection (city isolated entirely within 4-5 weeks), 20.1% hospitalization, and 4% CFR. Even when factoring in all uncertainties, it's roughly 0.15-0.5% infection, 10-20% hospitalization, and 1.7%-4% mortality.

That's over 10-30 times more deadly than seasonal flu. Moreover, this is only a lower bound because the government basically shut down and isolate the entire infected zone. I think this gives people a sense of risk. It is not to make them panic, but to prepare citizens. This is part of the readiness, mental and physical.

3. **Scale of testing:** In order to have true testing capacities/surge., we must select a collection of assays/reagents and make them into standards so that you can handoff to private sectors readily for (mass) production. Heterogeneous/combo selection is a must. You want to allow alternatives and fall-back, and you also want to scale up by broadening what can be allowed. At some point, we can do result validation to ensure everyone is happy with what they are using.

4. **Community testing priority:** Hospitalized patients certainly can and should be tested. But that's too late for early intervention (except contact tracing). Primary care would be great. Universities and pharmacies are good to include. Strategic sampling is a must because you won't be able to host so many tests so rapidly.

5. **Supply Chain:** Supply chain is affected already. It is just how far and how broad it may reach and be felt. Thailand's flood and Japan Fukushima delayed the sequencer's production by 2 years, affecting some of the medical research.. That's very specialized. The current impact is more general as it covers many different industrial sectors.

Eva

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On Sunday, February 9, 2020 10:59 PM, Lawler, James V <[REDACTED]@unmc.edu> wrote:

Eva – your data fit well with other modelers. We are in mitigation phase and goal is to drive down  $R_0$ .

**James Lawler, MD, MPH,**  
<[REDACTED]@unmc.edu>

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Sunday, February 9, 2020 11:16 PM, Dr. Eva K Lee <[REDACTED]@pm.me> wrote:

Yes, absolutely! And we need public engagement now. We need the citizens to know and practice social distancing in a way that best protect them. Every action counts. Communities can help a lot. The aging population with such high percentage of individuals with multiple chronic conditions make it very hard to fight on the treatment front (alone). It's too late and too costly with lower chance of success. We have to move the action timeline forward to the pre-empt stage. Whatever we can do to prevent and mitigate will take us a long way. We also need to help China to fight and contain rapidly (so we can learn more how and what's happening), or else the global impact on supply-chain and the economy will be substantial.

China also has bird flu H5N1 outbreak now, very close to the epicenter of 2019-nCoV. All these zoonotic activities are worrisome. And we can't control where all the birds are flying...

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On Sunday, February 9, 2020 12:54 PM, Lawler, James V [REDACTED]@unmc.edu> wrote:

Thanks, Nathaniel. Great stuff. Have you taken a swag at case-ascertainment vs true cases based upon numbers of cases outside Wuhan/Hubei and positivity rates in folks repatriated from Wuhan in last 10 days? Those look to have a prevalence rate of 1-2 % that would presumably reflect community prevalence in Wuhan at the time they were extracted. This obviously suggests a much higher number of true cases and would match the data that say most cases are mild/moderate URI and ILI and that we are only mostly counting hospitalized pneumonia. Certainly affects the CFR prediction quite a bit and our assessment of healthcare surge requirement. I think everybody agrees we are dramatically undercounting the real denominator – question is by how much. I think we also mostly agree that without dramatic NPI we can expect 30-40% infection rate by end of community epidemic – and even with dramatic NPI, that total may only be slightly reduced. Any thoughts there?

**James Lawler, MD, MPH, FIDSA**

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**From:** [Dr. \[REDACTED\] K Lee](#)

**Sent:** Monday, February 10, 2020 7:10 AM

**To:** [Lawler, \[REDACTED\] V](#)

**Cc:** [Carter Mecher](#); [Richard Hatchett](#); [Caneva, Duane](#); [Hepburn, Matthew J CIV USARMY DOD JPEO CBRND \(USA\)](#)

**Subject:** Re: [Non-DoD Source] RE: 2019-nCoV (UNCLASSIFIED) -- Strategic testing is a must -- testing capacity --

Strategic testing is a must -- if we truly want to get a good sense of what's happening to the infection in the community level and have an ability to prepare the citizens, the community, and the hospitals. [[That is part of managing the expectation.]]

Diamond Princess -- as I said from the start -- offers the biggest opportunity to study in multiple levels and I am afraid it has become a quarantine nightmare with missing opportunities and missteps. And it shows why strategic (community) testing is a must, and why testing -- must be made effective and must be heterogeneous with all possibilities.

The Cruise ship is a tiny community of itself, and it shows we have no ability to test even just that.

-- 136 confirmed cases out of 336 tested thus far.

- Japan still maintains they are going to test those with symptoms and the elderly. They should and must test all, and truly use that opportunity to get a good sense of symptoms vs no-symptoms and patterns of all potential manifestation.

- The spread -- no doubt -- involves those without symptoms. Who knows they might be just so effective to spread. Japan MUST test in a *nonlinear* manner, it cannot prioritize in a one-side pattern as it has done at the beginning and continue.

- Some 850 passengers made medication requests and about 750 received thus far. A very good example for us to take note. So many people need medication -- not just on the cruise, but everywhere because of prevalence of chronic diseases.

It shows they can't even contain one cruise ship, not to mention the consequence of their disembarkment.

- I maintain those without symptoms must be tested, even if we can't cover all, we must sample. That's the only way to fill in the gaps.

- Carter -- this also re-enforces the notion that NPI as in social distancing has to begin now, not later -- we cannot prepare the future by acting in the future, we must roll it out now. There's no harm to do it, but there can be a lot of regret if not. And the very concern regarding testing capability remains critical. But with limited testing ability, we better be smart in how to sample.

- James, perhaps you and others can give me the laboratory information now (list of locations, various test and associated) so I can start optimizing.

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On Monday, February 10, 2020 7:21 AM, Carter Mecher <[REDACTED]@r.net> wrote:

Eva, below is our review of the cruise ship outbreak.

The case count aboard that cruise ship is now up to 136. This is unbelievable.

Go back to the original data I shared on this.

Diamond Princess cruise ship with 2,666 passengers and 1,045 crew members



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Data:

Jan 20: Departed from Japan

Jan 25: 80-year-old passenger who disembarked on Jan 25 in Hong Kong tested positive on Feb 1.

Feb 1: Quarantine procedure at a port in Naha (quarantine officials had issued certificates allowing passengers and crew to land; no one on board at that time showed any symptoms and the case of the man who disembarked in Hong Kong was not known at that time). When results known, certificate of landing canceled and second quarantine. Tests for the virus would be administered to three groups: those with symptoms, those who got off in Hong Kong, and those who had close contact with the infected passenger.

Feb 3: Arrives in port of Yokohama

Feb 5: Japan reports 10 passengers confirmed +

Feb 6: Japan reports 10 more passengers confirmed + (total of 20); Japan later reports a total of 41 passengers now confirmed + for nCoV

Feb 7: Japan reports a total of 61 passengers now confirmed + for nCoV

Feb 8: Japan reports a total of 64 passengers now confirmed + for nCoV

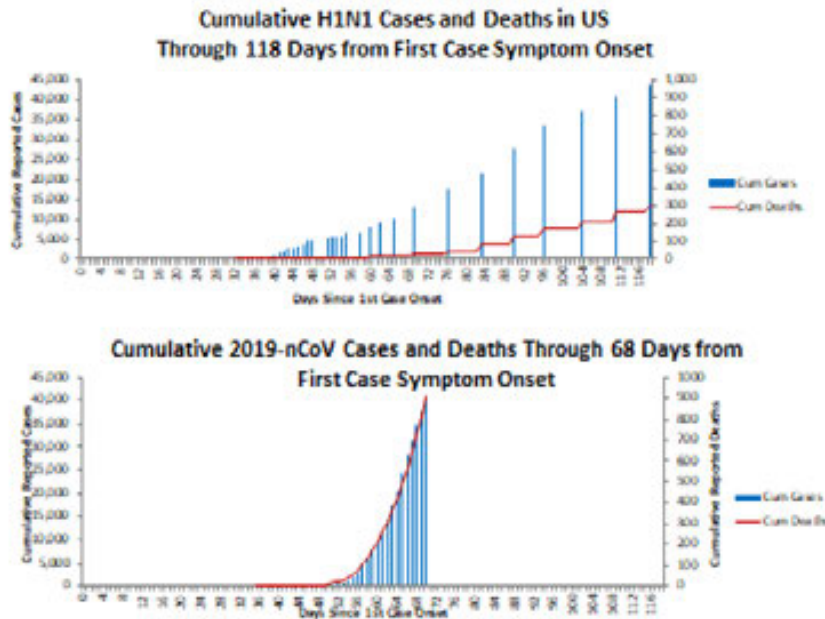
Feb 10: Japan reports a total of 136 passengers now confirmed + for nCoV

Index case of 80 year old passenger is Hong Kong Case#14

Case no. Date of laboratory confirmation; Gender; Age; Name of hospital admitted; Discharge status Hospitalised

14. 01/02/2020 M 80 Princess Margaret Hospital Hospitalised  
 Over a span of 21 days (from Jan 20-Feb 10), this outbreak has expanded to 136 confirmed cases. That is a prevalence of 3.7% over the span of 3 weeks. That is unbelievable.  
 But go back and compare the dynamics of the nCov outbreak to the spring wave of H1N1, this outbreak is even faster.

Comparison of 2009 H1N1 and 2019-nCoV  
 Number of Cases & Deaths Reported from Date of 1<sup>st</sup> Known Case



We are so far behind the curve.

I would drop almost everything we are now doing and prepare for implementing TLC (NPIs).

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On Monday, February 10, 2020 9:48 PM, Caneva, Duane <[REDACTED]@hq.dhs.gov> wrote:

Just spoke with Charity.

There are some challenges within the PH system to test for community spread, and the CDC kits are still 1-2 weeks from operational. Moving forward through healthcare systems is a great option, the more the better. If Kaiser, HCA, DOD, VA can be leveraged, it's a case of beer to the first one to find the case.

What happened to Mike C???  
 Should we be worried?

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From: "Dr. Eva K Lee" <[REDACTED]@pm.me>  
 Reply-To: "Dr. Eva K Lee" <[REDACTED]@pm.me>  
 Date: Monday, February 10, 2020 at 7:38 PM  
 To: "Lawler, James V" <[REDACTED]@unmc.edu>  
 Cc: Richard Hatchett <[REDACTED]ll@cepi.net>, Carter Mecher <[REDACTED]>, "Caneva, Duane" <[REDACTED]a@hq.dhs.gov>, "Hepburn, Matthew J CIV USARMY DOD JPEO CBRND (USA)" <[REDACTED].civ@mail.mil>  
 Subject: Re: [Non-DoD Source] RE: 2019-nCoV (UNCLASSIFIED) -- Reaching out to Kaiser - Strategic testing is a must -- testing capacity --

Non-UNMC email

Guys,

I just talked to the Kaiser East Coast COO and asked him about Kaiser laboratory (James, I wrote him several weeks ago when we talked about lab testings in December). He said that Kaiser has labs, mostly on the West Coast. I asked him if the government can outsource to them the lab tests, he said it should be doable.

Just one piece of a solution, but I think it's good to recruit them. We have to explore private-business engagement. Once you get all the testkits you deem acceptable with clear instruction etc, then you will need to make/entice private sectors to come in and take over the testing responsibility. I am most certain Charity (is that the lady on the call from California) knows how to access Kaiser resources. She can ask them. I can facilitate if needed. I have done some clinical work for Kaiser with great implementation results (improving outcome and reducing cost on their patients). So I think I can ask them to help. And in turn, they can help by reaching to other lab network. I have also extracted tons of clinical data from their EMR system. I think their lab may have been connected already... not sure. I will check.

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On Thursday, February 13, 2020 9:21 AM, Dr. Eva K Lee [REDACTED]@pm.me> wrote:

I found it very odd that China is now rolling out the clinically diagnosed cases. All these time as they reported over 47,000+ confirmed positive cases, they still have over 187,000+ cases that they are observing clinically. Fair enough, they can't confirm yet.

Last night they reported 242 more deaths, which would have driven the CFR close to 2.9% again. But conveniently they are adding 13,332 of the new cases from the "clinically diagnosed" pool. That keeps the CFR at 2.3%. This seems more for convenience to smooth the curve rather than to truly have a good sense of what's going on.

It is also odd -- why would officials in US keep saying that they cannot confirm the extent of human-to-human transmission? I think the public is confused by all these experts saying conflicting things. If human-to-human transmission is still in question, how was the transmission in China? It's one thing that I predicted based on the social situation, how animals and human interact, I got that people don't have to believe. But now it is very clear -- based on published results -- that confirms over 90% of them are not animal-to-human.

I talked to a public health official, he thinks this is all overblown. He thinks flu is what we have to fight, not COVID-19.

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#### Tradeoffs on Decision – Public Health and Emergency Response-National ED Overcrowding Study (NEDOCS) and the Medical/Public Health Information Sharing Enterprise.

Sent: Friday, February 14, 2020 8:08 PM

From: Dr. Eva K Lee [REDACTED]@pm.me

To: HARVEY, MELISSA [REDACTED]@hq.dhs.gov

CC: Cormier, Scott [REDACTED]@medxcelfm.com, Krohmer, Jon (NHTSA) [REDACTED]@dot.gov,

Caneva, Duane [REDACTED]@hq.dhs.gov, Carter Mecher [REDACTED], Lisa Koonin

[REDACTED], David Marcozzi [REDACTED]@som.umaryland.edu, Chaney, Eric (NHTSA)

[REDACTED]@dot.gov, WILKINSON, THOMAS [REDACTED]@hq.dhs.gov, Wargo Michael

[REDACTED]@hcahealthcare.com, [REDACTED]@uhc.com, [REDACTED]@uhc.com,

[REDACTED]@gwu.edu, [REDACTED]@gwu.edu, Firoved, Aaron [REDACTED]@HQ.DHS.GOV, Quitugua, Teresa

[REDACTED]@HQ.DHS.GOV, [REDACTED] Kshemendra [REDACTED]@va.gov, Eastman,

Alexander [REDACTED]@hq.dhs.gov, CHRISTOPHER ALLEN [REDACTED] Luke,

Stephen [REDACTED]@hq.dhs.gov, Nathaniel Hupert [REDACTED]@med.cornell.edu

I want to update some analysis -[[Sorry no graphs attached, too many and it will take too long.]]

Protect the operators: I want to update more -- I maintain as my email said on Jan 31 -- we must protect the healthcare workers and the operators. The latter are not as knowledgeable and as well equipped and they can be very exposed. We must train them well so that they can be protected in the best possible manner.

Infectivity and mortality: I again review the models as we put in the dots onto the graphs. It remains within our zone of prediction, since the models did include asymptomatic cases. The total infection ranges from 400,000 to 9 million (6 months starting Nov 15 2019), and mortality from 9,000 - 150,000. The Chinese is not helping. I don't really care if they want to report the clinically diagnosed cases, they just have to separate the confirmed positive vs clinically diagnosed. That is important, even though everything seems like a blackbox and the test kits are in short supply and still not reliable.

Virus adaptability: It seems the virus is really rather adaptable to the human body, exploiting the health conditions to assert different types of symptoms making it hard to treat and to diagnose. In that case, it can

come back with more power.

Public health strategy (and public perception): I understand there continues to be debates on if/when we should put in full throttle of effort. My feeling is -- Public health always faces such a dilemma.

a. Nothing bad will happen and we put too much resources and effort

b. Something bad really happens and that we mitigate and make it go away -- this is a good effort and result, but understandably it will be underappreciated because noone would know how it would play out without intervention and how bad it is. So successful mitigation is often under-valued. [[people will think it is just (a).]]

c. Something bad happens and we did not do enough -- that is a big fall out everyone knows.

I think it is very important we take path (b) and treat (a) as a real test of how good we can mount a full fight.

The lab tests are the first bottleneck (besides all the biological and clinical understanding of the virus). We should lay it all out all sequences of effort and develop a full plan. It is not going to be like a flu plan-- because we don't know much about this virus. But we certainly can adapt it.

I incorporate the disease models within the network of critical infrastructures (Duane, I showed you the cascading interdependence multi-layer graphs with risks at various layers). This virus could disrupt many layers the supply-chain networks, truly affecting the whole world. Consider it a real ugly test that we can blanket it and win it, it is a must.

**Clinical cases:** Please safeguard clinical data and treatment response. That will be invaluable and I would like to perform machine learning to uncover patterns and correlations

Best,  
Eva

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From: Caneva, Duane

Sent: Sunday, February 16, 2020 9:39 AM

To: Dodgen, Daniel (OS/ASPR/SPPR) [REDACTED]@HHS.GOV>; DeBord, Kristin (OS/ASPR/SPPR) [REDACTED]@hhs.gov>; Phillips, Sally (OS/ASPR/SPPR) [REDACTED]@hhs.gov>; David Marcozzi [REDACTED]@som.umaryland.edu>; Hepburn, Matthew J CIV USARMY (USA) [REDACTED].civ@mail.mil>; Lisa Koonin [REDACTED]@gmail.com>; Wargo Michael [REDACTED]@hcahealthcare.com>; Walters, William (STATE.GOV) [REDACTED]@state.gov>; HARVEY, MELISSA <[REDACTED]@hq.dhs.gov>; WOLFE, HERBERT [REDACTED]@hq.dhs.gov>; Eastman, Alexander [REDACTED]@hq.dhs.gov>; EVANS, MARIEFRED [REDACTED]s@associates.hq.dhs.gov>; Callahan, Michael V.,M.D. [REDACTED]N@mgh.harvard.edu> [REDACTED]UTMB.EDU; [REDACTED]c@email.unc.edu; Johnson, Robert (OS/ASPR/BARDA) [REDACTED]@hhs.gov>; Yeskey, Kevin <[REDACTED]@hhs.gov>; Disbrow, Gary (OS/ASPR/BARDA) [REDACTED]@hhs.gov>; Redd, John (OS/ASPR/SPPR) [REDACTED]@hhs.gov>; Hassell, David (Chris) (OS/ASPR/IO) [REDACTED]@hhs.gov>; Hamel, Joseph (OS/ASPR/IO) <[REDACTED]@hhs.gov>; Tracey McNamara <[REDACTED]@westernu.edu>; Dean, [REDACTED]@cdph.ca.gov>; Caneva, Duane [REDACTED]@hq.dhs.gov>; Richard Hatchett [REDACTED]@cepi.net>; Lawler, James V [REDACTED]@unmc.edu>; Kadlec, Robert (OS/ASPR/IO) [REDACTED]@hhs.gov>; 'Martin, Gregory J [REDACTED]@state.gov' [REDACTED]@state.gov>; Borio, Luciana [REDACTED]@igt.org>; Hanfling, Dan [REDACTED]@igt.org>; McDonald, Eric [REDACTED]@sdcounty.ca.gov>; Wade, David [REDACTED]@hq.dhs.gov>; TARANTINO, DAVID A [REDACTED]@cbp.dhs.gov>; Baric, Ralph S [REDACTED]unc.edu>; WILKINSON, THOMAS [REDACTED]@hq.dhs.gov>; Hassell, David (Chris) (OS/ASPR/IO) <[REDACTED]@hhs.gov>; David Grube [REDACTED]dshs.texas.gov> [REDACTED]; KAUSHIK, SANGEETA [REDACTED]@hq.dhs.gov>

Subject: Red Dawn Breaking, COVID-19 Collaborative, Feb 16 start

Purpose: This is a new Red Dawn String to cut down the size from the previous string, opportunity to provide thoughts, concerns, raise issues, share information across various colleagues responding to COVID-19. Including all from previous string plus a few additional folks.

Duane C. Caneva, MD, MS  
Chief Medical Officer  
Department of [REDACTED]

Executive Assistant: Nichole Burton [REDACTED]

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**From:** [Carter Mecher](#)

**Sent:** Monday, February 17, 2020 8:57 AM

**To:** [Tracey McNamara](#); [Dr. Eva K Lee](#)

**Cc:** [Caneva, Duane](#); [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [David Marcozzi](#); [Hepburn, Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [Wargo Michael](#); [Walters, William \(STATE.GOV\)](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [Callahan, Michael V., M.D.](#); [REDACTED]@UTMB.EDU; [REDACTED]@email.unc.edu; [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR/IO\)](#); [REDACTED]@CDPH; [Richard Hatchett](#); [Lawler, James V](#); [Kadlec, Robert \(OS/ASPR/IO\)](#); [Martin, Gregory J](#); [REDACTED]@state.gov; [Bono, Luciana](#); [Hanfling, Dan](#); [McDonald, Eric](#); [Wade, David](#); [TARANTINO, DAVID A](#); [WILKINSON, THOMAS](#); [David Gruber](#); [REDACTED]@dshs.texas.gov; [KAUSHIK, SANGEETA](#); [Nathaniel Hupert](#)

**Subject:** RE: Red Dawn Breaking, COVID-19 Collaborative, Feb 16 start

NPIs are going to be central to our response to this outbreak (assuming our estimates of severity prove accurate). This email group has grown since we began (not quite epidemic-level growth, but getting there). Looking ahead, I anticipate we might encounter pushback over the implementation of NPIs and would expect similar concerns/arguments as were raised back in 2006 when this strategy first emerged. It was one of the reasons I shared the updated data on US households from American Community Survey, data on USDA programs for nutritional support (including school meal programs), data on schools and enrollment, and even data on juvenile crime. The data that was gathered back in 2006 on social density in various environments (homes, offices/workplaces, schools, daycare, etc., is unchanged). For additional background and context, we attached are 3 papers on NPIs and TLC for those who are interested. Richard Hatchett deserves full credit for birthing the idea of TLC (it was actually developed in response to the threat of H5N1 and later adopted for pandemic influenza response). Duane, perhaps you can store these documents on MAX for safe keeping and access?

The first paper is an historical review of the 1918 pandemic (the comparison of Philadelphia and St. Louis is emblematic of the lesson from 1918 that timing matters when deploying NPIs—need to be early). The second paper is modeling work that was done to evaluate these strategies. At the time, modelers were focused on how best to contain an outbreak overseas (really focusing on using antivirals primarily for treatment and prophylaxis). They focused their models to evaluate the effectiveness of various strategies and quantities of antiviral medications required to quench an emerging outbreak. There were 3 groups who were doing this work back then. They each present their data in that paper. A few things to note. In all the model runs, they did not model perfection or 100% adherence (actually far from it). You will see scenarios from 30/60 (meaning 30% compliance and 60% ascertainment) on up to 90/80). (See figures 1) Even leaky implementation can reduce overall attack rates. The modelers also looked at timing of implementation (see figure 3). At the time there was a great deal of skepticism—was hard for people to believe this was possible. Or even if TLC could be effective, was implementation practical given the challenges trying to implement and the 2<sup>nd</sup> and 3<sup>rd</sup> order consequences (especially of closing schools). But the modeling data combined with the historical data was the tipping point. Marty Cetron from CDC and Howard Markel from U of Michigan, published a more extensive historical review of the 1918 pandemic showing much the same. Since then, a group within CDC continued to work on this (collecting additional data from the 2009 pandemic and elsewhere). They published an update of CMG in MMWR in 2017. <https://protect2.fireeye.com/url?k=3985fc87-65d1e5fb-3985cdb8-0cc47adc5fa2-bb4a28993b5aa9e0&u=https://www.cdc.gov/media/dpk/cdc-24-7/preventing-pandemic-influenza/community-mitigation-guidelines-for-preventing-pandemic-flu.html>

The third paper, is a more recent paper (from 2017) that Richard shared with me. The paper is a little dense, but I found this paper useful because it provides a vocabulary for strategies that we have raised (Symptom Monitoring vs Quarantine of potentially infected but symptom-free contacts during an epidemic). This paper identifies those conditions where SM or Q is preferred. Figure 1 is useful for understanding the challenges given the picture that seems to be emerging with this virus. This outbreak seems closer to pandemic flu than SARS in terms of bobtransmission dynamics (and hence the NPIs we would need to employ).

Lastly, another person, Bob Glass at Los Alamos, also did work on this separately from the MIDAS group. He actually began this work as part of a science fair project for his daughter (using social contacts of his daughter and her classmates at school to model disease transmission). He knew someone at VA who forwarded his work to us (chain of transmission). Early on (even before the MIDAS group modeled TLC), we had a "Eureka" moment when we graphed his data in Excel (I can share that single graph to anyone interested). Bob Glass was also interested in trying to determine when you could let up on the NPIs during a pandemic. Here is a story about Bob Glass and that work published in Fast Company I will see if I can find his work on when to reopen schools. Decisions in terms of letting up on NPIs could be critical down the line.

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From: [Carter Mecher](#)  
Sent: Monday, February 17, 2020 2:57 PM  
To: [Tracey McNamara](#); [Dr. Eva K Lee](#)  
Cc: [Caneva, Duane](#); [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [David Marcozzi](#); [Hepburn, Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [Wargo Michael](#); [Walters, William \(STATE.GOV\)](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [Callahan, Michael V, M.D.](#); [\[Redacted\]@UTMB.EDU](#); [\[Redacted\]@email.unc.edu](#); [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR/IO\)](#); [\[Redacted\]@CDPH](#); [Richard Hatchett](#); [Lawler, James V](#); [Kadlec, Robert \(OS/ASPR/IO\)](#); [Martin, Gregory J](#); [\[Redacted\]@state.gov](#); [Borio, Luciana](#); [Hanfling, Dan](#); [McDonald, Eric](#); [Wade, David](#); [TARANTINO, DAVID A](#); [WILKINSON, THOMAS](#); [David Gruber](#); [\[Redacted\]](#); [KAUSHIK, SANGEETA](#); [Nathaniel](#); [\[Redacted\]@gmail.com](#)  
Subject: RE: Red Dawn Breaking, COVID-19 Collaborative, Feb 16 start

Trying to estimate severity by bringing a number of pieces together.

The Diamond Princess Cruise Ship had a crew of 1,745 and 2,666 passengers (total pf 3,711) Approximately 400 of the passengers are Americans (11%). Several days ago (Feb-13) we attempted to estimate disease severity using the current data being reported by the media (number of confirmed cases and ICU cases) as well as data on the outbreak in Singapore (number of confirmed cases, number hospitalized, and number in ICU) (see attached Word file).

Given the additional information becoming available (including more specific information being reported by the media on the numbers of Americans infected), I was interested in an updated crude estimate of severity (and to see how well the early predictions of severity matched with what was being reported by the media on illness in the Americans. See latest re the cruise ship outbreak below (two stories). We can glean from these stories that the number infected is now up to 454. And 14 positive passengers were included among the Americans who were



evacuated to the US. Canada, South Korea, Italy and Hong Kong announced Sunday that they would also arrange charter flights to evacuate their citizens. A few additional pieces of data. News reports yesterday stated that 73 of the 355 confirmed cases from the cruise ship were asymptomatic (20%). Also, yesterday the media quoted Dr. Fauci that the total number of Americans who were confirmed to have COVID yesterday and who remained at hospitals in Japan at 44. Assuming that this number does not include the 14 confirmed cases that were evacuated, suggests that the total number of Americans with confirmed COVID is 58. An earlier news report from Feb-12 re a couple from California, noted the husband was in the ICU in Japan (so at least 1 American in the ICU). ["...remained in a hospital intensive care unit and has been able to communicate with his family, his wife said in a phone interview from the ship, where she remained in quarantine." <https://protect2.fireeye.com/url?k=5b014cc3-075555bf-5b017dfc-0cc47adc5fa2-5be62cf1a816fc6d&u=https://web.archive.org/web/20200212093725/https://www.ocregister.com/2020/02/11/southern-california-man-on-cruise-sent-to-a-hospital-in-tokyo-with-a-high-fever-tested-for-coronavirus/> ]

So, piecing all the data together:

The ~400 Americans account for 11% of the 3,711 passengers and crew of the Diamond Princess.  
The 58 confirmed cases among Americans account for 12% of the 454 total confirmed COVID cases  
Assuming that proportion of asymptomatic cases in Americans is similar to the proportion of asymptomatic cases for the entire ship (73/355 or 20%), we would estimate the number of Americans with asymptomatic infection at ~12. Symptomatics would be 46. If 2% of cases result in ICU admission (based on earlier estimates on Feb-12 where 4 ICU cases were reported with 203 total confirmed cases), we would expect ~9 ICU cases overall with 454 infected. Media reports from today note 19 of the passengers are "seriously ill, with some of whom treated in intensive care units." (Would be helpful to quantify "some"—from the earlier data, we would estimate about half that number would require ICU care at some point). For the 54 Americans confirmed to have COVID, we would estimate 1 would require ICU care if 2% of cases required ICU care (we are already aware of at least 1 American who was receiving ICU care in Japan).

So estimates of severity looking only at the American passengers:

~400 total American passengers

58 confirmed to have COVID-19

12 Asymptomatic (20%)

46 Symptomatic (80%)

~55% of total cases mildly ill (hospitalized for isolation only) (31 cases)

~25% of total cases acutely ill requiring inpatient care (15 cases)

~2% of total cases requiring ICU admission (1 cases)

Expected mortality for patients with pneumonia admitted to ICU (15-50%); assuming 2% of those who become infected with COVID-19 require ICU care, these mortality rates equate to a CFR of 0.3%-1.0%

Those estimates fit pretty well with the estimates from Feb-13. To firm up these numbers it would be useful to have actual numbers from Japan on ICU admissions, number requiring mechanical ventilation, number in the hospital because they are acutely ill, and number in the hospital because of isolation only (mildly ill or asymptomatic). Also would be helpful to have more granular information on the Americans (hospital data in Japan including number acutely ill, number needing ICU admission, and number only in the hospital for isolation). Would also be critical to gather/compile the same information from Canada, South Korea, Italy, Hong Kong, and other nations as they also evacuate their citizens. The cruise ship is a circumscribed population where it is possible to get a handle on severity fairly early in an epidemic. The limitation though, is the population on board that ship is elderly (so need to be careful about generalizing to the entire population). But it is the best data we have.

The reason why this is so important is decisions re the implementation of NPIs depend upon severity (the more severe the more intense the NPIs). The sooner we have a more accurate assessment of severity, the better for making plans for NPIs.

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**From:** [Carter Mecher](#)

**Sent:** Monday, February 17, 2020 10:39 PM

**To:** [Caneva, Duane](#); [Tracey McNamara](#); [Dr. Eva K Lee](#); [\[REDACTED\]@ail.com](#)

**Cc:** [\[REDACTED\]@com](#); [\[REDACTED\]@om>](#); [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [David Marozzi](#); [Hepburn, Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [Wargo Michael](#); [Walters, William \(STATE.GOV\)](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [Callahan, Michael](#); [V.M \[REDACTED\]@UTMB.EDU](#); [\[REDACTED\]@unc.edu](#); [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR/IO\)](#); [\[REDACTED\]@CDPH](#); [Richard Hatchett](#); [Lawler, James V](#); [Kadloc,](#)

[Robert \(OS/ASPR/IO\): 'Martin, Gregory J. \[REDACTED\] gov\)'; Borio, Luciana; Hanfling, Dan; McDonald, Eric; Wade, David; TARANTINO, DAVID A; WILKINSON, THOMAS; David Gruber \[REDACTED\] s.texas.gov\); KAUSHIK, SANGEETA; Nathaniel Hupert](#)  
**Subject:** RE: Red Dawn Breaking, COVID-19 Collaborative, Feb 16 start

I really need help thinking thru the testing piece (screening for COVID-19). How do we protect the staff in outpatient clinics (where all the ILI is typically seen) and conserve PPE by shifting all the mild illness away from clinics and toward patients' homes using telephone care/telehealth and home healthcare and employing home isolation for those who are infected and voluntary home quarantine for otherwise well (but exposed and potentially infected) household contacts? Having all the suspected patients coming in to clinics to be screened really defeats the purpose. So how would very large numbers of outpatients get screened? Home screening? Drive thru screening? Or creating a free standing screening facility for rapid screening? Has anyone thought this thru (how you screen for disease plus promote adherence/compliance to home isolation and home quarantine and shift outpatient care of patients with mild disease to telephone/home care to protect outpatient clinic staff? Looking for practical solutions. Just to remind you, here are the estimates of demand (assuming we would need to screen all ILI)—about 88K per day in primary care clinics across the US.

US Data	
US population	325,700,000
Hospital Beds	924,107
ICU Beds	81,790
Hospital Admissions	36,353,946.00
ER Visits	145,600,000
Family Practice/PC Visits	481,963,000
Total Deaths	2,813,503
A Day in the US	
Hospital Admissions	99,600
Inpatient Census (85% occupancy)	785,491
ICU Census (85% occupancy)	69,522
ER Visits	398,904
Family Practice/PC Visits	1,320,447
Deaths	7,708
Current Background of Illness Similar to COVID-19	
2019-20 Flu Season MMWR Week 5 ILI Rate 6.7%	
1.4M hospitalizations annually for pneumonia	
Medicare Average LOS Pneumonia 6 days	
55,672 pneumonia & influenza deaths annually	
Daily Hospital Admissions Pneumonia	3,836
Hospital Census Pneumonia	23,014
Daily ILI cases seen in ERs	26,727
Daily ILI cases seen in FP/PC clinics	88,470
Daily pneumonia & influenza deaths	153

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Tuesday, February 18, 2020 11:01 AM, Carter Mecher [REDACTED] wrote:

More puzzle pieces re the cruise ship outbreak.

- About 2/3rds of the passengers have been tested so far (2,404 out of 3,711).
- 61 Americans opted to remain onboard and not be evacuated.

Japan has completed tests for all passengers and crew aboard the ship as of Monday, but the results for the last batch of tests aren't expected until Wednesday, the day that the quarantine is slated to end. So far, results are back for 2,404 passengers and crew, out of the 3,711 who were on board the ship when the quarantine began on Feb. 5.

Japanese Health Minister Katsunobu Kato said Tuesday that people who have tested negative for the virus would start leaving on Wednesday, but that the process of releasing passengers and crew won't be finished until Friday, according to [the Washington Post](#).

The remaining 61 American passengers on the DP who opted not to join the evacuation will not be allowed to return to the US until March 4, according to the American embassy in Tokyo. The governments of Australia, Hong Kong and Canada have also said they would evacuate passengers.

Elsewhere, Japan confirmed three more cases of the virus. This time, they were confirmed in Wakayama, a prefecture in eastern Japan.

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February 18, 2020 11:39 AM, Dr. Eva K Lee [REDACTED] wrote:

We predicted the Diamond Princess infection totality before they announced it. What it shows -- is that intervention (NPI) must be done timely. A delayed intervention cannot reverse the course and can be catastrophic. They have far more positive infected cases than they should have, have they intervened differently and swiftly. **The health system burden cannot be overemphasized.** Just think about 1% infection in Georgia, out of that 20% requires medical attention. That is over 18,000 people. Can we handle these extra people in the hospitals in a timely and prolonged manner? That is assuming noone is going to infect anyone anymore. So this is the message the local MUST understand and take action now.

So I assume those 61 Americans will at least get off the cruise and stay inland in Japan. And I hope Japan will not make the crew stay on board the ship for longer period of quarantine. Everyone has to get off the ship now. The ship now becomes the best clinical forensic evidence to study the surface contact, how long infection remains active and of course, large-scale disinfection at the very end. But I hope at least they will collect some evidential samples first before everything is destroyed.

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**From:** Carter Mecher <[REDACTED]>  
**Sent:** Tuesday, February 18, 2020 1:32 PM  
**Subject:** RE: Red Dawn Breaking, COVID-19 Collaborative, Feb 16 start

**CAUTION:** This email originated from outside of DHS. DO NOT click links or open attachments unless you recognize and/or trust the sender. Contact your component SOC with questions or concerns.

My thinking is evolving in terms of healthcare system response. Initially I described how I would refocus the outpatient clinics away from COVID care and leverage the NPIs of isolation and quarantine to help keep the workplace safe (for the clinic staff and other patients) rather than a strategy that employs PPE. I would only use the outpatient clinic staff to help with telephone/home care support of those patients under home isolation or home quarantine--to help with compliance/adherence to isolation and quarantine, monitoring their health, and optimizing the care of their other chronic medical conditions (to keep them out of the ER and the hospital). But as I thought more about this, it occurs to me that this can be generalized beyond outpatient clinics.

I would think about dividing our healthcare system into two big pieces: (1) acute care (EDs, acute inpatient care, critical care); and (2) non-acute care including outpatient clinics (PC/Family Practice, pediatrics, OB/GYN, medical specialty, surgical specialty, dental, mental health, rehab, etc.), as well as other inpatient areas (inpatient mental health, substance abuse, nursing homes, hospice care, memory care, assisted living, etc.). Inpatient surgery (and I suppose labor and delivery) is part of acute care, but for this outbreak, it probably best belongs bundled with the other non-acute inpatient areas. I would anticipate that the tripwire for implementing NPIs (community transmission), will

also be the trigger for healthcare systems to dial down or turn off elective admissions (primarily surgical) to free up acute care and ICU/monitored beds. The most effective way to protect these non-acute areas is by shunting potential COVID patients away from these areas and either providing this type of care while the patients is hospitalized in acute care or thru telephone care/home care for patients with mild illness receiving care at home. And the most effective way to shunt these patients away from non-acute care areas is thru the implementation of early and aggressive NPIs of isolation of the ill and home quarantine of household contacts (and not fit testing the world and passing out PPE that we don't have).

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On Tuesday, February 18, 2020 1:51 PM, Caneva, Duane <[REDACTED]> wrote:

Seems to me a big challenge will be asymptomatic or mild symptoms in kids, spread through the schools, shed to parents who staff both categories acute and non-acute care clinics. If there are several days of asymptomatic shedding, how do you prevent spread to the vulnerable, high risk patients in each category? Will mild symptoms drive complacent compliance?

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On Tuesday, February 18, 2020 2:20 PM, Dr. Eva K Lee <[REDACTED]> wrote:

Duane, Yes. (asymptomatic or mild symptoms) this is the worry at the very start, and it remains the most critical. Hence even 1% of infection for us -- can balloon out of proportion and we can't handle. Shedding not only during infection period, but also post-recovery. It's a very long timeline that we have to deal with. Then you have all the university students. Students travelled to China and came back to school, they asked health service if they needed to quarantine or take any action, the advice -- no need. Those are missed opportunities. Again, seasonal influenza affects 8-10% Americans, 0.7% of those infected required hospitalization, and mortality is roughly 0.1%. So it is easy to "calculate" all these numbers backwards... So 20% of COVID-19 infected may need hospitalization, mortality is 10-30 times higher than seasonal flu. How much can we tolerate before anyone would spring into action? Keep in mind, some begin to infect rapidly upon contracting the virus, the incubation is so short (and so long) and infectious too during that period (with much being unknown).

Carter, I think you will expect heterogeneous approaches from different communities in the overall response strategy, since it depends on the social setting and the demographics and more importantly the local resources. We have to optimize for sure.

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On Tuesday, February 18, 2020 7:56 PM, Carter Mecher <[REDACTED]> wrote:

Japan inching toward mitigation

### **Abe urges people with cold-like symptoms to avoid work, school**

Today 06:30 am JST [24 Comments](#)

TOKYO

Prime Minister Shinzo Abe on Tuesday advised people across the country not to go to work or school if they develop cold-like symptoms, as the country grapples with the spread of a new coronavirus originating in China.

Workplaces in the country, known for their long hours, need to encourage people to take days off without hesitation if they do not feel well, Abe said.

"The first thing that I want the people of Japan to keep in mind is to take time off school or work and refrain from leaving the house if they develop cold-like symptoms such as fever," Abe told a meeting of a government task force on the viral outbreak.

Teleworking is an "effective alternative" to help prevent the virus from spreading further, Abe said.

He made the remarks as the government is scrambling to contain the virus that originated in Wuhan, with more people with no obvious link to China getting infected in Japan.

The global outbreak of the disease called COVID-19 has prompted some event organizers in Japan to rethink their plans for hosting mass gatherings.

The number of confirmed cases in Japan has topped 600, including over 500 passengers and crew on the Diamond Princess, a quarantined cruise ship docked at Yokohama near Tokyo with more than 3,000 confined.

The steady rise in infections in various parts of Japan has raised public concern, prompting the health ministry to ask people who develop symptoms such as a temperature of 37.5 C or higher for at least four days to consult local health care centers and go to designated hospitals. The period is set shorter for the elderly, those with underlying conditions and pregnant women.

As Tokyo and other major cities in the country are notorious for packed rush-hour trains, commuters have been encouraged by a government panel of medical experts to go to work earlier or later than usual as the risk of infection is increased in crowds.

On Tuesday, Fujitsu Ltd and Hitachi Ltd said they are expanding teleworking, though Japanese companies overall have been slow to introduce it.

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**From:** [Carter Mecher](#)

**Sent:** Wednesday, February 19, 2020 4:45 PM

**Subject:** RE: Red Dawn Breaking, COVID-19 Collaborative, Feb 16 start

Was listening to the discussion today. There was a discussion about the shortages of PPE. There was also discussion re NPIs, but I'm not sure that most folks appreciate that the NPIs that have been arrayed as part of the TLC strategy to reduce disease transmission in the community can be leveraged to create safer compartments or spaces by shunting disease toward the home. By implementing these interventions, one could reduce the likelihood of disease in workplaces (by home isolation and home quarantine-- keeping sick employees at home and keeping employees who are well but potentially infected because someone is sick in their household, at home). Adding in other social distancing measures including social distancing at work, helps to reduce community transmission (adds additional protection to the workplace). The consequence is shunting disease to the home--120 M different compartments in the US, and making the workplace the safe place. That is potentially very important for critical infrastructure. The answer is not PPE for these employees. And why would we expect that employees in these sectors would have any better IPC with the use of PPE than we saw with staff on the Diamond Princess? Healthcare is a key critical infrastructure. It is different from the other sectors in that it will be attracting patients with COVID like a magnet. It is hard to imagine how one could make healthcare a safe workplace. But it is only hard to imagine how one could do that unless you begin to look a little closer at the different components of the healthcare system and the roles each component might play during this pandemic.

To illustrate this, I took a stab at developing a conops or roadmap to look at the various pieces of the healthcare system. The shunting of disease is really fractal. Just as we can look at shunting disease across a community into one compartment (the home) to make other compartments safer, we can do the same within our healthcare system--shunt disease to the acute care area where COVID patients will be concentrated. What are the strategies to do that? This conops is notional. It is purposely designed for a severe outbreak with severe disease and assumes that the healthcare system must somehow continue to limp along and continue to care for the background disease we see during normal times (strokes, AMIs, fractures and trauma, appendicitis, other serious infections, CHF, diabetic emergencies, psychotic episodes, preeclampsia, complicated deliveries, end stage renal disease and dialysis, etc.) as well as sustain outpatients with chronic conditions that require monitoring and care to keep them well and out of the ER and out of the hospital.

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**From:** [Carter Mecher](#)

**Sent:** Thursday, February 20, 2020 6:39 AM

**To:** [Richard Hatchett](#); [Dr. Eva K Lee](#)

**Cc:** [Tracey McNamara](#); [Caneva, Duane](#); [REDACTED]@gmail.com; [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [David Marozzi](#); [Hepburn, Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [Wargo Michael](#); [Walters, William \(STATE.GOV\)](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [Callahan, Michael V., M.D.](#); [REDACTED]@UTMB.EDU; [REDACTED]@email.unc.edu; [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR\)](#); [REDACTED]; [Lawler, James V](#); [Kadlec, Robert](#)

(OS/ASPR/IO): [Martin, Gregory J. \[REDACTED\]@hhs.gov](#); [Borio, Luciana](#); [Hanfling, Dan](#); [McDonald, Eric](#); [Wade, David](#); [TARANTINO, DAVID A](#); [WILKINSON, THOMAS](#); [David Gruber \[REDACTED\]@hhs.gov](#); [KAUSHIK, SANGEETA](#); [Nathaniel Hupert](#)

**Subject:** RE: Red Dawn Breaking, COVID-19 Collaborative, Feb 16 start

Keeping track of the outbreak aboard the cruise ship. The latest update is the announcement of 2 deaths (both patients in their 80s). An 87-year-old man and an 84-year-old woman, died on the 20th. Both were Japanese (the 87-year-old man was hospitalized on Feb-11 and the 84-year-old women on Feb-12). So time to death from recognition of infection was 8-9 days. On Feb-12, the total number of confirmed cases was 203. So estimated CFR back dating the denominator to Feb-12 is 1%. Assuming a denominator of 621, the CFR is 0.3%. If deaths are lagging by 8-10 days (and confirmed cases plateau), we should have a pretty good estimate of CFR for the entire group in another week or so. Will need to peel off the number of cases involving the crew member to get a better estimate of CFR in the elderly. These numbers are within the range we have been estimating.

The 2,666 passengers are similar in age (and likely in co-morbidities) to the population we see in a nursing home or residential care facility. The 1,045 crew are a proxy for a young healthy population. It will be important to look at the outcomes separately. One of the concerns is how a 'remake of this movie' could play out in similarly confined populations of elderly frail Americans. Here are the numbers of long term care facilities/programs in the US that care for the frail elderly. A large number of locations and a large number of residents/participants. I know that healthcare leaders were engaged yesterday, is anyone engaging this sector (long term care)? The healthcare leaders seemed more concerned about critical supply shortages (akin to the IV fluid shortage). Listening to them, it felt like their concerns seemed almost divorced from the threat of COVID.

	Number of Facilities / Communities	Number of Agencies / Centers	Number of Beds	Number of Residents	Number of Participants
Nursing Homes	15,600		1,700,000	1,300,000	
Residential Care	28,900		996,100	811,500	
Hospice Care		4,300			1,400,000
Adult Day Care		4,600			286,300

Source: <https://www.cdc.gov/nchs/fastats/nursing-home-care.htm>

The outbreak on the cruise ship should be the wake up call for leaders in long term care (and I would think healthcare overall).

Here is a summary of the cruise ship data (as of Feb 20)

Date	Event	Cumulative Number of Confirmed Cases	Cumulative Number of Deaths	Notes
20-Jan	Cruise ship departs from Yokohama Japan			
25-Jan	80 year old passenger disembarks in Hong Kong			
1-Feb	80 year old passenger confirmed to have COVID-19			
	When results known, certificate of landing canceled and ship under quarantine. Tests for the virus would be administered to three groups: those with symptoms, those who got off in Hong Kong, and those who had close contact with the infected passenger.			
3-Feb	Ship arrives in port of Yokohama Japan			

5-Feb	10 passengers and crew confirmed +	10		
6-Feb	31 more passengers and crew confirmed +	41		
7-Feb	30 more passenger and crew confirmed +	61		
8-Feb	9 more passenger and crew confirmed +	70		
10-Feb	66 more passenger and crew confirmed +	136		439 tested
11-Feb	39 more passenger and crew confirmed +	175		492 tested
12-Feb	28 more passenger and crew confirmed +	203		4 in ICU
13-Feb	15 more passenger and crew confirmed +	218		713 tested
14-Feb	67 more passenger and crew confirmed +	285		927 tested
15-Feb	70 more passenger and crew confirmed +	355		73 asymptomatic; 1,219 tested
16-Feb	329 American evacuated from cruise ship (14 of the evacuees found to be +) remained on board 61 Americans 44 Americans remained hospitalized in Japan	369		
17-Feb	85 more passenger and crew confirmed +	454		1,723 tested; 19 seriously ill
18-Feb	167 more passenger and crew confirmed +	621		3,011 tested
19-Feb	2 deaths	621	2	

Data by country is a bit sketchy

Country	Passengers	Total Confirmed Cases	ICU Admissions	Deaths
US	434	58	1	
Hong Kong	330			
Canada	256	32		
Australia	241	46		
UK	78	6		
Italy	35			
South Korea	14			
Japan				
Subtotal	1,388	142		

### New virus cruise ship disembarks and kills two Japanese passengers in hospital

February 20, 2020 11:38

Two Japanese men and women in their 80s who were hospitalized and treated for the virus were killed on the 20th in a cruise ship passenger who was confirmed to be infected with the new coronavirus. This is the first time a cruise ship passenger has died and three people have been killed in the country.

As of the 19th, 621 cruise ships out of approximately 3,700 crew members and passengers on the cruise ship where outbreaks of the new coronavirus were confirmed were confirmed.

According to government officials, two of them, a 87-year-old man and an 84-year-old woman, died on the 20th.

Both were Japanese and had a basic illness and were confirmed to have been infected with the virus, so it was said that men were hospitalized on the 11th of this month and women on the 12th to be treated.

This is the first time a cruise ship passenger has died.

In addition, three people have been killed in Japan, following the death of a woman in her 80s living in Kanagawa Prefecture on the 13th of this month.

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**From:** [Carter Mecher](#)

**Sent:** Thursday, February 20, 2020 7:15 AM

**To:** [Richard Hatchett](#); [Dr. Eva K Lee](#)

**Cc:** [Tracey McNamara](#); [Caneva, Duane](#); [rjglassjr@gmail.com](mailto:rjglassjr@gmail.com); [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [David Marcozzi](#); [Hepburn, Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [Wargo Michael](#); [Walters, William \(STATE.GOV\)](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, \[REDACTED\]](#)

[\[REDACTED\]](#); [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey,](#)

[Kevin; Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\)](#)

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[David; TARANTINO, DAVID A; WILKINSON, THOMAS; David Gruber \[REDACTED\]@dshs.texas.gov](#); [KAUSHIK,](#)

[SANGEETA; Nathaniel Hupert](#)

**Subject:** RE: Red Dawn Breaking, COVID-19 Collaborative, Feb 16 start

What has me worried is what happened on the cruise ship is a preview of what will happen when this virus makes its way to the US healthcare system (not to mention institutionalized high-risk populations in the US, like nursing homes). I'm not sure that folks understand what is just over the horizon.

Remember the story about Mann Gulch? We are at the equivalent of about 5:44. I anticipate that when we reach 5:45, there is going to be chaos and panic to get anything in place. I doubt that what we would then hurriedly put in place will be any better than what they did on that cruise ship. As a consequence, would expect much the same results.

I listened to the discussion yesterday. After listening to James and Michael describe the conditions on and around the cruise ship, I wondered whether anyone in healthcare leadership (outside the expertise at our biocontainment facilities) is thinking about infection control practices for any staff entering areas of a hospital caring for COVID patients (like changing clothes before entering and perhaps wearing scrubs, not bringing personal items into the area like iphones, ipads, stethoscopes, white coats, purses, briefcases, etc.)? And instituting policies that require all patients to phone for clearance to enter prior to presenting at safe acute and non-acute areas including community based clinics? Are we confident of the infection control practices of acute care staff (that they know the basics of how to don and doff PPE and behavior while in PPE?) Would HCWs in outpatient clinics or long term care facilities be any better prepared than the crew on board the cruise ship or the responders in Japan? I'm no expert in infection control and would defer to the expertise in this group. I was just a little surprised how little this seemed to be a concern for the healthcare leaders gathered yesterday.

I think we are getting close to the point where we need to drop those things that are not critical and focus on the most important things.

We are going to have a devil of time with lab confirmation—it is just too slow (they had a 2 day turnaround on the cruise ship) and we just don't have the capacity for the volume of tests we would anticipate. Charity has stressed this point again and again. That means we are going to have to fly blind early on. Perhaps the best we are going to be able to do in the near term if things begin to accelerate is screen all suspect cases (pretty much anyone with ILI symptoms) with a quick flu test and assume anyone who tests negative is suspected COVID until proven otherwise; and treat everyone who tests positive with Tamiflu. It will prove problematic early on, but as the epidemic barrels along, COVID will displace everything (at that point we will just assume that anyone with a fever or ILI has COVID). The problem is in the beginning. It is going to be so hard to sort things out. Matt, James and others are pushing for more rapid screening—but we just aren't there yet. The consequence is that we will be placing patients with resp illness (that is not flu and presumed to be COVID) in areas with actual COVID patients. I hate to do that, but not sure how it could be avoided early on. But we would only do that for those who are ill enough to be hospitalized. The large number of asymptomatic and mildly ill patients would be under home isolation (so no worries



about mixing confirmed and suspected patients). The downside is that we would have larger number of people in isolation and home quarantine than is really necessary (and the consequence of increased workplace absenteeism).

And it is because home isolation and home quarantine are so important, healthcare systems (and not just public health) have to grab a hold of operationalizing those NPIs with both hands. A while back, I created some prescriptions (tongue in cheek), just to underscore that physicians do have a role in isolation and quarantine (it is not limited to public health). We might not have pharmaceuticals available to treat COVID, but why can't we write prescriptions for non-pharmaceuticals? I don't think healthcare leaders appreciate this point. Every COVID patient we admit or see in the ER will require us to follow up with household members to make sure they know to home quarantine (need to do the same anywhere in our system we find a patient who is infected). You could not imagine the pushback I have received when I proposed that we must have an active role—people seem to think that state and local public health is alone responsible for this. I would think public health will be overwhelmed and taking charge of this is our best strategy to keep our safe areas safe.

I would be interested to hear how other healthcare systems and public health leaders are thinking about this.

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From: Carter Mecher

Sent: Sunday, February 23, 2020 7:28 AM

To: Richard Hatchett; Dr. Eva K Lee

Cc: Tracey McNamara; Caneva, Duane [REDACTED].com; Dodgen, Daniel (OS/ASPR/SPPR); DeBord, Kristin (OS/ASPR/SPPR); Phillips, Sally (OS/ASPR/SPPR); David Marcozzi; Hepburn, Matthew J CIV USARMY (USA); Lisa Koonin; Wargo Michael; Walters, William (STATE.GOV); [REDACTED]

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Johnson, Robert (OS/ASPR/BARDA); Yeskey, Kevin; Disbrow, Gary (OS/ASPR/BARDA); Redd,

Johnt(OS/ASPR/SPPR); Hassell, David (Chris) (OS/ASPR/IO); Hamel, Joseph (OS/ASPR/IO) [REDACTED]

[REDACTED]@CDPH; Lawler, James V; Kadlec, Robert (OS/ASPR/IO); 'Martin, Gregory J ([REDACTED]@state.gov)'; Borio,

Luciana; Hanfling, Dan; McDonald, Eric; Wade, David; TARANTINO, DAVID A; WILKINSON, THOMAS; David

Gruber ([REDACTED]shs.texas.gov); KAUSHIK, SANGEETA; Nathaniel Hupert

Subject: RE: Red Dawn Breaking, COVID-19 Collaborative, Feb 16 start

Cruise Ship Update: Japan announced 3rd death. With 634 confirmed cases, lowest limit of CFR is now at 0.5%.

Couldn't sleep. Woke up with an idea that I wanted to try and articulate.

First, I went thru some of my old emails and tried to thin thru the conops for envisioning how to organize and realign the healthcare system to respond to this looming threat.

Some follow up thoughts. Protecting outpatient care (and the role and function of outpatient care with a massive shift toward care delivered thru a phone) and leveraging TLC (especially home isolation and home quarantine) is relatively straightforward. Doing the same for acute care areas dedicated for caring for non-COVID patients and long term care is much more complex.

A thought came to me as I reread something I shared with the group earlier.

The concept of shunting of disease is really fractal. Just as we can apply NPIs and look at shunting disease across a community into one compartment (the home) to make other compartments safer, we can do the same within our healthcare system—shunt disease to the acute care area where COVID patients will be concentrated as well as shunt disease into the home (home isolation and home quarantine).

We talk about medical homes for patients, so think of the equivalent of a medical home model for inpatient care. Just as we think about shunting disease to the home (as a means of protecting the entire community), can we think of an inpatient area the same way. The entire inpatient area (the entire safe area of the hospital) is the community and within the community are a number of inpatient medical homes. And those medical homes have the equivalent of households (the patient(s) within that home and the HCWs caring for them). For TLC, the smallest unit is the household. What is that equivalent smallest unit in a hospital setting

The risk of introducing COVID into this very dynamic community can be thru patients or staff. The number of inpatient staff is probably on the order of 5 FTE per bed (roughly 5M staff for nearly 1 M beds), and nurses account for about 30% of hospital staff, so about 1.5 RNs per bed. The total hospital staffing includes numbers of employees who never come in contact with patients (or easily could be prevented from coming into contact with patients).

So over the span of a day, the number of total hospital personnel is about 5 times higher than the number of inpatients, however, the staff of greatest concern are nurses. So let's focus on the primary care giver who will have the most contact with the patient—nursing. Over the span of a day, the number of nurses that will have contact with patients is about the same as the number of inpatients. Near term turnover of nurses is negligible. Turnover of patients is much, much higher (inpatient beds turning over on average every 3-4 days). So the risk is much, much greater that COVID will be inadvertently introduced thru a patient who was incorrectly triaged or slips through with asymptomatic disease.

So now let's get back to the idea of an inpatient medical home. Patients are transients. They will enter and stay in the inpatient home for their hospitalization (3-4 days). The idea of a home is to also dedicate inpatient staff to that home so that in the event of nosocomial transmission/outbreak within this acute care area, we can shunt the disease outbreak to individual inpatient homes and protect the rest of the community (entire hospital). Ideally, one would want dedicated staff (primarily nursing, but one could also think of other inpatient team members such as NAs, health techs, housekeeping, hospitalist, etc.). It is unrealistic to have single patient homes (just not enough staff to do that). So what could be the smallest unit within a hospital? This doesn't need to be perfect just better than random distribution of patients throughout the hospital and assignment of staff to care for them. Inpatient wards do this already by specialty (surgical, medical, psychiatric, etc.). Nursing and other staff tend to have a home in either medicine or surgery or psychiatry, but it isn't ironclad and nurses do get reassigned depending upon need. One simple solution would be to have a ward = inpatient medical home but be much stricter in terms of dedicated staffing. So if a staff member working there is found to have COVID, we isolate the staff member and quarantine the ward (effectively taking it out of service), but sparing the rest of the hospital. The same if we find a patient who is found to have COVID, we isolate the patient and quarantine the rest of the patients and staff. Again, effectively taking it out of service but sparing the rest of the hospital. It is relatively straightforward and wards are physically isolated (so staff and patients can be prevented from mixing). This would require treating each ward as a separate entity (no patient movements to other wards, except for the need for ICU care—which creates more things to think thru). That may work for large hospitals with large number of wards. It may not work in smaller hospitals with few wards or mixed medical/surgical patients.

Another thought is to define the patient home by the day of admission. We did that in the old days when I was a resident and we admitted patients to a team (that included two interns and two medical students) every 3rd day. But we housed patients all over the hospital (pretty much wherever there was an open bed). Think of doing exactly the same but only admitting them to a dedicated area or inpatient home with dedicated inpatient 24/7 staff. That would mean we would cohort patients by day of admission and keep them together with a single team caring for them (from dedicated nursing across the shift, tech, hospitalist, etc.). Would need to think about what makes sense (the inpatient home opening its doors for admissions every 3- 4 days or so). If a patient is found to have COVID, the response would focus on that inpatient home--isolate the ill patient and quarantine the rest of the home (patients and staff). If a staff is found to have COVID, the response again would focus on the inpatient home, isolate the staff member and quarantine the rest of the home (patients and staff). By defining inpatient home by day of admission, it also helps us quickly doing the equivalent of a contact tracing since we would know the day the suspect patient entered the system and who had contact with the patient.

I can't underscore enough how important the early implementation of TLC is in a community to tamp down community transmission and reduce the probability that either a staff member or a patient presenting to the hospital will be infected. It is the single most important thing we can do. These strategies help to minimize the disruption should infectious individuals (staff or patients) slip thru our defenses.

In addition to an inpatient medical home, how else might we leverage social distancing and infection control to minimize transmission among staff and patients within an inpatient home?

The next thing we need to think more about is the nursing home. Should we think of compartmentalizing the nursing home? The risk to the nursing home is primarily from staff since turnover of nursing home residents is so low. Are there ways to create a LTC home where we break the nursing home into smaller subunits or LTC homes with a small number of dedicated/assigned staffing to minimize the introduction of infection from staff into the nursing home or at least shunt it into a subunit of the nursing home? It is easier to minimize the introduction of COVID thru a patient (would need to quarantine all new admissions in an another area for 14 days before allowing them to be introduced into the nursing home community). Would also need to make sure that the staff caring for the quarantined nursing home admission do not care for any nursing home patients or mix or mingle with other nursing home staff. I can't underscore enough the importance of early TLC in a community to tamp down community transmission and reduce the probability that a staff member working in a nursing home will become infected. These strategies help to minimize the disruption should infectious individuals (primarily staff) slip thru our defenses.

Just trying to think thru ways to apply TLC more effectively to healthcare to reduce transmission and shunt disease to smaller compartments to safeguard the entire system.

On Feb 23, 2020, at 7:38 AM, Dr. Eva K Lee [REDACTED] > wrote:

A few things I want to highlight --

**1. Means of spread** A study from AMA confirmed many of the parameters assumed in our models:

- A 20-year old infected with COVID-19 left Wuhan and went on infecting 5 relatives. When they tested positive, she was finally isolated, but tested negative still, and later tested positive, and remain normal on chest CT with no fever, stomach or respiratory symptoms (cough or sore throat as late as Feb 11 (time of the paper study duration).

So spreading and its wide scope is unavoidable because there exists these very healthy individuals who can spread effectively -- even during incubation period -- while they remain perfectly healthy. It also showcases difficulty in testing -- negative test -- may not be the end of it.

**2. Iranian cases**, though mysterious since the origin was not traced to China, may very well show that COVID-19 virus is very adaptable and mutating rapidly.

**3. Long recovery** The long recovery period is troublesome and must be taken seriously by health providers as they prepare for hospitalization. There is not much surge capacity in hospitals. So they must be innovative in the staggering process and isolation is of paramount importance. Government/Local should be ready for supplementing medical tents outside hospitals when needed (clearly extra staff too).

**4. Citizens' view** I was traveling so I did a real-time on-the-road analysis of human behavior and anxiety level. I overheard many people

-- (a) asked when CDC would tell us more on what to do.

-- (b) wish they could pull their kids out of school but there is no such option as part of the preventive measure (not announced by CDC).

-- (c) wish CDC would recommend tele-work options so they don't have to travel and expose themselves and their family to unnecessary risk.

-- (d) have no clue what the government is doing to keep the risk low as it is now. What exactly is being implemented to keep it low.

**5. Resource-limited countries** I pray that it would not reach the resource-limited countries like many in Africa (though it seems unavoidable). I cannot imagine the consequence.

**6. What we must do:** We must leverage the knowledge from other countries to better prepare ourselves. Japan's Crisis shows the importance of TIMELY proper isolation and STRATEGIC operations logistics in testing and in quarantine. South Korea (contrasting with Hong Kong, Singapore) demonstrates critical importance of EARLY social distancing and high compliance community NPI intervention. China's latest lockdown of 1/2 billion people truly signifies that gravity and uncharted territory of this virus. No country would take to such extreme measure.

**7. CFR** Since over 90% of influenza is never recorded/known, this COVID-19 seems to fall into similar spirit now, with so many cases of asymptomatic and transmission while incubating. While the true CFR remains unknown, the CFR of tested positive cases should offer a good comparison to the CFR of tested positive flu cases. That gives us a clearer estimate of health-resource burden.

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On Sunday, February 23, 2020 11:35 PM, Kadlec, Robert (OS/ASPR/IO) [REDACTED] > wrote:

Eva Is this true?! If so we have a huge whole on our screening and quarantine effort.  
(Dr Lee is at GaTech. )

**Means of spread** A study from AMA confirmed many of the parameters assumed in our models:

- A 20-year old infected with COVID-19 left Wuhan and went on infecting 5 relatives. When they tested positive, she was finally isolated, but tested negative still, and later tested positive, and remain normal on chest CT with no fever, stomach or respiratory symptoms (cough or sore throat as late as Feb 11 (time of the paper study duration).

So spreading and its wide scope is unavoidable because there exists these very healthy individuals who can spread effectively -- even during incubation period -- while they remain perfectly healthy. It also showcases difficulty in testing -- negative test -- may not be the end of it.

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Sent: Monday, February 24, 2020 12:07 AM From: Dr. Eva K Lee [redacted] pm.me To: Kadlec, Robert (OS/ASPR/IO) [redacted] gov CC: Giroir, Brett (HHS/OASH) [redacted] gov, Fauci, Anthony (NIH/NIAID) [redacted] gov, Redfield, Robert R. (CDC/OD) [redacted], Redd, John (OS/ASPR/SPPR) [redacted], Shuy, Bryan (OS/ASPR/IO) [redacted] hs.gov, Lee, Scott (OS/ASPR/EMMO) [redacted] v, Yeskey, Kevin (OS/ASPR/IO) [redacted] y@hhs.gov, Carter Mecher [redacted], Richard Hatchett [redacted] pi.net, Tracey McNamara [redacted] @westernu.edu, Caneva, Duane (DHS.GOV) [redacted] @hq.dhs.gov, [redacted] mail.com [redacted] gmail.com, Dodgen, Daniel (OS/ASPR/SPPR) [redacted] @HHS.GOV, DeBord, Kristin (OS/ASPR/SPPR) [redacted] @hhs.gov, Phillips, Sally (OS/ASPR/SPPR) [redacted] @hhs.gov, David Marcozzi [redacted] @som.umaryland.edu, Hepburn, Matthew J CIV USARMY (USA) [redacted] .civ@mail.mil, [redacted] @gmail.com, Walters, William (STATE.GOV) [redacted] @state.gov, HARVEY, MELISSA [redacted] @hq.dhs.gov, Wolfe, Herbert (DHS.GOV) [redacted] @hq.dhs.gov, a [redacted] @hq.dhs.gov a [redacted] @hq.dhs.gov, EVANS, MARIEFRED [redacted] @associates.hq.dhs.gov, Callahan, Michael V. [redacted] @mgh.harvard.edu, [redacted] @UTMB.EDU [redacted] edu, [redacted] @email.unc.edu [redacted] @email.unc.edu, Johnson, Robert (OS/ASPR/BARDA) [redacted] @hhs.gov, Disbrow, Gary (OS/ASPR/BARDA) [redacted] @hhs.gov, Hassell, David (Chris) (OS/ASPR/IO) [redacted] @hhs.gov, Hamel, Joseph (OS/ASPR/IO) [redacted] @hhs.gov, Dean, [redacted] CDPH [redacted] @cdph.ca.gov, Lawler, James V [redacted] r@unmc.edu, Martin, Gregory J [redacted] ale.gov) [redacted] @state.gov, Borio, [redacted] @iql.org, Hanfling, [redacted] iql.org, [redacted] @sdcountry.ca.gov [redacted] @sdcountry.ca.gov, Wade, David [redacted] @hq.dhs.gov, [redacted] @cbp.dhs.gov [redacted] @cbp.dhs.gov, WILKINSON, THOMAS [redacted] [redacted] hq.dhs.gov, [redacted] @dshs.texas.gov [redacted] @dshs.texas.gov, KAUSHIK, SANGEETA [redacted] ik@hq.dhs.gov, Nathaniel [redacted]

On Monday, February 24, 2020 12:07 AM, Dr. Eva K Lee [redacted] > wrote:

Hi Bob,

Yes, it is reported in JAMA:

<https://jamanetwork.com/journals/jama/fullarticle/2762028>

Clearly, there're still lots of uncertainty. However, there is no reason for them to lie. Furthermore, in the very first model I sent around the results on Jan 30, I assume infectious for patients even during incubation, during infection, 1/3 asymptomatic, 2/3 symptomatic. I was motivated to do that after talking to the head of laboratory in Hong Kong on Jan 29. He said many cases from his findings support that the viral counts are simply too low to surface at the beginning and hence cannot be detected.

With that assumption, the model can explain how and why the spread is so furious in China and why China resorts to complete lock down of Hubei, and now 1/2 billion people. Simply, people are carrying the virus everywhere. And this young woman is doing exactly that. She wasn't even tested positive after she infected her 5 relatives. Only afterwards. That's why I modeled the test and told James of the days to test and that we either must test all, or we must sample. The Diamond cruise partially supports that priority screening on only "suspected symptomatic individuals" are not sufficient. Please note also that before the Jan 23 lock down of Hubei, approx. 5 million people have left the city, traveling everywhere in China. This woman left on Jan 10.

Bob, if Europe fails, there is very little chance we can contain. So we must roll out the NPI now systematically.

Best, Eva

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On Monday, February 24, 2020 5:55 AM, Dr. Eva K Lee <[redacted]> wrote:

Hi Bob,

In addition to the JAMA paper, there is more --

**1. Infectious during incubation:**

Attached is another paper that will appear in Lancet ID this week. The viral load at early disease onset is high. In this study, there were two individuals shedding high level of viral RNA before symptoms. The result in this Lancet ID paper was the basis for my model assumption. [[I received the initial draft about 4 weeks ago.]]

## 2. Diamond Princess:

If the 80 year old who boarded the ship on Jan 20 and disembarked on Jan 25 and showed symptoms later and tested positive on Jan 31, then that's yet another asymptomatic transmission. The way the infection spread on the ship, even assuming no quarantine at all, reflects asymptomatic secondary infection too in order to reach such high number. Or that this man is a super spreader.

## 3. Early NPI is a must:

Even if there is only 1% COVID-19 infection, and within which 20% requires hospitalization, this will already overwhelm our health systems. Singapore and Hong Kong have demonstrated that early NPI can help contain and prevent disease spread. In Hong Kong, government and private sectors are practicing home-office (tele-work), schools are closed, community service even churches are doing distance worship, and public places are disinfected regularly, so is personal hygiene. Regardless if there is any asymptomatic transmission, we must take these steps early. We need to allow parents make that choice, workers make that choice, without being penalized by their teachers and employers.

**4. Screening:** We must be strategic in community screening. Carter made many points. Patients who have flu-like symptoms will go to their primary care, pediatrician, urgent care, or even ED. So there is a big contamination risk. Setting up a POD (like mass dispensing) for screening might be good. So we can ensure screening is done properly and with proper protection to the providers. Since so little is known about this COVID-19, a concentrated effort as such allows for knowledge sharing and dissemination rapidly across. It is invaluable for the whole process.

**5. Care for COVID-19 patients:** I advocate separating the COVID-19 patients from hospital ED/ICU patients since COVID-19 seems to attack patients with co-existing health issues. Hence exiting hospital patients are at high risk. On Tuesday, February 25, 2020 11:34 AM, Carter Mecher <[REDACTED]> wrote:

South Korea now has 977 cases and 10 deaths. They are about where Wuhan was on January 25<sup>th</sup> (so about 1 month behind). Wuhan was overwhelmed less than 2 weeks later. I would expect the same for South Korea with the epicenter being in Seoul.

I think Iran is about at the same point (maybe even a little ahead) of South Korea. Tehran is another very large city that will likely become its epicenter.

I see a few hopeful signs. Singapore and Hong Kong have done a great job thus far and have implemented NPIs very early. Both have great surveillance. They are holding the line. They are also small and islands. Japan on the other hand is struggling and hasn't been as aggressive as Singapore and Hong Kong.

The other thing that gives me hope is what I see in Hubei and Wuhan. I realize the data is a little sketchy because China has gone back and forth with the definition of cases, but I tried to smooth that over by looking at cumulative hospitalization rates per 100,000 (like we do for flu). Hubei (and Wuhan is a city within Hubei) reports each day the current number of people in the hospital (# currently in severe condition, # in critical condition), cumulative number of hospital discharges, cumulative deaths, and cumulative cases. From this we can estimate cumulative hospitalizations and then rates. 92% of the cases have been hospitalized (up thru Feb 2<sup>nd</sup> 100% of the cases they reported were hospitalized). Knowing the number of cases in Wuhan, we have been estimating the number hospitalized assuming a similar % of the cases requiring hospitalization rate for Wuhan (that 92% of the cases are being hospitalized—that number is adjusted each day based on current data). So we really can't back out the Wuhan numbers from the Hubei numbers. The best we can do is compare Hubei totals (including Wuhan) with an estimate of Wuhan. This data is good enough to show that the Chinese appear to be slowing transmission outside of Wuhan (They were late to implement NPIs in Wuhan but were able to implement NPIs earlier in the epidemic outside of Wuhan because the outbreak had about a 2 week head-start in Wuhan).

<E0B38B2300CE43F09DC37BFDDDB81F3C.png>

We need to emulate the blue curve. If I could subtract Wuhan, this curve would be significantly lower.

Remember the goals of NPIs.

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**From:** Caneva, Duane  
**Sent:** Monday, February 24, 2020 12:28 PM

To: Subject: Red Dawn Breaking Bad, Start Feb 24  
Importance: High

All,  
**This is a new Red Dawn Email String. Please use this one going forward.**  
Best,  
Duane

Duane C. Caneva, MD, MS  
Chief Medical Officer  
Department of Homeland Security

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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From: Carter Mecher [REDACTED] <[REDACTED]>  
Sent: Monday, February 24, 2020 4:58:53 PM  
To: [REDACTED] <[REDACTED]@hq.dhs.gov>; Richard Hatchett [REDACTED] <[REDACTED]@cepi.net>; Caneva, Duane [REDACTED] <[REDACTED]@hq.dhs.gov>; [REDACTED] <[REDACTED]@gmail.com>; Dodgen, Daniel (OS/ASPR/SPPR) [REDACTED] <[REDACTED]@HHS.GOV>; DeBord, Kristin (OS/ASPR/SPPR) [REDACTED] <[REDACTED]@hhs.gov>; Phillips, Sally (OS/ASPR/SPPR) [REDACTED] <[REDACTED]@hhs.gov>; David Marcozzi <[REDACTED]@som.umaryland.edu>; Hepburn, Matthew J CIV USARMY (USA) [REDACTED] <[REDACTED]n.civ@mail.mil>; Lisa Koonin [REDACTED] <[REDACTED]@gmail.com>; Walters, William <[REDACTED]@state.gov>; HARVEY, MELISSA [REDACTED] <[REDACTED]@hq.dhs.gov>; WOLFE, HERBERT [REDACTED] <[REDACTED]@hq.dhs.gov>; Eastman, Alexander [REDACTED] <[REDACTED]@hq.dhs.gov>; EVANS, MARIEFRED [REDACTED] <[REDACTED]@associates.hq.dhs.gov>; Callahan, Michael V., M.D. [REDACTED] <[REDACTED]@mqh.harvard.edu>; [REDACTED] <[REDACTED]@UTMB.EDU>; [REDACTED] <[REDACTED]@mb.edu>; [REDACTED] <[REDACTED]@email.unc.edu>; [REDACTED] <[REDACTED]@mail.unc.edu>; Johnson, Robert (OS/ASPR/BARDA) <Robert.Johnson@hhs.gov>; Yeskey, Kevin <[REDACTED]y@hhs.gov>; Disbrow, Gary (OS/ASPR/BARDA) [REDACTED] <[REDACTED]@hhs.gov>; Redd, John (OS/ASPR/SPPR) [REDACTED] <[REDACTED]@hhs.gov>; Hassell, David (Chris) (OS/ASPR/IO) <[REDACTED]@hhs.gov>; Hamel, Joseph (OS/ASPR/IO) [REDACTED] <[REDACTED]@hhs.gov>; Dean, Charity A@CDPH <[REDACTED]@cdph.ca.gov>; Lawler, James V [REDACTED] <[REDACTED]@unmc.edu>; Martin, Gregory J [REDACTED] <[REDACTED]@state.gov>; Borio, Luciana <[REDACTED]o@lqt.org>; Hanfling, Dan <[REDACTED]@lqt.org>; [REDACTED] <[REDACTED]@sdcounty.ca.gov>; Wade, David [REDACTED] <[REDACTED]@hq.dhs.gov>; TARANTINO, DAVID A <[REDACTED]@cbp.dhs.gov>; WILKINSON, THOMAS <[REDACTED]@hq.dhs.gov>; [REDACTED] <[REDACTED]@dshs.texas.gov>; KAUSHIK, SANGEETA [REDACTED] <kaushik@hq.dhs.gov>; Nathaniel Huper [REDACTED] <[REDACTED]@med.cornell.edu>; Tracey McNamara [REDACTED] <ra@westernu.edu>; Dr. Eva K Lee [REDACTED] Lee, Scott [REDACTED]

Subject: RE: Red Dawn Breaking Bad, Start Feb 24

Several new countries announced first confirmed cases  
Afghanistan  
Bahrain  
Iraq  
Kuwait  
Oman

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From: Walters, William [REDACTED] <[REDACTED]@state.gov>  
Sent: Tuesday, February 25, 2020 6:56 PM  
To: [REDACTED] <[REDACTED]@hq.dhs.gov>; Richard Hatchett [REDACTED] <[REDACTED]@cepi.net>; Caneva, Duane [REDACTED] <[REDACTED]@hq.dhs.gov>; [REDACTED] <[REDACTED]@gmail.com>; Dodgen, Daniel (OS/ASPR/SPPR) [REDACTED] <[REDACTED]@HHS.GOV>; DeBord, Kristin (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Phillips, Sally (OS/ASPR/SPPR) [REDACTED] <[REDACTED]@hhs.gov>; David Marcozzi <[REDACTED]@som.umaryland.edu>; Hepburn, Matthew J CIV USARMY (USA) [REDACTED] <[REDACTED]lv@mail.mil>; Lisa Koonin [REDACTED] <[REDACTED]@gmail.com>; HARVEY, MELISSA [REDACTED] <[REDACTED]@hq.dhs.gov>; WOLFE, HERBERT [REDACTED] <[REDACTED]@hq.dhs.gov>; Eastman, Alexander [REDACTED] <[REDACTED]@hq.dhs.gov>; EVANS, MARIEFRED [REDACTED] <[REDACTED]@assc[REDACTED]@email.unc.edu>; Johnson, Robert (OS/ASPR/BARDA) <R[REDACTED]@hhs.gov>; Yeskey, Kevin [REDACTED] <[REDACTED]@hhs.gov>; Disbrow, Gary [REDACTED]

(OS/ASPR/BARDA) <[REDACTED]@hhs.gov>; Redd, John (OS/ASPR/SPPR) <[REDACTED]dd@hhs.gov>; Hassell, David (Chris) (OS/ASPR/IO) <[REDACTED]l@hhs.gov>; Hamel, Joseph (OS/ASPR/IO) <[REDACTED]el@hhs.gov>; Dean, Charity A@CDPH <Charity.Dean@cdph.ca.gov>; Lawler, James V <james.lawler@unmc.edu>; Martin, Gregory J <[REDACTED]tate.gov>; Borio, Luciana <[REDACTED]org>; [REDACTED] <[REDACTED]@hq.dhs.gov>; TARANTINO, DAVID A <[REDACTED]@cbp.dhs.gov>; WILKINSON, THOMAS <[REDACTED]@hq.dhs.gov>; [REDACTED] <[REDACTED]r@dshs.texas.gov>; KAUSHIK, SANGEETA <[REDACTED]@hq.dhs.gov>; Nathaniel Hupert <[REDACTED]005@med.cornell.edu>; Tracey McNamara <[REDACTED]sternu.edu>; Dr. Eva K Lee <[REDACTED]e>; Lee, Scott <[REDACTED]s.gov>; Carter Mecher <[REDACTED]>

**Subject:** Re: Red Dawn Breaking Bad, Start Feb 24

Colleagues,  
Does anyone have a case fatality rate projection broken down by age?  
William A. Walters, M.D., MBA  
Executive Director and  
Managing Director for Operational Medicine  
Bureau of Medical Services  
U.S. Department of State

[REDACTED]

[REDACTED]

[REDACTED]

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**From:** [Carter Mecher](#)  
**Sent:** Thursday, February 27, 2020 5:00 AM  
**To:** [Tracey McNamara](#); [Richard Hatchett](#); [Tom Bossert](#)  
**Cc:** [Caneva, Duane](#); [Dr. Eva K Lee](#); [Martin, Gregory J](#); [Walters, William](#); [HAMILTON, CAMERON](#); [REDACTED].com; [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [David Marcozzi](#); [Hepburn, Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [Callahan, Michael V., M.D.](#); [jwleduc@UTMB.EDU](#); [REDACTED]@email.unc.edu; [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR/IO\)](#); [REDACTED].A@CDPH; [Lawler, James V](#); [Borio, Luciana](#); [Hanfling, Dan](#); [REDACTED]@sdcounty.ca.gov; [Wade, David](#); [TARANTINO, DAVID A](#); [WILKINSON, THOMAS](#); [REDACTED]@dshs.texas.gov; [KAUSHIK, SANGEETA](#); [Nathaniel Hupert](#); [Lee, Scott](#); [Padgett, Larry G](#); [Ryan Morhard](#); [Stack, Steven J \(CHFS DPH\)](#)

**Subject:** RE: Red Dawn Breaking Bad, Start Feb 24

Details below on case in California. From the cruise ship data we would estimate there are 20-50 cases for each ICY admission (assuming ICU admissions in 2%-5% of cases). That ratio was for an aged population. Suspect that ratio might be higher for a general population. And given the time from disease onset to being on a ventilator for at least a week (since at least Feb 19 when the patient arrived at UC Davis), the outbreak has had a good head start. That would suggest we already have a significant outbreak and are well behind the curve. We are now well past the equivalent 5:45 moment at Mann Gulch. You can't outrun it. They need to be thinking NPIs locally (full TLC including school closure).

[I will send something I was looking at re the cruise ship data and kids.]

<https://www.sacbee.com/news/local/article240682311.html>

**Latest: Coronavirus patient at UC Davis Medical Center since Feb. 19 wasn't tested for days**

The Solano County resident who is the [nation's first confirmed case of coronavirus from "exposure in the community" has been under the care of UC Davis Medical Center for a week](#), according to an internal memo obtained Wednesday night by The Sacramento Bee.

Just before 10 p.m., [the hospital published the memo that was sent to employees by UC Davis Health leaders earlier in the day](#) and outlines the timeline of the patient's admission and disclosed that several employees who were exposed to the patient self-isolate at home "out of abundance of caution."

The patient, whom the U.S. Centers for Disease Control and Prevention confirmed has tested positive the COVID-19 strain, was moved to the Sacramento teaching hospital on Feb. 19, according to the memo sent to staffers by David Lubarsky, the head of the hospital and UC Davis Health's vice chancellor of human health services, and Brad Simmons, the health system's interim CEO.

The patient was transferred to the facility from another hospital, where a medical team had already put the patient on a ventilator.

"The individual is a resident of Solano County and is receiving medical care in Sacramento County. The individual had no known exposure to the virus through travel or close contact with a known infected individual," California Department of Public Health officials said in a news release.

Because physicians at the first hospital suspected the patient had a virus, they issued an order that health care workers should wear personal protective gear when with the patient to guard against exposure to droplets, said the memo, which was [first reported by the Davis Enterprise newspaper](#).

The UCD medical team used the proper infection protocols out of concern that the individual might have coronavirus, according to the memo, and upon the patient's admission, UCD physicians requested that public health officials perform a test to determine whether the person had COVID-19.

"We requested COVID-19 testing by the CDC, since neither Sacramento County nor CDPH is doing testing for coronavirus at this time," the memo says. "Since the patient did not fit the existing CDC criteria for COVID-19, a test was not immediately administered. UC Davis Health does not control the testing process."

On Sunday, the CDC ordered a coronavirus test on the patient, and UC Davis Health officials discovered Wednesday that the patient tested positive for the deadly respiratory illness that causes coughing, fever and shortness of breath. That prompted hospital officials to tell "a small number" of hospital workers to stay home and monitor themselves for possible infection.

"Just as when a health care worker has a small chance of exposure to other illnesses, such as TB or pertussis, we are following standard CDC protocols for determination of exposure and surveillance," the memo said. "So, out of an abundance of caution, in order to assure the health and safety of our employees, we are asking a small number of employees to stay home and monitor their temperature."

"We are handling this in the same way we manage other diseases that require airborne precautions and monitoring," the memo said, adding hospital officials are "in constant communication with the state health department and the CDC and Sacramento County Public Health about the optimal management of this patient and possible employee exposures."

UCD officials did not respond to The Bee's request for comment.

The memo ended: "We are dedicated to providing the best care possible for this patient and continuing to protect the health of our employees who care for them."

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**From:** [Carter Mecher](#)

**Sent:** Friday, February 28, 2020 5:20 AM

**To:** [Tracey McNamara](#); [Baric, Ralph S](#); [Caneva, Duane](#); [Richard Hatchett](#); [Dr. Eva K Lee](#)

**Cc:** [Tom Bossert](#); [Martin, Gregory J](#); [Walters, William](#); [HAMILTON](#); [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [David Marcozzi](#); [Hepburn, Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [Callahan, Michael V., M.D.](#); [jw](#); [MB.EDU](#); [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR/IO\)](#); [Dean](#); [Lawler, James V](#); [Borio, Luciana](#); [Hanfling, Dan](#); [sdcounty.ca.gov](#); [Wade, David](#); [TARANTINO, DAVID A](#); [WILKINSON](#); [KAUSHIK, SANGEETA](#); [Nathaniel Hupert](#); [Lee, Scott](#); [Padgett, Larry G](#); [Ryan Morhard](#); [Slack, Steven J \(CHFS DPH\)](#); [Adams, Jerome \(HHS/OASH\)](#); [Fantinato, Jessica - OHS, Washington, DC](#); [Colby, Michelle - OHS, Washington, DC](#)

**Subject:** RE: Red Dawn Breaking Bad, Start Feb 24

Japan announced fifth death of Diamond Princess passenger (70 year old woman). CFR for infected passengers is now 0.67% (this represents the lower limit of CFR). Below are the latest numbers I have (had to make a correction when I learned that the 705 total cases reported by Japan also included the 14 confirmed cases in Americans who were evacuated but not the cases that have appeared in the remaining citizens from the US (28), Australia (8), Hong Kong (4), UK (4), and Israel (2) after they were evacuated.

Date	Event	Cumulative Number of Confirmed Cases	Cumulative Number of Deaths	Notes
20-Jan	Cruise ship departs from Yokohama Japan			
25-Jan	80 year old passenger disembarks in Hong Kong			



	80 year old passenger confirmed to have COVID-19			
1-Feb	When results known, certificate of landing canceled and ship under quarantine. Tests for the virus would be administered to three groups: those with symptoms, those who got off in Hong Kong, and those who had close contact with the infected passenger.			
3-Feb	Ship arrives in port of Yokohama Japan			
5-Feb	10 passengers and crew confirmed +	10		
6-Feb	31 more passengers and crew confirmed +	41		
7-Feb	30 more passenger and crew confirmed +	61		
8-Feb	9 more passenger and crew confirmed +	70		
10-Feb	66 more passenger and crew confirmed +	136		439 tested
11-Feb	39 more passenger and crew confirmed +	175		492 tested
12-Feb	28 more passenger and crew confirmed +	203		4 in ICU
13-Feb	15 more passenger and crew confirmed +	218		713 tested
14-Feb	67 more passenger and crew confirmed +	285		927 tested
15-Feb	70 more passenger and crew confirmed +	355		1,219 tested; 73 asymptomatic
16-Feb	329 American evacuated from cruise ship (14 of the evacuees found to be +) 61 Americans remained on board 44 Americans remained hospitalized in Japan	369		
17-Feb	85 more passenger and crew confirmed +	454		1,723 tested; 19 seriously ill
18-Feb	167 more passenger and crew confirmed +	621		3,011 tested
19-Feb	2 deaths	621	2	
20-Feb	13 more passenger and crew confirmed +	634	2	3,066 tested; 28 seriously ill; 322 asymptomatic
23-Feb	Death reported in Japan		3	
24-Feb	Japan updates total to 691; US reports 36 in US	691	3	
25-Feb	Death reported in Japan; US reports 40 in US; UK 4; Australia 7; Hong Kong 4; Israel 2; Total 744; plus 4 not on ship	734	4	3,894 tested; 35 seriously ill; 380 asymptomatic

26-Feb	US reports total of 42 cases in US; Japan announces that 45 of 613 former passengers have symptoms and will need to be tested, 14 new cases confirmed in the Diamond Princess cruise ship, raising the total to 705 cases inside the ship	750	4	
27-Feb	Australia (+1) 0 cases (repatriated)	751	4	
27-Feb	Death reported in Japan	751	5	

Country	Passengers/Crew	Cases Hospitalized in Japan	Cases Confirmed upon Repatriation	Total Confirmed Cases	ICU Admissions	Deaths	% Infected
US	434	44	42	66			20%
Hong Kong	364	55	4	59			16%
Canada	256	47		47			18%
Australia	241	47	8	55			23%
UK	78	6	4	10			13%
Italy	35						
South Korea	14						
Israel	11	3	2	5			45%
Japan						5	
Subtotal	1,433	202	60	262			
Total	3,711	691	60	751			20%

From: [Carter Mecher](#)  
Sent: Friday, February 28, 2020 5:37 AM  
To: [Tracey McNamara](#); [Baric, Ralph S](#); [Caneva, Duane](#); [Richard Hatchett](#); [Dr. Eva K Lee](#)  
Cc: [Tom Bossert](#); [Martin, Gregory J](#); [Walters, William](#); [HAMILTON, CAMERON](#); [REDACTED]@gmail.com; [Dodgen, Daniel](#) (OS/ASPR/SPPR); [DeBord, Kristin](#) (OS/ASPR/SPPR); [Phillips, Sally](#) (OS/ASPR/SPPR); [David Marcozzi](#); [Hepburn, Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [Callahan, Michael V, M](#); [REDACTED]@son, Robert (OS/ASPR/BARDA); [Yeskey, Kevin](#); [Disbrow, Gary](#) (OS/ASPR/BARDA); [Redd, John](#) (OS/ASPR/SPPR); [Hassell, David \(Chris\)](#) (OS/ASPR/IO); [Hamel, Joseph](#) (OS/ASPR/IO); [REDACTED]@lawler, James V; [Borio, Luciana](#); [Hanfling, Dan](#); [REDACTED]@by; [Wade, David](#); [TARANTINO, DAVID A](#); [WILKINSON, THOMAS](#); [REDACTED]@by; [KAUSHIK, SANGEETA](#); [Nathaniel Hupert](#); [Lee, Scott](#); [Padget, Larry G](#); [Ryan Morhard](#); [Stack, Steven J](#) (CHFS DPH); [Adams, Jerome](#) (HHS/OASH); [Fantinato, Jessica](#) - OHS, Washington, DC; [Colby, Michelle](#) - OHS, Washington, DC  
Subject: RE: Red Dawn Breaking Bad. Start Feb 24

New areas impacted (lots of spread from Italy), which tells us that the outbreak in Italy is substantial. Most concerning development is case in Nigeria.

- Belarus (traveler from Iran)
- Lithuania
- Netherlands (traveler from Italy)
- New Zealand
- Nigeria (traveler from Italy)
- Northern Ireland (traveler from Italy)
- Wales (traveler from Italy)

#### FIRST CASE OF CORONA VIRUS DISEASE CONFIRMED IN NIGERIA

Friday, February 28, 2020

The Federal Ministry of Health has confirmed a coronavirus disease (COVID-19) case in Lagos State, Nigeria. The case, which was confirmed on the 27th of February 2020, is the first case to be reported in Nigeria since the beginning of the outbreak in China in January 2020.

The case is an Italian citizen who works in Nigeria and returned from Milan, Italy to Lagos, Nigeria on the 25th of February 2020. He was confirmed by the Virology Laboratory of the Lagos University Teaching Hospital, part of the Laboratory Network of the Nigeria Centre for Disease Control. The patient is clinically stable, with no serious symptoms, and is being managed at the Infectious Disease Hospital in Yaba, Lagos.

The Government of Nigeria, through the Federal Ministry of Health has been strengthening measures to ensure an outbreak in Nigeria is controlled and contained quickly. The multi-sectoral Coronavirus Preparedness Group led by the Nigeria Centre for Disease Control (NCDC) has immediately activated its national Emergency Operations Centre and will work closely with Lagos State Health authorities to respond to this case and implement firm control measures.

I wish to assure all Nigerians that we have been beefing up our preparedness capabilities since the first confirmation of cases in China, and we will use all the resources made available by the government to respond to this case.

We have already started working to identify all the contacts of the patient, since he entered Nigeria. Please be reminded that most people who become infected may experience only mild illness and recover easily, but it can be more severe in others, particularly the elderly and persons with other underlying chronic illnesses. All Nigerians should take care of their health and maintain hand and respiratory hygiene to protect themselves and others, including their own families, following the precautions below:

1. Regularly and thoroughly wash your hands with soap and water, and use alcohol-based hand sanitiser.
  2. Maintain at least 1 & half metres (5 feet) distance between yourself and anyone who is coughing or sneezing.
  3. Persons with persistent cough or sneezing should stay home or keep a social distance, but not mix in crowd.
  4. Make sure you and people around you, follow good respiratory hygiene, meaning cover your mouth and nose with a tissue or into your sleeve at the bent elbow or tissue when you cough or sneeze. Then dispose of the used tissue immediately.
  5. Stay home if you feel unwell with symptoms like fever, cough and difficulty in breathing. Please call NCDC toll free number which is available day and night, for guidance- 0800-970000-10. Do not engage in self-medication
  6. Stay informed on the latest developments about COVID-19 through official channels on TV and Radio, including the Lagos State Ministry of Health, NCDC and Federal Ministry of Health.
- Citizens must not abuse social media and indulge in spreading misinformation that causes fear and panic. The Federal Ministry of Health, through Nigeria Centre for Disease Control, will continue to provide updates and will initiate all measures required to prevent the spread of any outbreak in Nigeria.

Dr Osagie Ehanire

Hon. Minister of Health

<https://ncdc.gov.ng/news/227/first-c...med-in-nigeria>

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From: Carter Mecher

Sent: Friday, February 28, 2020 7:31 AM

To: Tracey McNamara; Baric, Ralph S; Caneva, Duane; Richard Hatchett; Dr. Eva K Lee

Cc: Tom Bossert; Martin, Gregory J; Walters, William; HAMILTON, CAMERON [REDACTED]; Dodgen, Daniel (OS/ASPR/SPPR); DeBord, Kristin (OS/ASPR/SPPR); Phillips, Sally (OS/ASPR/SPPR); David Marcozzi; Hepburn, Matthew J CIV USARMY (USA); Lisa Koonin; HARVEY, MELISSA; WOLFE, HERBERT; Eastman, Alexander; EVANS, MARIEFRED; Callahan, Michael V. M [REDACTED]; Johnson, Robert (OS/ASPR/BARDA); Yeskey, Kevin; Disbrow, Gary (OS/ASPR/BARDA); Redd, John (OS/ASPR/SPPR); Hassell, David (Chris) (OS/ASPR/IO); Hamel, Joseph (OS/ASPR [REDACTED]); Lawler, James V; Borio,

[Luciana; Hanfling, Dan; \[REDACTED\], David; TARANTINO, DAVID A; WILKINSON, THOMAS; \[REDACTED\], SANGEETA; Nathaniel Hupert; Lee, Scott; Padget, Larry G; Ryan Morhard; Stack, Steven J \(CHFS DPH\); Adams, Jerome \(HHS/OASH\); Fantinato, Jessica - OHS, Washington, DC; Colby, Michelle - OHS, Washington, DC](#)

**Subject:** RE: Red Dawn Breaking Bad, Start Feb 24

Italy has emerged as a major exporter of COVID. Above the surface, nothing much was happening in Italy until Feb 21<sup>st</sup> (before that just a few cases reported, on Feb 20 Italy reported a cumulative total of 3 cases/0 deaths). Over the past week things exploded and Italy has exported cases around the world. Things exploded in a matter of days (or at least were recognized to have exploded in a matter of days). That is what will likely happen here. It will be that fast and soon the US (because we are a major travel hub/destination) could become an exporter of disease like Italy. Think of that wrt the window for implementing community mitigation measures.

Timeline for Italy

Feb 22:

- Over 50,000 people have been asked to stay at home in the areas concerned, while all public activities such as carnival celebrations, church masses and sporting events have been banned for up to a week.
- Coronavirus, ordinance on compulsory quarantine and isolation for those returning from China.
- **VENETIAN UNIVERSITIES CLOSED.** The universities of Veneto will remain closed due to the Coronavirus emergency. This was announced by the president of Veneto, Luca Zaia, specifying that he had consulted with the rectors of the various universities in the region: "we have decided to keep them closed from next week" he said. Responding to journalists on possible measures for events such as the Venice Carnival, Zaia said he awaits the guidelines that will be issued by the minister of health, Roberto Speranza, because the initiatives must be uniform across the country.
- Cases of the new coronavirus in Italy, the most affected country in Europe, rose on Saturday to nearly 80, killing two people and prompting the government to close off the worst hit areas in the northern regions of Lombardy and Veneto. Authorities in the two regions, where the outbreak is concentrated, have cancelled sports events and closed schools and universities, while companies from Ray-Ban owner Luxottica to the country's top bank UniCredit have told workers living in the affected areas to stay home.

Feb 23:

"Prohibition of all individuals still present in the municipality or area from leaving the municipality or the affected area"; "ban on access to the municipality or area concerned"; "suspension of events or initiatives of any nature, of events and of any form of meeting in a public or private place, including those of a cultural, recreational, sporting and religious nature, even if carried out in closed places open to the public". These are some of the measures contained in the law decree approved this evening by the Council of Ministers to deal with the spread of the crown virus in the outbreak areas.

Other measures also include "the suspension of early childhood education services and schools of all levels, as well as the attendance of school and higher education activities, except for distance learning activities", the "suspension of opening services to the museum public ", that" of every educational trip, both on the national and foreign territory ", and" the application of the quarantine measure with active surveillance among individuals who have had close contacts with confirmed cases of widespread infectious disease ".

**Municipalities affected:** Eleven municipalities in the Lodi area and in the Veneto region are affected by the coronavirus emergency and by the relevant measures taken by the authorities to prevent the spread of the virus. Here is the complete list:

Vo 'Euganeo  
Codogno  
Castiglione d'Adda  
Casalpusterlengo  
Fombio

Maleo  
Somaglia  
Bertonico  
Terranova dei Passerini  
Castelgerundo  
San Fiorano.

**Carnivale in Venice suspended**

**Feb 25:**

Veneto, what is suspended and what is not. Open markets, closed cinemas. And 'private' wedding  
Coronavirus, what can be done and what cannot be done, after the state of emergency proclaimed in Veneto? What are the prohibited and allowed venues and events? A circular from the Region explains it in detail.

1. All events that cause 'significant concentrations of people in public and private places' ARE SUSPENDED. IN DEPTH
2. 'fairs and festivals, attractions and fairgrounds, concerts, sporting events with presence of the public, such as championships, tournaments and competitions of all categories and disciplines' ARE SUSPENDED.
3. 'theatrical, cinematographic, musical performances, including discos and dance halls' ARE SUSPENDED.
4. Ordinary amateur activities are NOT SUSPENDED such as 'courses of various kinds and sports training, language centers, after-school activities, music centers, driving schools, sports facilities, gyms and public and private swimming pools, playgrounds'.
5. 'public businesses, canteens, weekly markets' remain open.
6. Support activities for the disabled and elderly are NOT SUSPENDED, even in semi-residential services and day centers.
7. Marriages and funerals, civil and religious, are NOT SUSPENDED, provided that participation is limited to family members only.

Italian oil and gas contractor Saipem has confirmed that more than 2,000 staff are working from home due to the coronavirus.

Around 2,196 employees, many whom are based in the firm's headquarters in Milan, are under what Saipem called "smart working".

**Feb 26:**

An Italian cruise ship, the MSC Meraviglia, was rejected by two ports in the Caribbean, Jamaica and the Cayman Islands, for fear of the coronavirus. A crew member would not be in good health. The New York Times reports. On the ship over 4,500 passengers and 1,600 crew members. It had arrived Tuesday morning at the port of Ocho Rios, Jamaica, coming from Miami. The landing ban was triggered when the captain communicated the flu status of one of the people on board. Same situation at the port of Georgetown in the Cayman Islands.

**Feb 27:**

**Coronavirus in Veneto, hospitals under pressure: more infections among doctors  
Another cluster grows in Treviso. Zaia orders another 200 permanent hires for the emergency**

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From: Carter Mecher  
Sent: Friday, February 28, 2020 8:39 AM  
To: Tracey McNamara; Baric, Ralph S; Caneva, Duane; Richard Hatchett; Dr. Eva K Lee  
Cc: Tom Bossert; Martin, Gregory J; Walters, William; HAMILTON, CAMERON; ██████████ Dodgen, Daniel (OS/ASPR/SPPR); DeBord, Kristin (OS/ASPR/SPPR); Phillips, Sally (OS/ASPR/SPPR); David Marcozzi; Hepburn, Matthew J CIV USARMY (USA); Lisa Koonin; HARVEY, MELISSA; WOLFE, HERBERT;

Eastman, Alexander; EVANS, MARIEFRED; Callahan, Michael V., M [REDACTED] Johnson, Robert  
(OS/ASPR/BARDA); Yeskey, Kevin; Disbrow, Gary  
(OS/ASPR/BARDA); Redd, John (OS/ASPR/SPPR); Hassell, David (Chris) (OS/ASPR/IO); Hamel, Joseph  
(OS/ASPR/IO); [REDACTED]; Lawler, James V;  
Borio, Luciana; Hanfling, Dan; [REDACTED]; Wade, David; TARANTINO, DAVID A; WILKINSON,  
THOMAS [REDACTED]  
[REDACTED], Scott; Padget, Larry G; Ryan Morhard; Stack, Steven J (CHFS DPH);  
Adams, Jerome (HHS/OASH); Fantinato, Jessica -  
OHS, Washington, DC; Colby, Michelle - OHS, Washington, DC  
Subject: RE: Red Dawn Breaking Bad, Start Feb 24

Updated tables

Date	Event	Cumulative Number of Confirmed Cases	Cumulative Number of Deaths	Notes
20-Jan	Cruise ship departs from Yokohama Japan			
25-Jan	80 year old passenger disembarks in Hong Kong			
1-Feb	80 year old passenger confirmed to have COVID-19			
	When results known, certificate of landing canceled and ship under quarantine. Tests for the virus would be administered to three groups: those with symptoms, those who got off in Hong Kong, and those who had close contact with the infected passenger.			
3-Feb	Ship arrives in port of Yokohama Japan			
5-Feb	10 passengers and crew confirmed +	10		
6-Feb	31 more passengers and crew confirmed +	41		
7-Feb	30 more passenger and crew confirmed +	61		
8-Feb	9 more passenger and crew confirmed +	70		
10-Feb	66 more passenger and crew confirmed +	136		439 tested
11-Feb	39 more passenger and crew confirmed +	175		492 tested
12-Feb	28 more passenger and crew confirmed +	203		4 in ICU
13-Feb	15 more passenger and crew confirmed +	218		713 tested
14-Feb	67 more passenger and crew confirmed +	285		927 tested
15-Feb	70 more passenger and crew confirmed +	355		1,219 tested; 73 asymptomatic
16-Feb	329 American evacuated from cruise ship (14 of the evacuees found to be +) 61 Americans remained on board 44 Americans remained hospitalized in Japan	369		
17-Feb	85 more passenger and crew confirmed +	454		1,723 tested; 19 seriously ill
18-Feb	167 more passenger and crew confirmed +	621		3,011 tested
19-Feb	2 deaths	621	2	
20-Feb	13 more passenger and crew confirmed +	634	2	3,086 tested; 28 seriously ill; 322 asymptomatic
23-Feb	Death reported in Japan		3	
24-Feb	Japan updates total to 691, US reports 36 in US	691	3	
25-Feb	Death reported in Japan, US reports 40 in US, UK 4, Australia 7, Hong Kong 4, Israel 2, Total 744, plus 4 not on ship	734	4	3,894 tested; 35 seriously ill; 380 asymptomatic
26-Feb	US reports total of 42 cases in US; Japan announces that 45 of 813 former passengers have symptoms and will need to be tested; 14 new cases confirmed in the Diamond Princess cruise ship, raising the total to 705 cases inside the ship	750	4	
27-Feb	Australia (+1) 8 cases (repariated)	751	4	
28-Feb	2 deaths reported in Japan	751	6	

Country	Passengers/Crew	Cases Hospitalized in Japan	Cases Confirmed upon Repatriation	Total Confirmed Cases	ICU Admissions	Deaths	% Infected
US	434	44	42	86			20%
Hong Kong	364	55	4	59			16%
Canada	256	47		47			18%
Australia	241	47	8	55			23%
UK	78	6	4	10		1	13%
Italy	35						
South Korea	14						
Israel	11	3	2	5			45%
Japan						5	
Subtotal	1,433	202	60	262			
<b>Total</b>	<b>3,711</b>	<b>691</b>	<b>60</b>	<b>751</b>		<b>6</b>	<b>20%</b>

From: Carter Mecher  
 Sent: Friday, February 28, 2020 9:14 AM  
 To: Tracey McNamara; Baric, Ralph S; Caneva, Duane; Richard Hatchett; Dr. Eva K Lee

Cc: Tom Bossert; Martin, Gregory J; Walters, William; HAMILTON, CAMERON; [REDACTED]; Dodgen, Daniel (OS/ASPR/SPPR); DeBord, Kristin (OS/ASPR/SPPR); Phillips, Sally (OS/ASPR/SPPR); David Marcozzi; Hepburn, Matthew J CIV USARMY (USA); Lisa Koonin; HARVEY, MELISSA; WOLFE, HERBERT; Eastman, Alexander; EVANS, MARIEFRED; Callahan, Michael V.,M.D.; [REDACTED]@UTMB.EDU; Johnson, Robert (OS/ASPR/BARDA); Yeskey, Kevin; Disbrow, Gary (OS/ASPR/BARDA); [REDACTED]; Hassell, David (Chris) (OS/ASPR/IO); Hamel, Joseph (OS/ASPR/IO); [REDACTED], James V; Borio, Luciana; Hanfling, Dan; eric [REDACTED]; Wade, David; TARANTINO, DAVID A; WILKINSON, THOMAS; [REDACTED]; KAUSHIK, SANGEETA; Nathaniel Hupert; Lee, Scott; Padget, Larry G; Ryan Morhard; Stack, Steven J (CHFS DPH); Adams, Jerome (HHS/OASH); Fantinato, Jessica - OHS, Washington, DC; Colby, Michelle - OHS, Washington, DC

Subject: RE: Red Dawn Breaking Bad, Start Feb 24

This might be of interest. A comparison I ran of the distribution of the US population by age group compared to the passengers and crew aboard the Diamond Princess (surprised nobody ever did this). Except for kids, the cruise ship data tells a lot about adults (really shifted toward the 60-80 year old group)

AGE	US Population 2017	% Distribution	Cruise Ship Passengers & Crew	% Distribution
0-9 years	40,243,098	12%	16	0%
10-19 years	41,910,114	13%	23	1%
20-29 years	45,489,095	14%	347	9%
30-39 years	43,204,209	13%	426	12%
40-49 years	40,617,231	12%	334	9%
50-59 years	43,409,050	13%	398	11%
60-69 years	36,824,083	11%	923	25%
70-79 years	21,588,326	7%	1,015	27%
>80 years	12,433,972	4%	227	6%
<b>Total population</b>	<b>325,719,178</b>	<b>100%</b>	<b>3,711</b>	<b>100%</b>

Here is how the distributions compare when I only look at age ≥ 20 (essentially

AGE	US Population 2017	% Distribution	Cruise Ship Passengers & Crew	% Distribution
20-29 years	45,489,095	19%	347	9%
30-39 years	43,204,209	18%	426	12%
40-49 years	40,617,231	17%	334	9%
50-59 years	43,409,050	18%	398	11%
60-69 years	36,824,083	15%	923	25%
70-79 years	21,588,326	9%	1,015	27%
>80 years	12,433,972	5%	227	6%
<b>Total population</b>	<b>243,565,966</b>	<b>100%</b>	<b>3,672</b>	<b>100%</b>

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Friday, February 28, 2020 12:21 PM, Dr. Eva K Lee [REDACTED]:

Three things:  
**1. Early biosurveillance**

Carter, yes, a month ago you talked about wanting to screen everyone who comes into ED and ICU. And I wanted to sample tests even those who don't come into ED/ICU, and we wanted to include primary care also.



At the moment, we indeed have not yet gone forward with any of these. The "unknown origin" case in California shows that we missed a whole week before she was tested. And she may very well not be patient zero because she could have gotten it from someone with no symptoms at all. And yes, we now have multiple sources (clearly) and it is unclear how far it will / can go. We are like Europe, each state is connected to each other through air and ground transit.

It is not unexpected about the widespread from Italy. I know it sounds a bit silly, when I lived in Lausanne Switzerland we would drive to Annecy France to have dinner (students do go everywhere). So spread in Europe is unavoidable.

The unusual case is that this California case she is young but she is very sick.

This site has details on mortality vs age groups.

<https://multimedia.scmp.com/infographics/news/china/article/3047038/wuhan-virus/index.html>

## 2. Drive Through Screening

I just got back from discussion with the head nurse in Mississippi. I went through the drive-through setup and screening and she is very pleased. She told me although they have been planning for pandemic since 2006, many people still do not know what their roles are and what they are supposed to do during pandemic flu crisis. Now COVID-19 causes more confusion. I will finish the final layout and the information and send it around for comments. Some states already have my earlier version. I want to give more detail so they can prepare.

## 3. Homeless population

Any big or urban cities are going to face the challenges in containment and homeless population needs to be taken care of. If there is any infection there, it will spread like fire. I am very worried about California. Even Atlanta, Seattle, DC, New York City, and many more cities have these additional worries. I am going to Good Samaritan now to check out how the homeless population is preparing for these and what we are providing on the medical fronts.

Eva

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On Friday, February 28, 2020 8:16 AM, Carter Mecher [REDACTED] wrote:

My concern is that a possible scenario is that we become Italy part 2 (the sequel).

Italy had to have had ongoing community transmission well before Feb 21<sup>st</sup> when things appeared to take off for the outbreak to take off this quickly (including 17 deaths) and to have the amount of spread across the globe in such a short period of time. I suspect that prevalence is much higher than anyone realized. Watching how aggressively they implemented NPIs including cordon sanitaire (within just a couple of days of the first deaths and the acceleration in the number of confirmed/suspected cases) and the continued explosive growth suggests to me that disease must have been much more prevalent.

The lesson is that although things might have looked under control on Feb 20 (3 cases/0 deaths), things obviously weren't fine. They couldn't see how large the iceberg was below the water line. They were blind to the extent of disease and the extent of ongoing transmission.

We have also been flying blind. We see that part of the iceberg above the surface (~60 cases in the US). But because of little to no surveillance (other than our focus on travelers from China), we have little awareness of what is below the surface. The case in CA confirms that what is below the surface is larger than what is above (given what we learned from the cruise ship wrt the % of cases that end up in the ICU and the delay in recognizing this case). The CA patient was in an ICU and on a ventilator for more than 1 week before we even had confirmation.

So the scenario I am concerned about is the Italy scenario. We have unrecognized smoldering community transmission. We don't recognize the large numbers of asymptomatics (maybe half of the cases), we miss the mildly ill (maybe another 38% or so), and the remaining 12% get lost in the busy flu season.

Italy actually acted pretty quickly once they realized what was happening (things explode on Feb 21 and they implement NPIs pretty aggressively on Feb 22). I'm not sure we will be able to act that quickly.

A few weeks ago we talked about our priorities—surveillance and early implementation of NPIs. We still don't have surveillance, and because of that we will likely be late to implement NPIs like Italy.

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From: Carter Mecher  
Sent: Friday, February 28, 2020 9:26 AM  
To: Tracey McNamara; Baric, Ralph S; Caneva, Duane; Richard Hatchett; Dr. Eva K Lee  
Cc: Tom Bossert; Martin, Gregory J; Walters, William; HAMILTON, CAMERON [REDACTED]; Dodgen, Daniel (OS/ASPR/SPPR); DeBord, Kristin (OS/ASPR/SPPR); Phillips, Sally (OS/ASPR/SPPR); David Marcozzi; Hepburn, Matthew J CIV USARMY (USA); Lisa Koonin; HARVEY, MELISSA; WOLFE, HERBERT; Eastman, Alexander; EVANS, MARIEFRED; Callahan, Michael V.,M.D.; [REDACTED]@UTMB.EDU; Johnson, Robert (OS/ASPR/BARDA); Yeskey, Kevin; Dlsbrow, Gary (OS/ASPR/BARDA); Redd, John (OS/ASPR/SPPR); Hassell, David (Chris) (OS/ASPR/IO); Hamel, Joseph (OS/ASPR/IO); [REDACTED]; Lawler, James V; Borlo, Luclana; Hanfling, Dan; [REDACTED]; [REDACTED] david [REDACTED] ov; KAUSHIK, SANGEETA; Nathaniel Hupert; Lee, Scott; Padget, Larry G; Ryan Morhard; Stack, Steven J (CHFS DPH); Adams, Jerome (HHS/OASH); Fantinato, Jessica - OHS, Washington, DC; Colby, Michelle - OHS, Washington, DC  
Subject: RE: Red Dawn Breaking Bad, Start Feb 24

I think this data is close enough to convince people that this is going to be bad and we will need to pull the full array of NIs (TLC). All that is left is when (timing).

I went back to our comparison of Philadelphia and St. Louis in 1918. The difference between Philadelphia and St. Louis in terms when they pulled the trigger on NPIs was about two weeks during the course of their individual outbreaks.

In St. Louis, NPIs were put in place 1 week after the first cases at Jefferson Barracks, 5 days after the first death, and 3 days after the first civilian cases in St. Louis. In Philadelphia, NPIs were put in place 3 weeks after the first cases at the Navy Yard, 16 days after the first civilian cases in

Philadelphia, 2 weeks after the first death. In the cases of NPIs, timing matters.

We would estimate that the outbreak in Wuhan had about a 2 week head start on the rest of Hubei. So the measures China implemented to slow transmission happened about two later in the course of the outbreak in Wuhan compared to the rest of Hubei Province. That comparison looks a lot like Philadelphia and St. Louis.

So we have a relatively narrow window and we are flying blind.

Looks like Italy missed it.

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From: Tom Bossert [REDACTED]  
Sent: Friday, February 28, 2020 8:06:19 PM  
To: Carter Mecher <[REDACTED]>  
Cc: Tracey McNamara <[REDACTED]@westernu.edu>; Baric, Ralph S <[REDACTED]@email.unc.edu>; Caneva, Duane <[REDACTED]@hq.dhs.gov>; Richard Hatchett <[REDACTED]@cepl.net>; Dr. Eva K Lee <[REDACTED]>; Martin, Gregory J <[REDACTED]@state.gov>; Walters, William <[REDACTED]@hhs.gov>; HAMILTON, CAMERON <[REDACTED]@hq.dhs.gov>; [REDACTED] <[REDACTED]@gmail.com>; Dodgen, Daniel (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; DeBord, Kristin (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Phillips, Sally (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; David Marcozzi <[REDACTED]@som.umaryland.edu>; Hepburn, Matthew J CIV USARMY (USA) <[REDACTED]@mail.mil>; Lisa Koonin <[REDACTED]@gmail.com>; HARVEY, [REDACTED] <[REDACTED]@hq.dhs.gov>; WOLFE, HERBERT <[REDACTED]@hq.dhs.gov>; Eastman, Alexander <[REDACTED]@hq.dhs.gov>; EVANS, MARIEFRED

[REDACTED]@associates.hq.dhs.gov>; Callahan, Michael V., M.D.  
[REDACTED]@mgh.harvard.edu>; [REDACTED]@UTMB.EDU <[REDACTED]@utmb.edu>; Johnson, Robert  
(OS/ASPR/BARDA) [REDACTED]@hhs.gov>; Yeskey, Kevin <[REDACTED]@hhs.gov>; Disbrow, Gary  
(OS/ASPR [REDACTED]@hhs.gov>; Redd, John (OS/ASPR/SPPR) [REDACTED]@hhs.gov>; Hassell,  
David (Chris) (OS/ASPR/IO) <[REDACTED]@hhs.gov>; Hamel, Joseph (OS/ASPR/IO) <[REDACTED]@hhs.gov>;  
Dean, Charity A@CDPH <[REDACTED]@cdph.ca.gov>; Lawler, James V [REDACTED]@mc.edu>; Borio, Luciana  
[REDACTED]@org>; Hanfling, Dan  
[REDACTED]@org> [REDACTED]@sdcounty.ca.gov <[REDACTED]@sdcounty.ca.gov>; Wade, David  
[REDACTED]@hq.dhs.gov>; TARANTINO, DAVID A [REDACTED]@cbp.dhs.gov>; WILKINSON, THOMAS  
[REDACTED]@hq.dhs.gov>; [REDACTED]@r@dshs.texas.gov [REDACTED]@dshs.texas.gov>; KAUSHIK,  
SANGEETA <[REDACTED]@kaushik@hq.dhs.gov>; Nathaniel Hupert [REDACTED]@med.cornell.edu>; Lee, Scott  
[REDACTED]@hhs.gov>; Padget, Larry G [REDACTED]@state.gov>; Ryan Morhard <[REDACTED]@rd@weforum.org>;  
Stack, Steven J (CHFS DPH) [REDACTED]@ky.gov>; Adams, Jerome (HHS/OASH) <[REDACTED]@s@hhs.gov>;  
Fantinato, Jessica - OHS, Washington, DC [REDACTED]@usda.gov>; Colby, Michelle - OHS, Washington, DC  
[REDACTED]@usda.gov>

**Subject:** Re: Red Dawn Breaking Bad, Start Feb 24

On Friday, February 28, 2020 8:28 PM, Caneva, Duane [REDACTED]@dhs.gov> wrote:

Critical sectors like Healthcare need to be empowered by Government to establish Reliability Organizations unencumbered by Federal bureaucracy. The sector should be expected to identify risk, prepare and respond to predictable hazards. Less than a year after Crimson Contagion, and how much of the Sector was informed and improved by the "lessons learned"? Who's even heard of it?

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On Friday, February 28, 2020 10:39 PM, Dr. Eva K Lee [REDACTED]@pm.me> wrote:

I don't know much about the Crimson Contagion. But clearly planning itself does not include enough uncertainties for people to really think about what could go wrong. For example, it assumes every place is going to accept the patient being sent to them (is that true, I do not know). The Alabama case where they refused to house some American passengers with coronavirus in Anniston, Ala., after these individuals were evacuated from the Diamond Princess cruise ship was a good example -- can we plan that a judge or the president, or senators would intervene in such situation?

James accepts the 14 patients readily in Nebraska. The unknown is what we have been planning for all these years. So if not doing it now, when? Everyone has to step up now.

I do believe if we can summon all the capabilities around the country (private and government sectors), we can put up a very good and successful fight. And being decisive in making the calls of action is of paramount importance.

---

**From:** [Carter Mecher](#)

**Sent:** Friday, February 28, 2020 9:26 AM

**To:** [Tracey McNamara](#); [Baric, Ralph S](#); [Caneva, Duane](#); [Richard Hatchett](#); [Dr. Eva K Lee](#)

**Cc:** [Tom Bossert](#); [Martin, Gregory J](#); [Walters, William](#); [HAMILTON, \[REDACTED\].com](#); [Dodgen, Daniel](#) (OS/ASPR/SPPR); [DeBord, Kristin](#) (OS/ASPR/SPPR); [Phillips, Sally](#) (OS/ASPR/SPPR); [David Marcozzi](#); [Hepburn, Matthew J](#) CIV USARMY (USA); [Lisa Koonin](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [Callahan, Michael V., M](#) [REDACTED]@UTMB.EDU; [Johnson, Robert](#) (OS/ASPR/BARDA); [Yeskey, Kevin](#); [Disbrow, Gary](#) (OS/ASPR/BARDA); [Redd, John](#) (OS/ASPR/SPPR); [Hassell, David \(Chris\)](#) (OS/ASPR/IO); [Hamel, Joseph](#) (OS/ASPR/IO); [REDACTED]@CDPH; [Lawler, James V](#); [Borio, Luciana](#); [Hanfling, Dan](#); [REDACTED]@sdcounty.ca.gov; [Wade, David](#); [TARANTINO, DAVID A](#); [WILKINSON, THOMAS](#); [REDACTED]@dshs.texas.gov; [KAUSHIK, SANGEETA](#); [Nathaniel Hupert](#); [Lee, Scott](#); [Padget, Larry G](#); [Ryan Morhard](#); [Stack, Steven J](#) (CHFS DPH); [Adams, Jerome](#) (HHS/OASH); [Fantinato, Jessica](#) - OHS, Washington, DC; [Colby, Michelle](#) - OHS, Washington, DC

**Subject:** RE: Red Dawn Breaking Bad, Start Feb 24

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So we have a relatively narrow window and we are flying blind.

---

From: [Carter Mecher](#)

Sent: Friday, February 28, 2020 11:52 AM

To: [Tracey McNamara](#); [Baric, Ralph S](#); [Caneva, Duane](#); [Richard Hatchett](#); [Dr. Eva K Lee](#)

Cc: [Tom Bossert](#); [Martin, Gregory J](#); [Walters, William](#); [HAMILTON, CAMERON](#); [\[REDACTED\]](#); [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [David Marcozzi](#); [Hepburn, Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [Callahan, Michael V, M.D.](#); [\[REDACTED\]](#); [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR/IO\)](#); [Dean, Charity A@CDPH](#); [Lawler, James V](#); [Borio, Luciana](#); [Hanfling, Dan](#); [\[REDACTED\]](#); [Wade, David](#); [TARANTINO, DAVID A](#); [WILKINSON, THOMAS](#); [\[REDACTED\]](#); [@dshs.texas.gov](#); [KAUSHIK, SANGEETA](#); [Nathaniel Hupert](#); [Lee, Scott](#); [Padget, Larry G](#); [Ryan Morhard](#); [Stack, Steven J \(CHFS DPH\)](#); [Adams, Jerome \(HHS/OASH\)](#); [Fantinato, Jessica - OHS, Washington, DC](#); [Colby, Michelle - OHS, Washington, DC](#)

Subject: RE: Red Dawn Breaking Bad, Start Feb 24

### Estimates of the impact of COVID on VA

In FY2019, VA cared for 6,271,019 unique veterans and had 9,237,638 veteran enrollees.

The Diamond Princess cruise ship outbreak can provide invaluable insights into the potential impact to VA. Below is a comparison of the US population, the adult population aboard the cruise ship, and the Veteran population.

AGE	US Population 2017	% Distribution	Cruise Ship Passengers & Crew	% Distribution	FY2019 Veterans VetPop	% Distribution
20-29 years	45,489,095	19%	347	9%	932,473	5%
30-39 years	43,204,209	18%	428	12%	1,989,045	10%
40-49 years	40,617,231	17%	334	9%	2,194,505	11%
50-59 years	43,409,050	18%	398	11%	3,169,787	17%
60-69 years	36,824,083	15%	923	25%	3,735,399	19%
70-79 years	21,588,326	9%	1,015	27%	4,405,551	23%
>80 years	12,433,972	5%	227	6%	2,782,943	14%
Total population	243,565,966	100%	3,672	100%	19,209,704	100%

The Veteran population is similar to the cruise population. If anything, the veteran population is even older (so at even higher risk). There were 3,711 passengers and crew aboard the crew ship (1,045 crew and 2,666 passengers). As of February 28, 2020, there have been 751 confirmed cases of COVID (attack rate of 20%). There have been 6 deaths thus far (lower limit of a case fatality rate of 0.80%). [A timeline of the outbreak is provided at the bottom of this message.] 380 of the confirmed cases were asymptomatic (50.6%). It is estimated that approximately

12-15% of the 751 passengers and crew with confirmed disease required acute care with 36 hospitalized patients reported to be in serious condition (5%).

Given the similarities of the demographics of the cruise ship and veterans, we could project the potential impact on veterans.

Veterans	Population FY2019	Total Infected (20% AFR)	Number Asymptomatic (50.6%)	Hospitalizations (2%)	ICU Admissions (%)	Case Fatality Rate (CFR) 0.80%
All Veterans	19,209,704	3,841,941	1,944,022	461,033	192,097	30,736
Veteran Enrollees	9,237,638	1,847,528	934,849	221,703	92,376	14,780
Veteran Uniques	6,271,019	1,254,204	634,627	150,504	62,710	10,034

Need to place these numbers into perspective.

Acute Inpatient Care	VHA Total
Operating Beds Hospital	15,744
Operating Beds Medicine/Surgery	9,817
Operating Beds ICU	1,692
ADC Hospital	9,805
ADC Medicine/Surgery	6,225
ADC ICU	1,101
ADC On a Ventilator	240
Daily Hospital Admissions	1,641
Daily Admissions Medicine/Surgery	1,226
Daily Admissions/Transfers in ICU	389
Emergency Department Care	
Daily ER Visits	6,874
Outpatient Care (non-ER)	
Daily Clinic Visits	209,336

Annually, VA has:  
 450,000 acute (medical/surgical) admissions  
 140,000 ICU admissions  
 2.5M ER/Urgent Care visits

If we assume that this outbreak will last approximately 3 months, we can then overlay the projected demand upon the usual background utilization over 3 months.

Even if we simply focus on the veteran uniques (veterans who use VA services), we can assume that there might be 3 ER visits for each admission--so roughly 450,000 ER visits, 150,000 hospitalizations, and 63,000 ICU admissions.

Over an average 3 month period, VA would have ~625,000 ER/Urgent care visits, 112,000 acute care admissions, and 35,000 ICU admissions.

Now you understand the challenge.

On Friday, February 28, 2020 10:39 PM, Dr. Eva K Lee [REDACTED] wrote:

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being sent to them (is that true, I do not know). The Alabama case where they refused to house some American passengers with coronavirus in Anniston, Ala., after these individuals were evacuated from the Diamond Princess cruise ship was a good example – can we plan that a judge or the president, or senators would intervene in such situation?

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---

From: Carter Mecher [redacted]er.net>  
Sent: Saturday, February 29, 2020 2:09 PM  
To: Dr. Eva K Lee [redacted]me>  
Cc: Lawler, James V <[redacted]c.edu>; Tracey McNamara [redacted]@westernu.edu>; Baric, Ralph S <[redacted]c.edu>; Caneva, Duane [redacted]@hq.dhs.gov>; Richard Hatchett [redacted]@cepi.net>; Tom Bossert <[redacted]rt@me.com>; Martin, Gregory J [redacted]@state.gov>; Walters, William [redacted]@state.gov>; HAMILTON, CAMERON <[redacted]@hq.dhs.gov>; [redacted]@gmail.com>; Dodgen, Daniel (OS/ASPR/SPPR) <[redacted]@hhs.gov>; [redacted]eBord, Kristin (OS/ASPR/SPPR) [redacted]@hhs.gov>; Phillips, Sally (OS/ASPR/SPPR) <[redacted]s@hhs.gov>; David Marcozzi [redacted]@som.umaryland.edu>; Hepburn, Matthew J CIV USARMY (USA) [redacted].civ@mail.mil>; Lisa Koonin <[redacted]@gmail.com>; HARVEY, MELISSA <n[redacted]@hq.dhs.gov>; WOLFE, HERBERT <[redacted]@hq.dhs.gov>; Eastman, Alexander <[redacted]@hq.dhs.gov>; EVANS, MARIEFRED [redacted]s@associates.hq.dhs.gov>; Callahan, Michael V.,M.D. <[redacted]@mgh.harvard.edu>; LeDuc, James W. <[redacted]TMB.EDU>; Johnson, Robert (OS/ASPR/BARDA) [redacted]@hhs.gov>; Yeskey, Kevin [redacted]@hhs.gov>; Disbrow, Gary (OS/ASPR/BARDA) [redacted]@hhs.gov>; Redd, John (OS/ASPR/SPPR) [redacted]@hhs.gov>; Hassell, David (Chris) (OS/ASPR/IO) <[redacted]@hhs.gov>; Hamel, Joseph (OS/ASPR/IO) [redacted]@hhs.gov>; Dean, [redacted] <Ch[redacted]@cdph.ca.gov>; Borio, Luciana [redacted]lqt.org>; Hanfling, Dan <[redacted]@lqt.org>; [redacted]@sdcounty.ca.gov>; Wade, David <[redacted]@hq.dhs.gov>; TARANTINO, DAVID A <[redacted]@cbp.dhs.gov>; WILKINSON, THOMAS <[redacted]@hq.dhs.gov>; [redacted]er@dshs.texas.gov>; KAUSHIK, SANGEETA [redacted]hq.dhs.gov>; Lee, Scott [redacted]@hhs.gov>; Padget, Larry G <PadgetLG@state.gov>; Ryan Morhard <R[redacted]@weforum.org>; Stack, Steven J (CHFS DPH) [redacted].gov>; Adams, Jerome (HHS/OASH) <[redacted]s@hhs.gov>; Fantinato, Jessica - OHS, Washington, DC <j[redacted]usda.gov>; Colby, Michelle - OHS, Washington, DC <[redacted]@usda.gov>  
Subject: RE: Red Dawn Breaking Bad, Start Feb 24

WARNING: This email originated from outside of UTMB's email system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

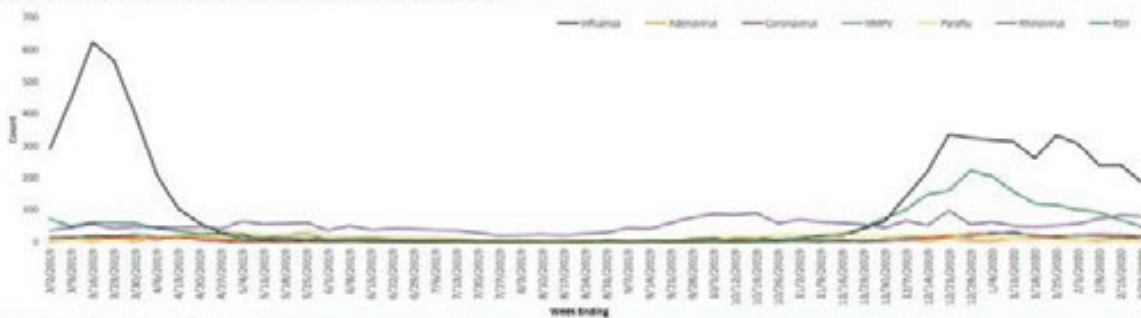
I am also concerned about Seattle (Kings County). Charity, do you have contacts there? Or could someone reach out to Jeff Duchin from CDC or HHS?

<https://www.kingcounty.gov/depts/health/communicable-diseases/disease-control/~media/depts/health/communicable-diseases/documents/influenza/2020/week-08.ashx>

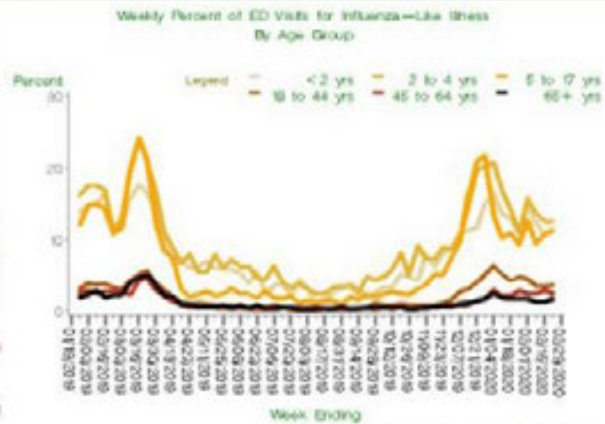
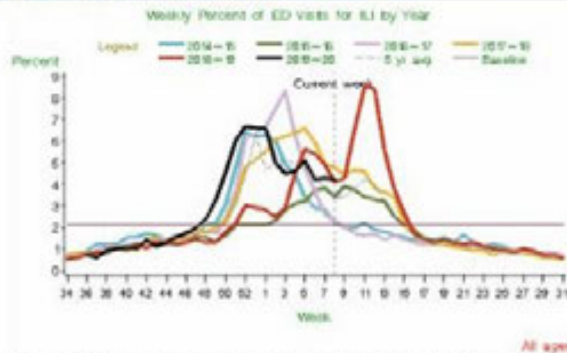
This is week 8 data (so recent data). Compare the 3 graphs. Seeing a mismatch between pathogens by PCR (going down) and syndromic surveillance (flat). Also looking at ED visits and seeing an upward trend in school age kids (ages 5-17) and 45-64 year olds. Something doesn't sit right with me.

**Public Health - Seattle & King County**  
**Summary of Influenza Syndromic and Laboratory Surveillance**

**Influenza and other respiratory pathogens, PCR testing only (NREVS)**



**King County syndromic surveillance**



Note: The change from ICD-9 to ICD-10 codes in October 2015 may impact trends.  
 Last updated Feb 23, 2020. Current week is week ending Feb 22, 2020.  
 Baseline Mean % ILI during non-flu weeks for previous three seasons, adding two standard deviations.  
 A non-flu week is a period of 2+ consecutive weeks where each one accounted for <2% of the season's total number of specimens that tested positive for influenza by PCR.

ALL-HOSPITALS, Last Updated: Feb 26, 2020

From: LeDuc, James W.  
 Sent: Saturday, February 29, 2020 3:08 PM  
 To: Carter Mecher <[REDACTED]>  
 Cc: Jeff Duchin (Jeff.Duchin@METROK.C.GOV) <Jeff.Duchin@METROK.C.GOV>  
 Subject: RE: Red Dawn Breaking Bad, Start Feb 24  
 Contacting Jeff Duchin.  
 Jim  
 James W. Le Duc, Ph.D.  
 Director  
 Galveston National Laboratory  
 University of Texas Medical Branch  
 Galveston, TX 77555-0610  
 [REDACTED]  
 [REDACTED]

From: Carter Mecher  
 Sent: Saturday, February 29, 2020 2:58 PM  
 To: Dr. Eva K Lee  
 Cc: Lawler, James V; Tracey McNamara; Baric, Ralph S; Caneva, Duane; Richard Hatchett; Tom Bossert; Martin, Gregory J; Walters, William; HAMILTON, CAMERON [REDACTED]; Dodgen, Daniel (OS/ASPR/SPPR); DeBord, Kristin (OS/ASPR/SPPR); Phillips, Sally (OS/ASPR/SPPR); David Marcozzi; Hepburn, Matthew J CIV USARMY (USA); Lisa Koonin; HARVEY, MELISSA; WOLFE, HERBERT; Eastman, Alexander; EVANS, MARIEFRED; Callahan, Michael V.,M.D. [REDACTED].EDU; Johnson, Robert (OS/ASPR/BARDA); Yeskey, Kevin; Disbrow, Gary (OS/ASPR/BARDA); Redd, John (OS/ASPR/SPPR); Hassell, David (Chris) (OS/ASPR/IO); Hamel, Joseph (OS/ASPR/IO); [REDACTED]; Borio, Luciana; Hanfling, Dan; [REDACTED]unty.ca.gov; Wade, David; TARANTINO, DAVID A;

WILKINSON, THOMAS [REDACTED]@dshs.texas.gov; KAUSHIK, SANGEETA; Lee, Scott; Padget, Larry G; Ryan Morhard; Stack, Steven J (CHFS DPH); Adams, Jerome (HHS/OASH); Fantinato, Jessica - OHS, Washington, DC; Colby, Michelle - OHS, Washington, DC  
Subject: RE: Red Dawn Breaking Bad, Start Feb 24

Charity, do you have any contacts in Hawaii? Would really be interested in Week 8 data. I remember a story of a couple from Japan who were symptomatic while visiting Hawaii and were confirmed to have COVID upon their return to Japan.  
<https://bigislandnow.com/2020/02/17/53-self-monitor-for-coronavirus-in-hawaii-after-visiting-japanese-couple-tests-positive/>  
My understanding is that Hawaii did not perform testing on anyone (just monitored some contacts from symptoms). I went to Hawaii's flu surveillance (their latest data is from week 7). My concern is the continued rise in ILI, despite a drop off in influenza in the lab.  
[https://health.hawaii.gov/docd/files/2018/03/FLU\\_Influenza\\_Surveillance.pd](https://health.hawaii.gov/docd/files/2018/03/FLU_Influenza_Surveillance.pd)

---

-From: Dr. Eva K Lee

Sent: Saturday, February 29, 2020 1:15 PM

To: Carter Mecher

Cc: Lawler, James V; Tracey McNamara; Baric, Ralph S; Caneva, Duane; Richard Hatchett; Tom Bossert; Martin, Gregory J; Walters, William; HAMILTON, CAMERON; [REDACTED]@gmail.com; Dodgen, Daniel (OS/ASPR/SPPR); DeBord, Kristin (OS/ASPR/SPPR); Phillips, Sally (OS/ASPR/SPPR); David Marcozzi; Hepburn, Matthew J CIV USARMY (USA); Lisa Koonin; HARVEY, MELISSA; WOLFE, HERBERT; Eastman, Alexander; EVANS, MARIEFRED; Callahan, Michael V., M.D.; [REDACTED]@UTMB.EDU; Johnson, Robert (OS/ASPR/BARDA); Yeskey, Kevin; Disbrow, Gary (OS/ASPR/BARDA); Redd, John (OS/ASPR/SPPR); Hassell, David (Chris) (OS/ASPR/IO); Hamel, Joseph (OS/ASPR/[REDACTED] A@CDPH; Borio, Luciana; Hanfling, Dan; [REDACTED]@sdcounty.ca.gov; Wade, David; TARANTINO, DAVID A; WILKINSON, THOMAS; [REDACTED]r@dshs.texas.gov; KAUSHIK, SANGEETA; Lee, Scott; Padget, Larry G; Ryan Morhard; Stack, Steven J (CHFS DPH); Adams, Jerome (HHS/OASH); Fantinato, Jessica - OHS, Washington, DC; Colby, Michelle - OHS, Washington, DC

Subject: Re: Red Dawn Breaking Bad, Start Feb 24

Oops. I mixed up the order. It should be -

From travelers: Washington, Illinois, California, Arizona, MA, Wisconsin, Oregon

Unknown origin: California, Oregon, Washington

I did a quick analysis on strategic screening, if we have enough testing power, I would suggest community testing strategically in California, Chicago/Illinois, Oregon, Washington, Boston, Atlanta, New York. It would be great if we can cover more. We have to go beyond contact tracing. It is also good to cover some universities.

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From: Duchin, Jeff <[REDACTED]@kingcounty.gov>

Sent: Sunday, March 1, 2020 10:16 AM

To: Bell, Michael MD (CDC/DDID/NCEZID/DHQP) <[REDACTED]8@cdc.gov>; Jernigan, Daniel B. (CDC/DDID/NCIRD/ID) [REDACTED]@cdc.gov>; Armstrong, Gregory [REDACTED]DC/DDID/NCEZID/OD) [REDACTED]@cdc.gov>; Pillai, Satish K. (CDC/DDID/NCEZID/DPEI) [REDACTED]@cdc.gov>

Cc: Kay, Meagan K. (CDC kingcounty.gov) <[REDACTED]y@kingcounty.gov>

Subject: Fwd: exposures in hospitals

We are having a very serious challenge related to hospital exposures and impact on the healthcare system. Would be great to have a call to discuss. Will be meeting with your team here this morning and then maybe we can chat after that.

Jeffrey S. Duchin, MD

Health Officer and Chief, Communicable Disease Epidemiology & Immunization Section  
Public Health - Seattle and King County  
Professor in Medicine, Division of Infectious Diseases, University of Washington  
Adjunct Professor, School of Public Health



401 5th Ave, Suite 1250, Seattle, WA 98104

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From: Armstrong, Gregory (CDC/DDID/NCEZID/OD)

To: Duchin, Jeff

Subject: RE: exposures in hospitals

Date: Sunday, March 1, 2020 7:45:23 AM

[EXTERNAL Email Notice! ] External communication is important to us. Be cautious of phishing attempts. Do not

click or open suspicious links or attachments.

Tom Clark is the lead.

John is lead of the Infection Control/Prevention team (which is definitely the biggest part so far). Here in Atlanta, Ermias Belay I is the POC

---

On Sunday, March 1, 2020 11:42 AM, Carter Mecher [REDACTED] > wrote:

Should have pulled all the triggers for NPIs by now—they are already later than they realize. I fear we are about to see a replay of Italy. Other cities need to learn from Seattle.

Eva, I did some back of the envelope estimates of what a 1% threshold means and when I would pull the trigger.

I made some estimates using the cruise ship data but then made some adjustments assuming that if we could do serology, the extent of the outbreak is likely twice as large as what we are estimating from swabs and pc (James Lawler's argument). So here is my second try with the math adjusting for true prevalence being double what we think it is on the cruise ship.

So assumptions are 80% asymptomatic, 6% hospitalized, 1% critical, 0.4% CFR. Part of this assumption is that true prevalence using serology will prove to be significantly greater than prevalence based on current diagnostics (swabs) and asymptomatic/mild disease in the age groups under-represented on the cruise ship (kids and young adults) will dilute the numbers we are estimating from the cruise ship. [So this is a bit of SWAG.]

We usually think of the window for implementing NPIs as before 1% prevalence. But this disease would be predicted to have more than 80% asymptomatics, so the threshold is really 0.2% prevalence of any symptoms (including very mild symptoms). But CDC criteria for testing is severe disease. Let's say that 1% of those who are infected have severe disease, that means our threshold is  $1\% \times 1\% = 0.01\%$ . But it takes 2 weeks or so before a patient who is infected becomes seriously ill. Over the span of 2 weeks plus the lag time for testing, the outbreak could have had at least 3 doublings (so an 8-fold increase). That may be conservative. So we are really talking about a threshold of close to  $0.01\%/8 = 0.00125\%$ . For a city of 1 M, that is 12 serious cases, 250 symptomatic, 1,250 infected. In 2 weeks, these numbers could be 100 serious, 2,000 symptomatic, 10,000 infected (the 1% threshold). Once you are there, the window is closed. If we assume a 3 week lag from infection onset to death, the number of deaths would be based on a denominator of 3 weeks ago, so divide 1,250 infected by roughly 3 (assume cases triple in a week), to get 400. Assume a CFR of 0.4%, so about 1 death. More than 1 death per million population is probably too late.

We can work backwards from the first critically ill case involving local transmission and no linkage to a known case. If our threshold is 15 cases of seriously ill individuals (really ICU cases), and cases increase by a factor of 8 over a period of about 2 weeks, the far end of the window is about 2 weeks from when you identify 2 critically ill cases. To give you a cushion, I would be ready to pull the trigger no later than 2 weeks of the first critically ill patient. If we look at the case in CA, that patient had been critically ill for at least a week. That means they had about a week from recognition until the window starts to close. I would be pulling the trigger in Fairfield/Sacramento.

So think of time to act.

1. By the time you identify the first death per million population in someone with local transmission (no linkage to a known case), you need to pull the trigger on NPIs. Looking at Seattle (population of city of Seattle of 740K and population of metro Seattle of 3.5M), I would pull the trigger very soon—the window is very close to closing.
2. No later than 2 weeks from the confirmation of the first critically ill patient per million population. The window is very close to closing for Fairfield/Sacramento CA.

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From: Dr. Eva Lee <[REDACTED]lee64@gmail.com>

Sent: Monday, March 2, 2020 7:45:51 AM

To: THOMAS <[REDACTED]@hq.dhs.gov>; M.D. <[REDACTED]@mqh.harvard.edu>; Tracey McNamara <[REDACTED]@westernu.edu>; James V <[REDACTED]@unmc.edu>; Duane <[REDACTED]@hq.dhs.gov>; David <[REDACTED]@som.umaryland.edu>; Tom Bossert <[REDACTED]@me.com>; Charity A@CDPH <[REDACTED]@cdph.ca.gov>; Ralph S <[REDACTED]email.unc.edu>; Richard Hatchett <[REDACTED]@cepi.net>; Gregory J <[REDACTED]@state.gov>; William <[REDACTED]@state.gov>; CAMERON <[REDACTED]@hq.dhs.gov>; [REDACTED] <[REDACTED]@gmail.com>; [REDACTED] <[REDACTED]@gmail.com>; Daniel (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Kristin (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Sally (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Matthew J CIV USARMY (USA) <[REDACTED]iv@mail.mil>; Lisa Koonin <[REDACTED]@gmail.com>; MELISSA <[REDACTED]@hq.dhs.gov>; HERBERT <[REDACTED]@hq.dhs.gov>; Alexander <[REDACTED]@hq.dhs.gov>; MARIEFRED <[REDACTED]s@associates.hq.dhs.gov>; [REDACTED] <[REDACTED]@utmb.edu>; [REDACTED] <[REDACTED]@utmb.edu>; Robert (OS/ASPR/BARDA) <[REDACTED]@hhs.gov>; Kevin <[REDACTED]key@hhs.gov>; Gary (OS/ASPR/BARDA) <[REDACTED]@hhs.gov>; John (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; David (Chris) (OS/ASPR/IO) <[REDACTED]@hhs.gov>; Joseph (OS/ASPR/IO) <[REDACTED]el@hhs.gov>; Luciana <[REDACTED]@lqt.org>; Dan <[REDACTED]@lqt.org>; Eric (San Diego County) <[REDACTED]@sdcounty.ca.gov>; David <[REDACTED]e@hq.dhs.gov>; DAVID A <[REDACTED]o@cbp.dhs.gov>; [REDACTED] <[REDACTED]@dshs.texas.gov>; [REDACTED] <[REDACTED]er@dshs.texas.gov>; SANGEETA <[REDACTED]ushik@hq.dhs.gov>; [REDACTED] <[REDACTED]Lee@hhs.gov>; Larry G <[REDACTED]@state.gov>; Ryan Morhard <[REDACTED]d@weforum.org>; Steven Jt(tCHFStDPH) <[REDACTED]@ky.gov>; tJerome (HHS/OASH) <[REDACTED]ms@hhs.gov>; DC <[REDACTED]o@usda.gov>; DC <[REDACTED]y@usda.gov>; [REDACTED] <[REDACTED]@usuhs.edu>; [REDACTED] <[REDACTED]u@usuhs.edu>; Danny Shlau <[REDACTED]cqhe.org>; ric <[REDACTED]@hhs.gov>; [REDACTED] <[REDACTED]@hhs.gov>; Eva Lee <[REDACTED]>

Carter Mecher <[REDACTED]>  
Subject: RE: Red Dawn Rising Start Feb 29

We need actions, actions, actions and more actions. We are going to have pockets of epicenters across this country, West coast, East coast and the South. Our policy leaders must act now. Please make it happen!

---

On Mon, Mar 2, 2020 at 11:29 AM Tracey McNamara <[REDACTED]ara@westernu.edu> wrote:

S. Korea drive through COVID19 testing. We need this now

Tracey

Get [Outlook for Android](#)

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On Mon, Mar 2, 2020 at 11:58 AM Dr. Eva Lee <[REDACTED]> wrote:

Yes, they are processing 10,000 screening per day. I believe we have to put in NPI actions now across the affected communities — those sensible steps of school closure, tele-work, call-in advisory hot-lines (for self-reporting or advice), avoid crowds, business continuity plans, exercise cautions on travel, practice personal hygiene, etc. These won't require too much government resources (i.e., funds). The biggest part is screening. Screening requires financial support and requires time and actual human and lab resources. So we must engage private laboratories to provide the screening surge capacities that we need. I will work to make sure Kaiser labs will be on board.

---

From: Carter Mecher <[REDACTED]>

Sent: Monday, March 02, 2020 11:45 AM

To: Dr. Eva Lee <[REDACTED]>; Tracey McNamara <[REDACTED]>

Cc: THOMAS <[REDACTED]@hq.dhs.gov>; M.D. <[REDACTED]@mqh.harvard.edu>; James V <[REDACTED]@unmc.edu>; Duane <[REDACTED]@hq.dhs.gov>; David <[REDACTED]m.umaryland.edu>; Tom

Bossert [REDACTED]@me.com>; Charity A@CDPH [REDACTED]@cdph.ca.gov>; Ralph S [REDACTED]@email.unc.edu>; Richard Hatchett [REDACTED]l@cepi.net>; Gregory J [REDACTED]@state.gov>; William [REDACTED]@state.gov>; [REDACTED]@hq.dhs.gov>; [REDACTED]gmail.com; Daniel (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Kristin (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Sally (OS/ASPR/SPPR) [REDACTED]hhs.gov>; Matthew J CIV USARMY (USA) [REDACTED]@mail.mil>; Lisa Koonin [REDACTED].com>; MELISSA [REDACTED]y@hq.dhs.gov>; HERBERT [REDACTED]@hq.dhs.gov>; Alexander [REDACTED].dhs.gov>; MARIEFRED [REDACTED]ates.hq.dhs.gov> [REDACTED].edu; Robert (OS/ASPR/BARDA) [REDACTED]son@hhs.gov>; Kevin <[REDACTED]key@hhs.gov>; Gary (OS/ASPR/BARDA) [REDACTED] [REDACTED]@hhs.gov>; Joseph (OS/ASPR/IO) [REDACTED]l@hhs.gov>; Luciana <[REDACTED]@iqt.org>; Dan <[REDACTED]@iqt.org>; Eric (San Diego County) <[REDACTED]d@sdcounty.ca.gov>; David <[REDACTED]de@hq.dhs.gov>; DAVID A [REDACTED] [REDACTED]@hhs.gov>; Larry G [REDACTED]LG@state.gov>; Ryan Morhard <[REDACTED]d@weforum.org>; Steven Jt(tCHFStDPH) [REDACTED]k@ky.gov>; tJerome (HHS/OASH) <[REDACTED]ms@hhs.gov>; DC <[REDACTED]o@usda.gov>; DC <n[REDACTED]by@usda.gov>; [REDACTED]@usuhs.edu; Danny Shiau <[REDACTED]@cghe.org> [REDACTED]; Dr. Eva K Lee <[REDACTED]>  
Subject: RE: Red Dawn Rising Start Feb 29

**6 deaths in Seattle  
Seattle missed the window...It is too late for NPIs**

---

From: [Dr. Eva Lee](#)  
Sent: Monday, March 2, 2020 12:12 PM  
To: [Tracey McNamara](#)  
Cc: [THOMAS; M.D.](#); [James V](#); [Duane](#); [David](#); [Tom Bossert](#); [REDACTED] CDPH; [Ralph S](#); [Richard Hatchett](#); [Gregory J](#); [William](#); [CAMERON](#); [REDACTED] Daniel (OS/ASPR/SPPR); [Kristin \(OS/ASPR/SPPR\)](#); [Sally \(OS/ASPR/SPPR\)](#); [Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [MELISSA](#); [HERBERT](#); [Alexander](#); [MARIEFRED](#); [REDACTED]@utmb.edu; [Robert \(OS/ASPR/BARDA\)](#); [Kevin](#); [Gary \(OS/ASPR/BARDA\)](#); [John \(OS/ASPR/SPPR\)](#); [David \(Chris\) \(OS/ASPR/IO\)](#); [Joseph \(OS/ASPR/IO\)](#); [Luciana](#); [Dan](#); [Eric \(San Diego County\)](#); [David](#); [DAVID A](#); [david.gruber@dshs.texas.gov](#); [SANGEETA](#); [Scott](#); [Larry G](#); [Ryan Morhard](#); [Steven Jt\(tCHFStDPH\)](#); [tJerome \(HHS/OASH\)](#); [DC](#); [DC](#); [REDACTED]@usuhs.edu; [Danny Shiau](#); [rl \[REDACTED\]t@hhs.gov](#); [Carter Mecher](#); [Dr. Eva K Lee](#)  
Subject: Re: Red Dawn Rising Start Feb 29

Last night it was 62 countries as I was writing an email. Now it's 74 countries. And we're in the 30's a week ago. We have a ton to catch up. I understand it is always difficult decisions for policy makers. But hopefully the contrasts of Hong Kong/Singapore vs Italy/S Korea/Japan provide a good concept of what needs to be put in place immediately. We need multiple measures in place to slow down the spread that clearly is happening around the country.

---

From: [Tracey McNamara](#)  
Sent: Monday, March 2, 2020 9:57 PM  
To: [Carter Mecher](#); [Dr. Eva Lee](#)  
Cc: [THOMAS; M.D.](#); [James V](#); [Duane](#); [David](#); [Tom Bossert](#); [REDACTED] CDPH; [Ralph S](#); [Richard Hatchett](#); [Gregory J](#); [William](#); [CAMERON](#); [REDACTED]gmail.com; [Daniel \(OS/ASPR/SPPR\)](#); [Kristin \(OS/ASPR/SPPR\)](#); [Sally \(OS/ASPR/SPPR\)](#); [Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [MELISSA](#); [HERBERT](#); [Alexander](#); [MARIEFRED](#); [REDACTED].edu; [Robert \(OS/ASPR/BARDA\)](#); [Kevin](#); [Gary \(OS/ASPR/BARDA\)](#); [John \(OS/ASPR/SPPR\)](#); [David \(Chris\) \(OS/ASPR/IO\)](#); [Joseph \(OS/ASPR/IO\)](#); [Luciana](#); [Dan](#); [Eric \(San Diego County\)](#); [David](#); [DAVID A](#); [david \[REDACTED\]s.texas.gov](#); [SANGEETA](#); [Scott](#); [Larry G](#); [Ryan Morhard](#); [Steven Jt\(tCHFStDPH\)](#); [tJerome \(HHS/OASH\)](#); [DC](#); [DC](#); [REDACTED]u@usuhs.edu; [Danny Shiau](#); [REDACTED].gov; [Dr. Eva K Lee](#)  
Subject: RE: Red Dawn Rising Start Feb 29

Courtesy of : [Raina MacIntyre \[REDACTED\]unsw.edu.au](#)

I think one of the problems is the poor sensitivity of the throat swab. Several studies have shown that serial throat swabs can be falsely negative. A nasal swab is more sensitive. There should be guidelines stipulating that a sputum is the gold standard, and if that is not possible for a "recovered" patient, serial nasal swabs should be done. I think this is also telling us the duration of viral shedding is quite long. 5-9 days from symptom onset to seeking medical

care; + 2-3 weeks in hospital + shedding in the convalescent phase adds up.. Most of the modelling studies assume 7 days of viral shedding, which is clearly wrong. See:

important paper showing:

1. viral load in asymptomatic same as symptomatic
2. Viral load highest early in the illness, when symptoms mild or absent
3. Nasal/NP swab more sensitive than throat swab

And in terms of the slow progress towards serology, it seems Singapore has developed a serological test.

Sensitive diagnostic tests are the highest priority for containment, but we seem to be slow off the mark, with everyone focused on vaccines.

Regards

Raina

**Professor Raina MacIntyre**

Head | [Biosecurity Research Program](#) | Kirby Institute | UNSW Medicine  
[Professor of Global Biosecurity & NHMRC Principal Research Fellow](#)

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**-From:** Carter Mecher <[REDACTED]>  
**Sent:** Tuesday, March 03, 2020 2:27 AM  
**To:** Richard Hatchett <[REDACTED].net>; Tracey McNamara <[REDACTED].du>; Dr. Eva Lee <[REDACTED].om>  
**Cc:** THOMAS <[REDACTED].dhs.gov>; M.D. <[REDACTED].gh.harvard.edu>; James V <[REDACTED].unmc.edu>; Duane <[REDACTED].hq.dhs.gov>; David <[REDACTED].som.umaryland.edu>; Tom Bossert <[REDACTED].me.com>; Charity A@CDPH <[REDACTED].cdph.ca.gov>; Ralph S <[REDACTED].email.unc.edu>; Gregory J <[REDACTED].state.gov>; William <[REDACTED].state.gov>; CAMERON <[REDACTED].hq.dhs.gov>; <[REDACTED].gmail.com>; Daniel (OS/ASPR/SPPR) <[REDACTED].hhs.gov>; Kristin (OS/ASPR/SPPR) <[REDACTED].hhs.gov>; Sally (OS/ASPR/SPPR) <[REDACTED].hhs.gov>; Matthew J CIV USARMY (USA) <[REDACTED].civ@mail.mil>; Lisa Koonin <[REDACTED].gmail.com>; MELISSA <[REDACTED].hq.dhs.gov>; HERBERT <[REDACTED].hq.dhs.gov>; Alexander <[REDACTED].hq.dhs.gov>; MARIEFRED <[REDACTED].associates.hq.dhs.gov>; <[REDACTED].utmb.edu>; Robert (OS/ASPR/BARDA) <[REDACTED].nson@hhs.gov>; Kevin <[REDACTED].hhs.gov>; Gary (OS/ASPR/BARDA) <[REDACTED].hs.gov>; John (OS/ASPR/SPPR) <[REDACTED].dd@hhs.gov>; David (Chris) (OS/ASPR/IO) <[REDACTED].ll@hhs.gov>; Joseph (OS/ASPR/IO) <[REDACTED].mel@hhs.gov>; Luciana <[REDACTED].iqi.org>; Dan <[REDACTED].org>; Eric (San Diego County) <[REDACTED].sdcounty.ca.gov>; David <[REDACTED].de@hq.dhs.gov>; DAVID A <[REDACTED].no@cbp.dhs.gov>; <[REDACTED].er@dshs.texas.gov>; SANGEETA <[REDACTED].shik@hq.dhs.gov>; Scott <[REDACTED].hhs.gov>; Larry G <[REDACTED].G@state.gov>; Ryan Morhard <[REDACTED].orhard@weforum.org>; Steven Jt(tCHFSIDPH) <[REDACTED].ack@ky.gov>; Jerome (HHS/OASH) <[REDACTED].ams@hhs.gov>; DC <[REDACTED].usda.gov>; DC <[REDACTED].by@usda.gov>; <[REDACTED].uhs.edu>; Danny Shiau <[REDACTED].cghe.org>; <[REDACTED].hhs.gov>; Dr. Eva K Lee <[REDACTED].h@pm.me>  
**Subject:** RE: Red Dawn Rising Start Feb 29

The documents Richard sent are excellent. I went thru and pulled out excerpts that really struck me. To get to the bottom line, I pasted the recommendation for us.

For countries with imported cases and/or outbreaks of COVID-19

1. Immediately activate the highest level of national Response Management protocols to ensure the all-of-government and all-of-society approach needed to contain COVID-19 with non-pharmaceutical public health measures;
2. Prioritize active, exhaustive case finding and immediate testing and isolation, painstaking contact tracing and rigorous quarantine of close contacts;
3. Fully educate the general public on the seriousness of COVID-19 and their role in preventing its spread;
4. Immediately expand surveillance to detect COVID-19 transmission chains, by testing all patients with atypical pneumonias, conducting screening in some patients with upper respiratory illnesses and/or recent COVID-19 exposure, and adding testing for the COVID-19 virus to existing surveillance systems (e.g. systems for influenza-like-illness and SARI);and

5. Conduct multi-sector scenario planning and simulations for the deployment of even more stringent measures to interrupt transmission chains as needed (e.g. the suspension of large-scale gatherings and the closure of schools and workplaces).

---

On Tuesday, March 3, 2020 1:56 PM, Marcozzi, David <DMarcozzi@som.umaryland.edu> wrote:

Act. Now.

Respectfully,

David Marcozzi, MD, MHS-CL, FACEP  
Associate Professor  
Director of Population Health  
Department of Emergency Medicine  
University of Maryland School of Medicine

[REDACTED]

---

Dr. Eva K Lee <[REDACTED]@pm.me>  
Sent: Tuesday, March 3, 2020 3:53 PM  
To: Marcozzi, David <[REDACTED]@umaryland.edu>  
Cc: Carter Mecher <[REDACTED]@ter.net>; Tracey McNamara <[REDACTED]@westernu.edu>; Richard Hatchett <[REDACTED]@cepi.net>; Dr. Eva Lee <[REDACTED]64@gmail.com>; WILKINSON, THOMAS <[REDACTED]nson@hq.dhs.gov>; M.D. <MVCALLAHAN@mgm.harvard.edu>; James V <[REDACTED]er@unmc.edu>; Caneva, Duane <[REDACTED]va@hq.dhs.gov>; Tom Bossert <[REDACTED]t@me.com>; Charity A@CDPH <[REDACTED]n@cdph.ca.gov>; Ralph S <[REDACTED]@email.unc.edu>; Gregory J <[REDACTED]J@state.gov>; William <WaltersWA2@state.gov>; HAMILTON, CAMERON <[REDACTED]n@hq.dhs.gov>; [REDACTED]ir@gmail.com; Daniel (OS/ASPR/SPPR) <[REDACTED]n@hhs.gov>; Kristin (OS/ASPR/SPPR) <[REDACTED]eBord@hhs.gov>; Sally (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Matthew J CIV USARMY (USA) <[REDACTED]iv@mail.mil>; Lisa Koonin <[REDACTED]1@gmail.com>; HARVEY, MELISSA <[REDACTED]harvey@hq.dhs.gov>; WOLFE, HERBERT <[REDACTED]wolfe@hq.dhs.gov>; Eastman, Alexander <alex[REDACTED]n@hq.dhs.gov>; EVANS, MARIEFRED <[REDACTED]@associates.hq.dhs.gov>; [REDACTED]@utmb.edu; Robert (OS/ASPR/BARDA) <[REDACTED]nson@hhs.gov>; Yeskey, Kevin <[REDACTED]ev@hhs.gov>; Gary (OS/ASPR/BARDA) <[REDACTED]w@hhs.gov>; John (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; David (Chris) (OS/ASPR/IO) <[REDACTED]il@hhs.gov>; Joseph (OS/ASPR/IO) <[REDACTED]@hhs.gov>; Luciana <[REDACTED]rq>; Dan <[REDACTED]@igt.org>; Eric (San Diego County) <E[REDACTED]@sdcounty.ca.gov>; Wade, David <[REDACTED]@hq.dhs.gov>; TARANTINO, DAVID A <[REDACTED]ntino@cbp.dhs.gov>; [REDACTED]er@dshs.texas.gov; KAUSHIK, SANGEETA <[REDACTED]aushik@hq.dhs.gov>; Scott <Scott.Lee@hhs.gov>; Larry G <[REDACTED]@state.gov>; Ryan Morhard <[REDACTED]@weforum.org>; Steven Jt(tCHFSTDPH) <[REDACTED]stack@ky.gov>; Jerome (HHS/OASH) <Jerome[REDACTED]@hhs.gov>; DC <[REDACTED]to@usda.gov>; DC <[REDACTED]y@usda.gov>; [REDACTED]@usuhs.edu; Danny Shiau <[REDACTED]lau@cohe.org>; [REDACTED]@hhs.gov  
Subject: Re: Red Dawn Rising Start Feb 29

[REDACTED]

Yes, we ought to act now. Ok, I know I have been urging this for a long time. I want to cover a few items discussed here:

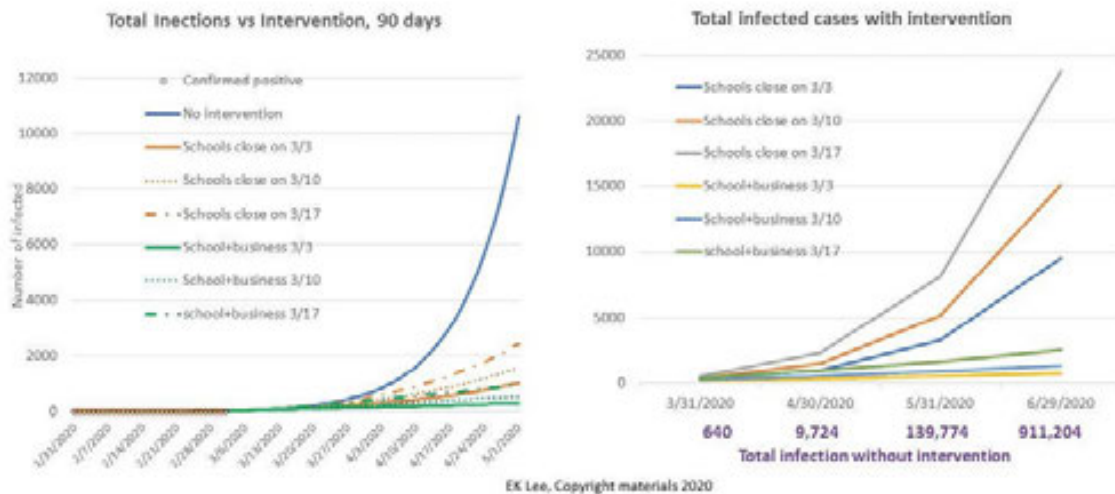
### 1. Social distancing, NPI can deter the spread

Singapore and Hong Kong prove that without any definitive treatment, and absence of any prophylactic MCM protection, closing schools, home-office business can make a huge difference. I ran a few models for school closure and business tele-work for Santa Clara, King County and I want to share some graphs here.

Santa Clara: One positive case on Jan 31. I look at closing school as of today, and tele-work by ~0.5 million workers. We can see the rapid decrease of spreading. I also contrast the results if we close a week from now, or two weeks from now.

Please note, the parameters need not be perfect. The idea is to contrast how NPI can work very effectively and we MUST act now and make it a success.

## Santa Clara: Strategies for Containment



### 2. Quarantine a city?

I believe there's a contingency plan (I did recall working with National Guard on it) where we will quarantine everyone inside a city if there's a severe disease spread. It is like what China did for Wuhan. With MCM, we can give citizens MCM before they leave. There is no MCM now.

While one can argue a federal quarantine and total lock down of a city is more effective, I think Lu's comment is on-point. We cannot expect perfect participation. Everyone is going to make a decision. If we can contain 80% of the people's movement (as in Hong Kong and Singapore, or in the Santa Clara model above), you can see that we are stopping the spread. Clearly, those who get out of the city might very well be infected and sow a seed to other places. Yes, we probably need to think harder what to do. The NPI of closing schools and tele-work in a sense is volunteering quarantine. It can work beautifully, and very effectively. Note that Hong Kong has only limited transportation ban. The citizens and the healthcare workers protest to close the border, but the border wasn't closed. **So the effort is volunteering quarantine of their own residents and then quarantine for everyone who enters the city. Together, it puts a brake on the spread. It is right to do it now.**

### 3. King County Seattle

True to the form of the COVID-19 and the mortality of elderly, which is 1.3%, 3.6%, 8<sup>+</sup> and 14.8% from 50 years onwards, for every 10 year age bracket. So we see the very high mortality of the nursing home. Although I know next to nothing about what's going on in China, these figures seem to be a good guiding point for us.

What troubles me about the spread is that it is almost like by-the-book. We got school teacher get infected, nursing home, a very sick patient in ICU (healthcare workers got quarantine)... you see where we are heading, every vulnerable population is hit.

### 4. Limited Transportation Ban

So last week, I wrote that we need to include New York and Atlanta in the screening. Bad enough this week we have cases in these cities. I do think we need to step up in reducing the South Korean flights into the US. Hong Kong uses brand-new public estates to quarantine the incoming travelers from high-risk regions. It is a luxury that we do not have. Here, we must figure out an effective quarantine for these entering visitors or returning citizens. Maybe it is time

to stop visitors from S Korea and Italy. It is just temporary. So we can focus on handling citizens coming back. We need to let them in. Cannot leave them outside their own country.

---

On Tuesday, March 3, 2020 4:22 PM, Caneva, Duane [REDACTED]@hq.dhs.gov> wrote:

Looking at a project to develop triggers for community mitigation based on proxy data such as ICU cases, deaths, surveillance diagnostics, and gap between ILI presentations with ILI + panels. We have good data from other cities around the world on what their data showed and when they implemented mitigation efforts. We can measure that data in near-real time and use it as objective measure to pull the trigger.

Thoughts?

---

From: Carter Mecher

Sent: Tuesday, March 3, 2020 5:59 PM

To: Dr. Eva K Lee; Eastman, Alexander

Cc: Caneva, Duane; Marcozzi, David; Tracey McNamara; Richard Hatchett; Dr. Eva Lee; WILKINSON, THOMAS; M.D.; James V; Tom Bossert; [REDACTED]; Ralph S; Gregory J; William; HAMILTON, CAMERON; [REDACTED]ail.com; Daniel (OS/ASPR/SPPR); Kristin (OS/ASPR/SPPR); Sally (OS/ASPR/SPPR); Matthew J CIV USARMY (USA); Lisa Koonin; HARVEY, MELISSA; WOLFE, HERBERT; EVANS, MARIEFRED [REDACTED]utmb.edu; Robert (OS/ASPR/BARDA); Yeskey, Kevin; Gary (OS/ASPR/BARDA); John (OS/ASPR/SPPR); David (Chris) (OS/ASPR/IO); Joseph (OS/ASPR/IO); Luciana; Dan; Eric (San Diego County); Wade, David; TARANTINO, DAVID A; dav [REDACTED]s.gov; KAUSHIK, SANGEETA; Scott; Larry G; Ryan Morhard; Steven Jt(tCHFSStDPH); Jerome (HHS/OASH); DC; DC; [REDACTED]u@usuhs.edu; [REDACTED]s.gov; Jolly, Brantley (OS/ASPR/EMMO) (CTR); Cordts, Jerome (CTR); Mansoura, Monique K.

Subject: RE: Red Dawn Rising Start Feb 29

I don't get the sense that Seattle will consider closing schools (except perhaps reactive school closure due to high absenteeism).

Has Seattle modeled the potential impact to their healthcare delivery system of an unmitigated outbreak? The high % of asymptomatic/mild disease is a bit misleading. It might be eye opening for Seattle to simply overlay the cruise ship data atop their population age >60 and assume everyone under 60 has mild disease and even use an attack rate of 20%. Easy enough to do for them.

#### **King County health officials: No reason yet to close schools for COVID-19**

Local health departments recommended Monday schools stay open as more announcements of cases of the novel coronavirus were made, but several districts closed schools on Monday anyway, mostly as students were tested. There were no blanket closures, or a scene of district-wide shutdowns, but different schools had different reasons for closing Monday. As of Monday, no schools in Washington state had confirmed cases of COVID-19.

The schools that have closed so far have done so for deep cleanings after students were either being tested for COVID-19 or had come into close contact with someone who had the virus.

Another school district is closing Tuesday for staff training on how teachers can continue their lesson plans remotely should the schools need to shut down as the virus spreads.

Dr. Jeff Duchin, health officer for King County Public Health, said during a press conference Monday if there are confirmed cases, the agency will work with schools directly to provide guidance.

"Schools don't need to take any special precautions beyond what we've recommended for good hygiene recommendations," he said, mentioning that ill students and staff should stay home from school.

The Centers for Disease Control and Prevention recommends school districts take steps that prioritize the community's health while causing the least amount of disturbance to students.

"Schools should continue to collaborate, share information, and review plans with local health officials to help protect the whole school community, including those with special health needs," the CDC said on its website. "School plans should be designed to minimize disruption to teaching and learning and protect students and staff from social stigma and discrimination."

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From: Carter Mecher [REDACTED]  
Date: Tue, Mar 3, 2020 at 8:55 PM  
Subject: RE: Red Dawn Rising Start Feb 29

To: Dr. Eva K Lee [REDACTED]me>, Eastman, Alexander [REDACTED]

Cc: Caneva, [REDACTED]dhs.gov>, Marcozzi, David <[REDACTED]d.edu>, Tracey  
McNamara [REDACTED]nu.edu>, Richard Hatchett <rich[REDACTED]@cepl.net>, Dr. Eva Lee  
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Charity A@CDPH [REDACTED]@cdph.ca.gov>, Ralph S [REDACTED]@email.unc.edu>, Gregory J  
[REDACTED]J@state.gov>, William [REDACTED]2@state.gov>, HAMILTON, CAMERON  
[REDACTED]n@hq.dhs.gov>, [REDACTED]@gmail.com <[REDACTED]@gmail.com>, Daniel (OS/ASPR/SPPR)  
<[REDACTED]en@hhs.gov>, Kristin (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>, Sally (OS/ASPR/SPPR)  
<[REDACTED]lips@hhs.gov>, Matthew J CIV USARMY (USA) <[REDACTED]@mail.mil>, Lisa Koonin  
<[REDACTED]gmail.co  
[REDACTED]WOLFE@hq.dhs.gov>, [REDACTED], MARIEFRED [REDACTED]vans@associates.hq.dhs.gov>,  
[REDACTED]c@utmb.edu [REDACTED]@utmb.edu>, Robert (OS/ASPR/BARDA) <[REDACTED]s.gov>, Yeskey, Kevin  
[REDACTED]y@hhs.gov>, Gary (OS/ASPR/BARDA) <G[REDACTED]w@hhs.gov>, John (OS/ASPR/SPPR)  
<[REDACTED]@hhs.gov>, David (Chris) (OS/ASPR/IO) <[REDACTED]ssell@hhs.gov>, Joseph (OS/ASPR/IO)  
<[REDACTED]l@hhs.gov>, Luciana <[REDACTED]@iqt.org>, Dan <[REDACTED]fling@iqt.org>, Eric (San Diego County)  
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Morhard [REDACTED]weforum.org>, Steven Jt(tCHFStDPH) <[REDACTED]k@ky.gov>, tJerome (HHS/OASH)  
[REDACTED]hhs.gov>, DC <[REDACTED]@usda.gov>, DC <[REDACTED]y@usda.gov>,  
[REDACTED]au@usuhs.edu <[REDACTED]@usuhs [REDACTED]t@hhs.gov <[REDACTED]@hhs.gov>, Jolly, Brantley  
(OS/ASPR/EMMO) (CTR) <E[REDACTED]>, Cordts, Jerome (CTR)  
<[REDACTED]ociates.hq.dhs.gov>, Mansoura, Monique K. <[REDACTED]@mitre.org>

I was curious what is meant by mild disease. Somebody can double check my math.

Attached is a back-of-the-envelope estimate of the impact of COVID on a notional city of 3.3M [The current US population is ~330M, so a notional city of 3.3M is assumed to be 1% of the US population, with 1% of healthcare assets (hospital beds/ICU beds), 1% of healthcare utilization (hospital admissions/hospital BDOCs/ICU BDOCs//ER visits/outpatient visits), and 1% of annual all-cause deaths—a notional average US city representing 1% of the US population]. I chose 3.3.M because this makes the math simple.

Methodology to estimate the impact of COVID on this notional city:

For the population age > 60 we assumed an attack rate of 30% and applied the cruise ship outbreak data (50% asymptomatic; 12% acutely ill; 2-5% ICU admission; 0.92% CFR)

For the under age 60 group, we assumed there will be a similar degree of disease transmission (AR=30%) and roughly 50% asymptomatic and 50% mild/moderate disease/ and occasional serious disease requiring them to touch our healthcare system (100% requiring outpatient care/10% ER care). [very conservative estimates]

Really interesting what havoc mild disease might cause on this notional city. In this scenario, roughly 89% of those who are infected are asymptomatic or mild disease. I assumed the event would stretch over 90 days—the acceleration in acute care demand in Wuhan was concentrated over a period of 5-6 weeks. So the estimates of demand relative to capacity superimposed over a shorter time period and adjusting for peak demand are much worse than what the numbers convey.

This is why Eva is so concerned about not delaying the implementation of mitigation measures. She understands what is going to happen.

Metro Seattle has a population of ~3.5M (close enough to this notional city).



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From: [Carter Mecher](#)

Sent: Wednesday, March 4, 2020 6:09 AM  
Subject: RE: Red Dawn Rising Start Feb 29

It is amazing how high the prevalence must be in Italy to have the amount of spread we are seeing associated with travelers from Italy. What is equally amazing is how it was hidden until it exploded. I suspect what happened in Italy is really the 'movie' for the rest of the world, including the US. It would be really useful to have better intel on what is happening to the healthcare delivery system in Italy (Italy also has the 2<sup>nd</sup> oldest population with 23% age 65+ while Japan is at 27% and the US at 15%).

The only report I noticed was a brief report on Twitter that "Italy - Converting military barracks to makeshift hospitals in anticipation of the development of Coronavirus spread"  
Does anyone have better data?

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On Wednesday, March 4, 2020 7:44 AM, Carter Mecher [\[REDACTED\]@harter.net](#) wrote:

Hong Kong (101 case/2 deaths) and Singapore (110 cases/0 deaths) continue to hold the line. Singapore has linear growth (keeping Ro close to 1); Hong Kong also has linear growth. This is really best practice for a city. Might be worthwhile for US cities to take a close look at how Singapore and Hong Kong have responded throughout this crisis. When this all began, Hong Kong and Singapore were seeded early and very early on they had the largest number of cases following mainland China. Since then I have watched other countries come out of nowhere and race far ahead of Hong Kong and Singapore (linear growth vs. exponential growth). South Korea (5,621/28 deaths); Italy (2,502/79); Iran (2,336/77); Japan (293/6); France (212/4); Germany (203/0); Spain (165/1); US (127/9). **Seattle alone will overtake Hong Kong and Singapore by the end of the week. Organizations and governments and scientists like to talk about learning from best practices. Well here they are. When I show the slide of Philadelphia-St. Louis in 1918 I often ask audiences which city they would have preferred to be living in during the 1918 pandemic. When we look back at this pandemic, we will have new contrasting city pairs and contrasting country pairs and can pose a similar question.**

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From: [Dr. Eva K Lee](#)

Sent: Wednesday, March 4, 2020 1:54 PM

To: [Carter Mecher](#)

Cc: [Tracey McNamara](#); [Richard Hatchett](#); [Dr. Eva Lee](#); [THOMAS; M.D.](#); [James V](#); [Duane](#); [David](#); [Tom Bossert](#); [\[REDACTED\]](#); [Ralph S](#); [Gregory J](#); [William](#); [CAMERON](#); [\[REDACTED\]](#); [om](#); [Daniel](#) ([OS/ASPR/SPPR](#)); [Kristin](#) ([OS/ASPR/SPPR](#)); [Sally](#) ([OS/ASPR/SPPR](#)); [Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [MELISSA](#); [HERBERT](#); [Alexander](#); [MARIEFRED](#); [\[REDACTED\]](#) ([@utmb.edu](#)); [Robert](#) ([OS/ASPR/BARDA](#)); [Kevin](#); [Gary](#) ([OS/ASPR/BARDA](#)); [John](#) ([OS/ASPR/SPPR](#)); [David \(Chris\)](#) ([OS/ASPR/IO](#)); [Joseph](#) ([OS/ASPR/IO](#)); [Luclana](#); [Dan](#); [Eric \(San Diego County\)](#); [David](#); [DAVID A](#); [\[REDACTED\]](#) ([xas.gov](#)); [SANGEETA](#); [Scott](#); [Larry G](#); [Ryan Morhard](#); [Steven Jt\(tCHFStDPH\)](#); [tJerome](#) ([HHS/OASH](#)); [DC](#); [DC](#); [\[REDACTED\]](#); [Shiau](#); [\[REDACTED\]](#) ([t@hhs.gov](#))

Subject: RE: Red Dawn Rising Start Feb 29

Carter, please review the information I sent regarding the NPI intervention model I sent for Santa Clara yesterday. I ran it for Hong Kong. It is another perfect result to confirm what we should do.

I am not sure how we can use increase of ILI and other disease activities to predict COVID-19. They should be used, but they are secondary because by the time we are seeing the citizens' symptoms and complaints, we are a few weeks late already. The "unknown" cases are out there already. Those with no/mild symptoms, or doesn't really matter if there's any symptoms or not, the 1 case in Santa Clara on Jan 31 is real. It's one – and as we can see in the model – one case is one case too many already, because it's already growing. Because it means there're others we don't know.

For example for the Seattle nursing home – they get infected and they have respiratory distressed. But they don't get registered onto public / hospital records. And then university students, they get sick all the time, not that they will see the doctor or anyone. So we won't register them either. Then ICU/ED patients. Ok, that we can screen and should screen. Also, the flu may be masked by COVID-19, as in Japan where COVID-19 basically halted the flu season. So there may be no spike at all in the surveillance data, since it is the usual pattern, but instead of the usual flu/cold etc, it is replaced by COVID-19. It is really quite difficult to use disease surveillance as a guide, because that is for sure late at least by 2 weeks. If not more weeks. The moment the first case appears, we're late already by 2 weeks.

[REDACTED]  
[REDACTED]

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From: [Carter Mecher](#)

Sent: Wednesday, March 4, 2020 2:19 PM

To: [Dr. Eva K Lee](#)

Cc: [Tracey McNamara](#); [Richard Hatchett](#); [Dr. Eva Lee](#); [THOMAS; M.D.](#); [James V](#); [Duane](#); [David](#); [Tom Bossert](#); [██████████](#); [Ralph S](#); [Gregory J](#); [William](#); [██████████](#); [Daniel \(OS/ASPR/SPPR\)](#); [Kristin \(OS/ASPR/SPPR\)](#); [Sally \(OS/ASPR/SPPR\)](#); [Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [MELISSA](#); [HERBERT](#); [Alexander](#); [██████████](#); [Robert \(OS/ASPR/BARDA\)](#); [Kevin](#); [Gary \(OS/ASPR/BARDA\)](#); [John \(OS/ASPR/SPPR\)](#); [David \(Chris\) \(OS/ASPR/IO\)](#); [Joseph \(OS/ASPR/IO\)](#); [Luciana](#); [Dan](#); [Eric \(San Diego County\)](#); [David](#); [DAVID A](#); [da██████████@dshtexas.gov](#); [SANGEETA](#); [Scott](#); [Larry G](#); [Ryan Morhard](#); [Steven Jt\(tCHFStDPH\)](#); [tJerome \(HHS/OASH\)](#); [DC](#); [DC](#); [g██████████@hs.edu](#); [Danny Shiau](#); [r██████████](#)

Subject: RE: Red Dawn Rising Start Feb 29

Eva, I agree with you. Political leaders and public health leaders need to be convinced of the utility of these interventions and the courage to act. If they miss the window to act, they don't get a do-over. Can't take a Mulligan with NPIs. There is no reset button to play the game again. You only get one shot. I fear that Seattle may have missed their opportunity. Out of desperation I predict they may eventually implement and endure all the downsides of NPIs with marginal to little upside. This is exactly what happened in 1918. A while back I shared some slides on the lessons learned from 1918. Unfortunately, we have to learn some lessons again and again.

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From: [Carter Mecher](#)

Sent: Wednesday, March 4, 2020 2:36 PM

To: [Dr. Eva K Lee](#)

Cc: [Tracey McNamara](#); [Richard Hatchett](#); [Dr. Eva Lee](#); [THOMAS; M.D.](#); [James V](#); [Duane](#); [David](#); [Tom Bossert](#); [Charit██████████](#); [Ralph S](#); [Gregory J](#); [William](#); [CAMERON](#); [██████████@mail.com](#); [Daniel \(OS/ASPR/SPPR\)](#); [Kristin \(OS/ASPR/SPPR\)](#); [Sally \(OS/ASPR/SPPR\)](#); [Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [MELISSA](#); [HERBERT](#); [Alexander](#); [MARIEFRED](#); [██████████@utmb.edu](#); [Robert \(OS/ASPR/BARDA\)](#); [Kevin](#); [Gary \(OS/ASPR/BARDA\)](#); [John \(OS/ASPR/SPPR\)](#); [David \(Chris\) \(OS/ASPR/IO\)](#); [Joseph \(OS/ASPR/IO\)](#); [Luciana](#); [Dan](#); [Eric \(San Diego County\)](#); [David](#); [DAVID A](#); [da██████████@dshtexas.gov](#); [SANGEETA](#); [Scott](#); [Larry G](#); [Ryan Morhard](#); [Steven Jt\(tCHFStDPH\)](#); [tJerome \(HHS/OASH\)](#); [DC](#); [DC](#); [██████████@usuhs.edu](#); [Danny Shiau](#); [██████████@hhs.gov](#)

The US is now up to 11 deaths (10 in Washington and 1 in California).

I think there is disconnect among very smart people. They hear the high % of patients who are asymptomatic or have mild illness and equate this to a mild outbreak. Hard for me to understand how they come to this conclusion.

2019 Novel Coronavirus (COVID-19) in Washington	
Positive (confirmed) * †	39
Deaths	10
* Positive <ul style="list-style-type: none"> <li>• Snohomish County - 8, including 1 death</li> <li>• King - 31, including 9 deaths</li> </ul> † Please contact the local health department for information.	

Number of People Under Public Health Supervision	
Number of people under public health supervision ‡	231
‡ The number of people under public health supervision includes those at risk of having been exposed to novel coronavirus who are monitoring their health under the supervision of public health officials. This number includes people who have returned from China in the past 14 days and are included in <a href="#">federal quarantine guidance</a> .	

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On 4 Mar 2020, at 20:31, Carter Mecher <[REDACTED]@charter.net> wrote:

Rhetorical question, what is he evaluating daily?

SEATTLE -- Washington state on Wednesday reported a 10th death from coronavirus. Gov. Jay Inslee said he was evaluating daily whether to order widespread closures and cancellations due to the outbreak.

The state Department of Health released updated figures showing that nine people had died in King County, the state's most populous, and one in Snohomish County. The state has now reported 39 COVID-19 cases, all in the greater Seattle area.

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On Wednesday, March 4, 2020 3:37 PM, Richard Hatchett <[REDACTED]@cepi.net> wrote:

It is remarkable that leaders are reluctant to implement interventions that they will have to implement anyway when they lose control. Do they think the virus is magically going to behave differently when it gets to their community? Why can't they look at the successful examples and emulate these?

---

On Mar 4, 2020, at 10:24 PM, Caneva, Duane <[REDACTED]a@hq.dhs.gov> wrote:  
Please use this thread as of evening of 04 March.

Duane C. Caneva, MD, MS  
Chief Medical Officer  
Department of Homeland Security



Executive Assistant: Nichole [REDACTED]

[REDACTED] Brian Benson [REDACTED] <[REDACTED]@icloud.com>

Sent: Thursday, March 5, 2020 12:08 AM

To: Caneva, Duane <[REDACTED]@hq.dhs.gov>

Cc: Carter Mecher <[REDACTED]>; Mecher, Carter <[REDACTED].outlook.com]

<[REDACTED]er@va.gov>; Tracey McNamara <[REDACTED]a@westernu.edu>; Hunt, Richard (OS/ASPR/EMMO)

<[REDACTED]@hhs.gov>; Richard Hatchett <[REDACTED]ett@cepi.net>; Dr. Eva Lee

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<[REDACTED]tate.gov>; Ryan Morhard <[REDACTED]@weforum.org>; Steven Jt(tCHFStDPH )

<[REDACTED]@ky.gov>; Adams, Jerome (HHS/OASH) <[REDACTED]@hhs.gov>; Mansoura, Monique K.

<[REDACTED]ra@mitre.org>; Fantinato, Jessica (USDA.GOV [gcc01.safelinks.protection.outlook.com])

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<[REDACTED]rdts@associates.hq.dhs.gov>; Schnitzer, Jay J <[REDACTED]@mitre.org>; Ignacio, Joselito

<[REDACTED]io@fema.dhs.gov>

Subject: Re: Red Dawn Raging Start March 4

Duane, thanks for including me in the conversation.

I've been reading what I can on PubMed and in the news, but can't find many answers, thus I'll asks this group. First, being that some viruses are capable of inserting their DNA into hosts genome, is there any evidence that this RNA virus can do that? I have nothing to support this, but I ask to anticipate any late term effects, i.e. Cancer, cardiomyopathy, diabetes, auto immune diseases or other post viral syndromes. Secondly, are there any restriction sites in this strain that are not present in others of the same family, suggesting this is engineered? Lastly, what's gong on in North Korea?

Folks, those of you that know me understand I'm glad to help in any way I can. Please let me know

---

From: "Baric, Ralph S"

To: "Brian Benson", Duane"

Cc: "Carter Mecher", Carter (VA.GOV [gcc01.safelinks.protection.outlook.com])", "Tracey McNamara", Richard

(OS/ASPR/EMMO)", "Richard Hatchett", "Dr. Eva Lee", THOMAS", "M.D.", "James V", "David", "Tom Bossert",

"Charity A@CDPH", "Gregory J", William (STATE.GOV [gcc01.safelinks.protection.outlook.com])", CAMERON",

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CIV USARMY (USA)", "Lisa Koonin", MELISSA", HERBERT", Alexander", MARIEFRED", [REDACTED]@utmb.edu",

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Jt(tCHFStDPH)", Jerome (HHS/OASH)", Monique K.", Jessica (USDA.GOV

[gcc01.safelinks.protection.outlook.com])", "DC", [REDACTED]@usuhs.edu", Jerome (CTR)", Jay J", Joselito"

Sent: Thursday March 5 2020 7:52:21AM

Subject: RE: Red Dawn Raging Start March 4

Hi Brian,

No coronavirus RNA viruses don't incorporate their genomes into the host DNA

Yes, potential hit and run disease is pulmonary fibrosis, which can occur as a result of acute lung injury months to years later

No, there is absolutely no evidence that this virus is bioengineered.

Ralph

---

To: Ralph S'

Cc: "Brian Benson", Duane", Carter ([VA.GOV\\_fgcc01\\_safelinks.protection.outlook.com](mailto:VA.GOV_fgcc01_safelinks.protection.outlook.com)), "Tracey McNamara", Richard (OS/ASPR/EMMO)", "Richard Hatchett", "Dr. Eva Lee", THOMAS", "M.D.", "James V", "David", "Tom Bossert", "Charity A@CDPH", "Gregory J", William ([STATE.GOV\\_fgcc01\\_safelinks.protection.outlook.com](mailto:STATE.GOV_fgcc01_safelinks.protection.outlook.com)), CAMERON", [\\_\\_\\_\\_\\_@gmail.com](mailto:_____@gmail.com)", Daniel (OS/ASPR/SPPR)", Kristin (OS/ASPR/SPPR)", Sally (OS/ASPR/SPPR)", "Matthew J CIV USARMY (USA)", "Lisa Koonin", MELISSA", HERBERT", Alexander", MARIEFRED", [\\_\\_\\_\\_\\_@edu](mailto:_____@edu)", Robert (OS/ASPR/BARDA)", Kevin", Gary (OS/ASPR/BARDA)", John (OS/ASPR/SPPR)", David (Chris) (OS/ASPR/IO)", Joseph (OS/ASPR/IO)", "Luciana", "Dan", [\\_\\_\\_\\_\\_@sdcounty.ca.gov](mailto:_____@sdcounty.ca.gov)", David", DAVID A", [\\_\\_\\_\\_\\_@dshs.texas.gov](mailto:_____@dshs.texas.gov)", SANGEETA", Scott (OS/ASPR/EMMO)", "Larry G", "Ryan Morhard", "Steven Jt(ICHFSDPH)", Jerome (HHS/OASH)", Monique K.", Jessica ([USDA.GOV\\_fgcc01\\_safelinks.protection.outlook.com](mailto:USDA.GOV_fgcc01_safelinks.protection.outlook.com))", "DC", [\\_\\_\\_\\_\\_@usuhs.edu](mailto:_____@usuhs.edu)", Jerome (CTR)", Jay J", Joselito"

Sent: Thursday March 5 2020 8:55:31AM

Subject: RE: Red Dawn Raging Start March 4

Impact assessment I pulled together and shared with my leaders. I utilized the attack rate of 20% that was experienced on the Diamond Princess so that I could begin to help people get their head around what is perceived to be a mild outbreak means. I purposely used an actual event (and actual attack rate) for comparison so as not to be perceived as fear mongering. I sense confusion among very smart people (politicians, physicians, public health leaders) who hear that more than 80% of those who are infected have mild disease and that overall case fatality rates are on the order of 0.5%. And they then equate these stats to a mild outbreak. They really don't consider attack rates and the impact of the 20% with something other than mild illness means.

A more reasonable attack rate to plan for is around 40%, so just double everything in the attached reports You all can look at these projections and envision what will happen to our healthcare system if we don't take aggressive actions to slow community transmission now. This is not the time to get fancy or creative with NPIs and try to finesse things (ala carte implementation). We should learn from China and the other best practice nations already fighting this disease. We know what works; we just need the will to do it. We should be treating this like we treat stroke and acute coronary syndromes where time = tissue. In this case time = transmission.

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From: [\\_\\_\\_\\_\\_@ter.net](mailto:_____@ter.net) <[\\_\\_\\_\\_\\_@ter.net](mailto:_____@ter.net)>

Sent: Thursday, March 05, 2020 10:53 AM

To: [\\_\\_\\_\\_\\_@et](mailto:_____@et) <[\\_\\_\\_\\_\\_@et](mailto:_____@et)>

Cc: 'Dr. Eva Lee' <[\\_\\_\\_\\_\\_@ter.net](mailto:_____@ter.net)>; 'Caneva, Duane' <[\\_\\_\\_\\_\\_a@hq.dhs.gov](mailto:_____a@hq.dhs.gov)>; 'Tom Bossert' <[\\_\\_\\_\\_\\_@me.com](mailto:_____@me.com)>; 'Baric, Ralph S' <[\\_\\_\\_\\_\\_@email.unc](mailto:_____@email.unc)>; [\\_\\_\\_\\_\\_@westernu.edu](mailto:_____@westernu.edu)>; 'Tracey McNamara' <[\\_\\_\\_\\_\\_@hhs.gov](mailto:_____@hhs.gov)>; 'Richard Hatchett' <[\\_\\_\\_\\_\\_@cepi.net](mailto:_____@cepi.net)>; 'WILKINSON, THOMAS' <[\\_\\_\\_\\_\\_@hq.dhs.gov](mailto:_____@hq.dhs.gov)>; 'M.D.' <[\\_\\_\\_\\_\\_@mgh.harvard.edu](mailto:_____@mgh.harvard.edu)>; 'James V' <[\\_\\_\\_\\_\\_@unmc.edu](mailto:_____@unmc.edu)>; 'David' <[\\_\\_\\_\\_\\_@maryland.edu](mailto:_____@maryland.edu)>; 'Charity A@CDPH' <[\\_\\_\\_\\_\\_@cdph.ca.gov](mailto:_____@cdph.ca.gov)>; 'Gregory J' <[\\_\\_\\_\\_\\_@gov](mailto:_____@gov)>; 'Walters, William' <[\\_\\_\\_\\_\\_gcc01\\_safelinks.protection.outlook.com](mailto:_____gcc01_safelinks.protection.outlook.com)>; [\\_\\_\\_\\_\\_state.gov](mailto:_____state.gov)>; 'HAMILTON, CAMERON' <[\\_\\_\\_\\_\\_q.dhs.gov](mailto:_____q.dhs.gov)>; 'r' <[\\_\\_\\_\\_\\_@gmail.com](mailto:_____@gmail.com)>; [\\_\\_\\_\\_\\_mail.com](mailto:_____mail.com)>; 'Dodgen, Daniel (OS/ASPR/SPPR)' <[\\_\\_\\_\\_\\_en@hhs.gov](mailto:_____en@hhs.gov)>; 'DeBord, Kristin (OS/ASPR/SPPR)' <[\\_\\_\\_\\_\\_@hhs.gov](mailto:_____@hhs.gov)>; 'Phillips, Sally (OS/ASPR/SPPR)' <[\\_\\_\\_\\_\\_ps@hhs.gov](mailto:_____ps@hhs.gov)>; 'Matthew J CIV USARMY (USA)' <[\\_\\_\\_\\_\\_civ@mail.mil](mailto:_____civ@mail.mil)>; 'Lisa Koonin' <[\\_\\_\\_\\_\\_@gmail.com](mailto:_____@gmail.com)>; 'HARVEY, MELISSA' <[\\_\\_\\_\\_\\_v@hq.dhs.gov](mailto:_____v@hq.dhs.gov)>; 'WOLFE, HERBERT' <[\\_\\_\\_\\_\\_@hq.dhs.gov](mailto:_____@hq.dhs.gov)>; 'Eastman, Alexander' <[\\_\\_\\_\\_\\_n@hq.dhs.gov](mailto:_____n@hq.dhs.gov)>; 'EVANS, MARIEFRED' <[\\_\\_\\_\\_\\_ociates.hq.dhs.gov](mailto:_____ociates.hq.dhs.gov)>; [\\_\\_\\_\\_\\_tmb.edu](mailto:_____tmb.edu) <[\\_\\_\\_\\_\\_c@utmb.edu](mailto:_____c@utmb.edu)>; 'Johnson, Robert (OS/ASPR/BARDA)' <[\\_\\_\\_\\_\\_hhs.gov](mailto:_____hhs.gov)>; 'Yeskey, \_\_\_\_\_' <[\\_\\_\\_\\_\\_@hhs.gov](mailto:_____@hhs.gov)>; 'Disbrow, Gary (OS/ASPR/BARDA)' <[\\_\\_\\_\\_\\_w@hhs.gov](mailto:_____w@hhs.gov)>; 'Redd, John (OS/ASPR/SPPR)' <[\\_\\_\\_\\_\\_d@hhs.gov](mailto:_____d@hhs.gov)>; 'Hassell, David (Chris) (OS/ASPR/IO)' <[\\_\\_\\_\\_\\_@hhs.gov](mailto:_____@hhs.gov)>; 'Hamel, Joseph (OS/ASPR/IO)' <[\\_\\_\\_\\_\\_@hhs.gov](mailto:_____@hhs.gov)>; 'Luciana' <[\\_\\_\\_\\_\\_@lqt.org](mailto:_____@lqt.org)>; 'Dan' <[\\_\\_\\_\\_\\_fling@lqt.org](mailto:_____fling@lqt.org)>; 'e' <[\\_\\_\\_\\_\\_@hq.dhs.gov](mailto:_____@hq.dhs.gov)>; 'David' <[\\_\\_\\_\\_\\_hq.dhs.gov](mailto:_____hq.dhs.gov)>; 'TARANTINO, DAVID A' <[\\_\\_\\_\\_\\_o@cbp.dhs.gov](mailto:_____o@cbp.dhs.gov)>; 'de' <[\\_\\_\\_\\_\\_s.texas.gov](mailto:_____s.texas.gov)>; [\\_\\_\\_\\_\\_hs.texas.gov](mailto:_____hs.texas.gov)>; 'KAUSHIK, \_\_\_\_\_' <[\\_\\_\\_\\_\\_@hq.dhs.gov](mailto:_____@hq.dhs.gov)>; 'Lee, Scott (OS/ASPR/EMMO)' <[\\_\\_\\_\\_\\_Lee@hhs.gov](mailto:_____Lee@hhs.gov)>; 'Larry G'

<[REDACTED]@tate.gov>; 'Ryan Morhard' <[REDACTED]@weforum.org>; 'Steven Jt(tCHFStDPH )'  
<[REDACTED]@ky.gov>; 'Adams, Jerome (HHS/OASH)' <[REDACTED]@hhs.gov>; 'Mansoura, Monique K.'  
<[REDACTED]@mitre.org>; 'Fantinato, Jessica ([REDACTED]@gcc01.safelinks.protection.outlook.com)'  
<[REDACTED]@ato.usda.gov>; 'DC' <[REDACTED]@usda.gov>; '[REDACTED]@usuhs.edu'  
<[REDACTED]@hiau.usuhs.edu>; 'Cordts, Jerome (CTR)' <[REDACTED]@associates.hq.dhs.gov>; 'Schnitzer, Jay J'  
<[REDACTED]@mitre.org>; 'Ignacio, Joselito' <[REDACTED]@fema.dhs.gov>; 'Will Gaskins' <[REDACTED]@efia.com>;  
'CHRISTOPHER ALLEN' <[REDACTED]@msn.com>; 'Kevin Montgomery' <[REDACTED]@collaborate.org>  
Subject: Re: Red Dawn Raging Start March 4

Listening to CDC. Anita Patel has just summarized CDC guidance re community mitigation measures. They are not recommending closing schools--talking about reactive school closure (e.g., a student becomes ill and they close the school to disinfect).  
Very unfortunate.

---

From: "Dr. Eva Lee"  
To: Duane"  
Cc: "Tom Bossert", [REDACTED]@et", Ralph S", "Brian Benson", Carter ([VA.GOV](#) [\[gcc01.safelinks.protection.outlook.com\]](#)), "Tracey McNamara", Richard (OS/ASPR/EMMO)", "Richard Hatchett", THOMAS", "M.D.", "James V", "David" [REDACTED]@CDPH", "Gregory J", William ([STATE.GOV](#) [\[gcc01.safelinks.protection.outlook.com\]](#)), CAMERON", "[REDACTED]@l.com", Daniel (OS/ASPR/SPPR)", Kristin (OS/ASPR/SPPR)", Sally (OS/ASPR/SPPR)", "Matthew J CIV USARMY (USA)", "Lisa Koonin", MELISSA", HERBERT", Alexander", MARIEFRED", "[REDACTED]", Robert (OS/ASPR/BARDA)", Kevin", Gary (OS/ASPR/BARDA)", John (OS/ASPR/SPPR)", David (Chris) (OS/ASPR/IO)", Joseph (OS/ASPR/IO)", "Luciana", "Dan", [REDACTED]  
[REDACTED] "Larry G", "Ryan Morhard", "Steven Jt(tCHFStDPH )", Jerome (HHS/OASH)", Monique K.", Jessica ([USDA.GOV](#) [\[gcc01.safelinks.protection.outlook.com\]](#)), [REDACTED]@hiau.usuhs.edu", Jerome (CTR)", Jay J", Joselito", "Will Gaskins", "CHRISTOPHER ALLEN", "Kevin Montgomery"  
Sent: Thursday March 5 2020 1:05:54PM  
Subject: Re: Red Dawn Raging Start March 4

Yes, we have a huge burden, and we are all thinking about the entire system and the cascading downstream effects. Perhaps a drawing will make a good exercise for the policy makers. We like to use the binary trees, since it explodes fast enough already. I think a tree with the contact rate would be great to show the policy makers so they know how many of the elderly infected would end up in hospitals/beds and we can even show the queues!

On Thu, Mar 5, 2020 at 12:02 PM Caneva, Duane [REDACTED]@hq.dhs.gov> wrote:  
Not just the grandparents, but the healthcare system functionality for everyone, too. There is increased mortality in older age groups, but the hospital stays are 2-3 times longer, resource intense, and affect access and availability for everyone in the community.

---

[REDACTED]@charter.net  
To: "Dr. Eva Lee"  
Cc: Duane", "Tom Bossert", Ralph S", "Brian Benson", Carter ([VA.GOV](#) [\[gcc01.safelinks.protection.outlook.com\]](#)), "Tracey McNamara", Richard (OS/ASPR/EMMO)", "Richard Hatchett", THOMAS", "M.D.", "James V", "David", "Charity A@CDPH", "Gregory J", William ([STATE.GOV](#) [\[gcc01.safelinks.protection.outlook.com\]](#)), CAMERON", [REDACTED]@gmail.com", Daniel (OS/ASPR/SPPR)", Kristin (OS/ASPR/SPPR)", Sally (OS/ASPR/SPPR)", "Matthew J CIV USARMY (USA)", "Lisa Koonin", MELISSA", HERBERT", Alexander", MARIEFRED", [REDACTED]@utmb.edu", Robert (OS/ASPR/BARDA)", Kevin", Gary (OS/ASPR/BARDA)", John (OS/ASPR/SPPR)", David (Chris) (OS/ASPR/IO)", Joseph (OS/ASPR/IO)", "Luciana", "Dan", [REDACTED]@sdcounty.ca.gov", David", DAVID A", [REDACTED]@dshs.texas.gov", SANGEETA", Scott (OS/ASPR/EMMO)", "Larry G", "Ryan Morhard", "Steven Jt(tCHFStDPH )", Jerome (HHS/OASH)", Monique K.", Jessica ([USDA.GOV](#) [\[gcc01.safelinks.protection.outlook.com\]](#)), "DC", [REDACTED]@usuhs.edu", Jerome (CTR)", Jay J", Joselito", "Will Gaskins", "CHRISTOPHER ALLEN", "Kevin Montgomery"  
Sent: Thursday March 5 2020 1:50:09PM  
Subject: Re: Red Dawn Raging Start March 4  
CDC is going to hold a meeting today on telehealth. Just some background as we prepare to gear up for implementing telehealth.  
Annually, primary care clinics see 482M patients (actually patient visits) in the US (the total number of outpatient visits is about 900K). Over a 3 month period primary care providers see about 120M patient visits. So hold onto that number for a moment,

Let's assume this outbreak has an attack rate of 30% (so about 100M infected) and that 50% of those infected are asymptomatic (50M). Let's assume the other 50% (those 50M who are symptomatic) are the ones seeking care. How many telehealth visits per patient do we think will be required? There will be the initial presentation, then most of these patients (35%-38% of those who were infected, so 35M-38M) will be 'prescribed' home isolation for 14 days). The remainder will require hospitalization but probably not before additional telehealth visits as their conditions worsens. How many follow up telehealth visits will be necessary to monitor the health of these patients in home isolation? Let's say we want to touch base with the patients twice per week, so that is another 4 visit per patient. that would equate to 140M-152M visits. Now add in the other 50M visits for initial presentation and we are up to about 200M telehealth visits. That is about double the number of all primary care visits in the US over a 3 month period. This is probably a conservative estimate since any patient on home quarantine will probably also be seeking to speak with their physician or primary care provider and chronically ill and elderly patients will likely require daily checks. This also does not include the background demand we see each day (for the management of chronic conditions etc.) where we would also like to use telehealth.

We have never done this on this scale before. We have people from large healthcare systems on this email, how are you planning to scale up to meet the demand for COVID and meet the needs of non-COVID patients with chronic conditions?

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██████████@charter.net

To: "Tracey McNamara"

Cc: "Dr. Eva Lee", Duane", "Tom Bossert", Ralph S", "Brian Benson", Carter (VA.GOV [gcc01.safelinks.protection.outlook.com]), Richard (OS/ASPR/EMMO)", "Richard Hatchett", THOMAS", "M.D.", "James V", "David", "Charity A@CDPH", "Gregory J", William (STATE.GOV [gcc01.safelinks.protection.outlook.com]), CAMERON", ██████████@gmail.com", Daniel (OS/ASPR/SPPR)", Kristin (OS/ASPR/SPPR)", Sally (OS/ASPR/SPPR)", "Matthew J CIV USARMY (USA)", "Lisa Koonin", MELISSA", HERBERT", Alexander", MARIEFRED" ██████████.utmb.edu", Robert (OS/ASPR/BARDA)", Kevin", Gary (OS/ASPR/BARDA)", John (OS/ASPR/SPPR)", David (Chris) (OS/ASPR/IO)", Joseph (OS/ASPR/IO)", "Luciana", "Dan", "e ██████████.county.ca.gov", David", DAVID A" ██████████@dshs.texas.gov", SANGEETA", Scott (OS/ASPR/EMMO)", "Larry G", "Ryan Morhard", "Steven Jt(ICHFStDPH)", Jerome (HHS/OASH)", Monique K.", Jessica (USDA.GOV [gcc01.safelinks.protection.outlook.com]), "DC", ██████████@usuhs.edu", Jerome (CTR)", Jay J", Joselito", "Will Gaskins", "CHRISTOPHER ALLEN", "Kevin Montgomery"

Sent: Thursday March 5 2020 3:46:37PM

Subject: RE: Red Dawn Raging Start March 4

History doesn't repeat itself, but often does rhyme.

In 1918, the pandemic started on the east coast and swept across the country from east to west. The initial cities that were hit were understandably a little slow to react. Initially, public health leaders minimized the threat. It was fascinating knowing how the outbreak would unfold to read newspaper accounts and the quotes and responses by politicians and health departments (who early on tried to reassure and calm the public by communicating that they thought the worst had passed when the outbreak was just beginning to accelerate). These cities on the east coast had the misfortune of being the first to face this threat. Other cities like St. Louis were lucky in that they had the chance to see what was happening to the east and act more quickly and more aggressively. Influenza never traveled faster than modern transportation. In 1918, travel was by ship or train.

In 2020, this pandemic seems to be starting on the opposite coast. Seattle has the misfortune of being the first major US city to be impacted. We are seeing some of the same reassurances from political and public health leaders to calm the public and minimize the threat. We have heard that Americans are at low risk. We also have heard it is a mild disease where more than 80% of those infected have either no symptoms or very mild disease, and only the very elderly or those with underlying medical conditions are at risk. Only 0.5% of those who become infected die (and again the vast majority are very old with chronic conditions). That description sounds even milder than flu because flu also hits the very young and anyone who had the flu would not likely remember it as a mild disease. And we hear that this disease is not impacting children so really no need to close the schools. I suspect there will be other cities in California and Oregon up and down the west coast that will soon be impacted and leaders will also need to make a decision re the public health interventions. Like 1918 we will have a natural experiment to assess the effectiveness of the public health interventions (both the measures and the timing). The question is how quickly will this outbreak emerge since a number of areas across the US have already been seeded and influenza can now travel at the speed of air travel. If we are lucky the outbreaks will be asynchronous and some cities will have enough time to be able to learn from the first cities like Seattle and judge the wisdom of the decisions being made now. But this isn't 1918 and I'm not sure there will be enough time for that to happen. What is unfortunate is that they don't need to wait for results from the Seattle experiment, they can learn from China's experience, Hong Kong's experience, and Singapore's experience. They can also go back to the body of work that has been done on community mitigation. Has CDC modeled the interventions they are proposing? How effectively do these interventions reduce community transmission? In short, where is the science to support these recommendations in the face of what we are learning from the experiences of China, Hong Kong and Singapore? When history judges our response, the comparison will

be to the best practices. Unlike 1918, we were actually blessed to know about those best practices before COVID arrived. Seems like a sin not to take full advantage of that knowledge.

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From: "Tracey McNamara"

To: [REDACTED]

Cc: "Dr. Eva Lee", Duane", "Tom Bossert", Ralph S", "Brian Benson", Carter ([VA.GOV](mailto:VA.GOV) [gccc01.safelinks.protection.outlook.com](mailto:gccc01.safelinks.protection.outlook.com)), Richard (OS/ASPR/EMMO)", "Richard Hatchett", THOMAS", "M.D.", "James V", "David", "Charity A@CDPH", "Gregory J", William ([STATE.GOV](mailto:STATE.GOV) [gccc01.safelinks.protection.outlook.com](mailto:gccc01.safelinks.protection.outlook.com)), CAMERON", [REDACTED]@gmail.com", Daniel (OS/ASPR/SPPR)", Kristin (OS/ASPR/SPPR)", Sally (OS/ASPR/SPPR)", "Matthew J CIV USARMY (USA)", "Lisa Koonin", MELISSA", HERBERT", Alexander", MARIEFRED", [REDACTED]@utmb.edu", Robert (OS/ASPR/BARDA)", Kevin", Gary (OS/ASPR/BARDA)", John (OS/ASPR/SPPR)", David (Chris) (OS/ASPR/IO)", Joseph (OS/ASPR/IO)", "Luciana", "Dan", [REDACTED]@sdcounty.ca.gov", David", DAVID A", [REDACTED]@dshs.texas.gov", SANGEETA", Scott (OS/ASPR/EMMO)", "Larry G", "Ryan Morhard", "Steven Jt(tCHFStDPH)", Jerome (HHS/OASH)", Monique K.", Jessica ([USDA.GOV](mailto:USDA.GOV) [gccc01.safelinks.protection.outlook.com](mailto:gccc01.safelinks.protection.outlook.com))", "DC", [REDACTED]@usuhs.edu", Jerome (CTR)", Jay J", Joselito", "Will Gaskins", "CHRISTOPHER ALLEN", "Kevin Montgomery"

Sent: Thursday March 5 2020 2:02:25PM

Subject: RE: Red Dawn Raging Start March 4

Unbelievable and unfortunate.

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From: [REDACTED]

To: [REDACTED] Cc: "Tracey McNamara", "Dr. Eva Lee", Duane", "Tom Bossert", Ralph S", "Brian Benson", Carter ([VA.GOV](mailto:VA.GOV) [gccc01.safelinks.protection.outlook.com](mailto:gccc01.safelinks.protection.outlook.com)), Richard (OS/ASPR/EMMO)", "Richard Hatchett", THOMAS", "M.D.", "James V", "David", "Charity A@CDPH", "Gregory J", William ([STATE.GOV](mailto:STATE.GOV) [gccc01.safelinks.protection.outlook.com](mailto:gccc01.safelinks.protection.outlook.com)), CAMERON", [REDACTED]@gmail.com", Daniel (OS/ASPR/SPPR)", Kristin (OS/ASPR/SPPR)", Sally (OS/ASPR/SPPR)", "Matthew J CIV USARMY (USA)", "Lisa Koonin", MELISSA", HERBERT", Alexander", MARIEFRED", [REDACTED]@utmb.edu", Robert (OS/ASPR/BARDA)", Kevin", Gary (OS/ASPR/BARDA)", John (OS/ASPR/SPPR)", David (Chris) (OS/ASPR/IO)", Joseph (OS/ASPR/IO)", "Luciana", "Dan", [REDACTED]@sdcounty.ca.gov", David", DAVID A", [REDACTED]@dshs.texas.gov", SANGEETA", Scott (OS/ASPR/EMMO)", "Larry G", "Ryan Morhard", "Steven Jt(tCHFStDPH)", Jerome (HHS/OASH)", Monique K.", Jessica ([USDA.GOV](mailto:USDA.GOV) [gccc01.safelinks.protection.outlook.com](mailto:gccc01.safelinks.protection.outlook.com))", "DC", [REDACTED]@usuhs.edu", Jerome (CTR)", Jay J", Joselito", "Will Gaskins", "CHRISTOPHER ALLEN", "Kevin Montgomery"

Sent: Thursday March 5 2020 4:45:23PM

Subject: RE: Red Dawn Raging Start March 4

I like to ask myself, knowing what I know now, what do I wish I would have done 2 weeks ago.

Attached is a slide that show side by side the ranking of countries by the number of cases and deaths reported for Feb 20 and Mar 5.

Imagine what this is going to look like in 2 more weeks. What will we have wished we had done today?

---

From: [REDACTED] meche

To: "Brian Benson"

Cc: James V", Luciana", "Tracey McNamara", "Duane Caneva", "Dr. Eva Lee", "Dr. Eva K Lee", "Tom Bossert", Ralph S", Carter ([VA.GOV](mailto:VA.GOV)), Richard (OS/ASPR/EMMO)", "Richard Hatchett", THOMAS", "M.D.", "David", "Charity A@CDPH", "Gregory J", William ([STATE.GOV](mailto:STATE.GOV)), CAMERON", [REDACTED]@gmail.com", Daniel (OS/ASPR/SPPR)", Kristin (OS/ASPR/SPPR)", Sally (OS/ASPR/SPPR)", "Matthew J CIV USARMY (USA)", "Lisa Koonin", MELISSA", HERBERT", Alexander", MARIEFRED", [REDACTED]@utmb.edu", Robert (OS/ASPR/BARDA)", Kevin", Gary (OS/ASPR/BARDA)", John (OS/ASPR/SPPR)", David (Chris) (OS/ASPR/IO)", Joseph (OS/ASPR/IO)", Dan", [REDACTED]@sdcounty.ca.gov", David", DAVID A", [REDACTED]@dshs.texas.gov", SANGEETA", Scott (OS/ASPR/EMMO)", "Larry G", "Ryan Morhard", "Steven Jt(tCHFStDPH)", Jerome (HHS/OASH)", Monique K.", Jessica ([USDA.GOV](mailto:USDA.GOV)), "DC", [REDACTED]@usuhs.edu", Jerome (CTR)", Jay J", Joselito", "Will Gaskins", "CHRISTOPHER ALLEN", "Kevin Montgomery", Gerald W", Linda L", "LLogandakar"

Sent: Saturday March 7 2020 7:24:25AM

Subject: Re: Red Dawn Raging Start March 4



The outbreak in the US is looking more like Italy but without the aggressive actions [including cordon sanitaire of 50,000 people, closing schools and universities, and canceling mass gatherings] taken by Italy as soon as they identified their first death. I pulled the numbers of cases and deaths reported by the media at the end of each (so data for today is preliminary/morning data).

Interesting to compare the two countries and align the outbreaks (4th slide by the date of first reported death). The US cases include the Princess Diamond cases of repatriated passengers as well as Americans evacuated from Wuhan. I was unable to estimate the number of tests performed by Italy compared to the US. The US case count seems to be lagging what Italy observed. The US appears to be about a week behind Italy. Time will tell.

-----  
From: [mecher@](mailto:mecher@)  
To: "Brian Benson"  
Cc: James V", Luciana", "Tracey McNamara", "Duane Caneva", "Dr. Eva Lee", "Dr. Eva K Lee", "Tom Bossert", Ralph S", Carter ([VA.GOV](http://VA.GOV)), Richard (OS/ASPR/EMMO)", "Richard Hatchett", THOMAS", "M.D.", "David", "Charity A@CDPH", "Gregory J", William ([STATE.GOV](http://STATE.GOV)), CAMERON", [@gmail.com](mailto:)", Daniel (OS/ASPR/SPPR)", Kristin (OS/ASPR/SPPR)", Sally (OS/ASPR/SPPR)", "Matthew J CIV USARMY (USA)", "Lisa Koonin", MELISSA", HERBERT", Alexander", MARIEFRED", "du", Robert (OS/ASPR/BARDA)", Kevin", Gary (OS/ASPR/BARDA)", John (OS/ASPR/SPPR)", David (Chris) (OS/ASPR/IO)", Joseph (OS/ASPR/IO)", Dan", ".gov", David", DAVID A", ".gov", SANGEETA", Scott (OS/ASPR/EMMO)", "Larry G", "Ryan Morhard", "Steven Jt(ICHFSIDPH)", Jerome (HHS/OASH)", Monique K.", Jessica ([USDA.GOV](http://USDA.GOV))", "DC", "u", Jerome (CTR)", Jay J", Joselito", "Will Gaskins", "CHRISTOPHER ALLEN", "Kevin Montgomery", Gerald W", Linda L", "LLogandakar"

Sent: Saturday March 7 2020 7:24:25AM

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On Mar 7, 2020, at 5:42 PM, Dr. Eva Lee <[@gmail.com](mailto:)> wrote:

How are our testing kits? Do we have the test kits and the throughput power now? This is yet another miss opportunity - about a covid-19 case in Georgia. Is it true that tests are only conducted on patients which satisfy the CDC criteria? The symptoms are so diverse that we can't be fixed to a set of guidelines. We need broader screening, that is a must.

"The third case involved a 46-year-old female who went to a hospital in Rome (Georgia) complaining of flu-like symptoms. Hospital officials said she didn't meet the Centers for Disease Control and Prevention (CDC) and GPH criteria for COVID-19 testing, so she was treated and released. After she began to feel worse, the woman was eventually tested. The test has now confirmed that she has COVID-9. Officials say she has been hospitalized."

On Sat, Mar 7, 2020 at 9:30 PM McDonald, Eric <[@sdcounty.ca.gov](mailto:)> wrote:

The long pole in the tent is testing capacity...without going into why it could possibly take so long to field tests in this country when others seem to be able to do it, at the operational level, if you only have limited access to testing, triage needs to occur. So hindsight criticism of providers using the criteria they had/have on patients who did not meet these criteria and then were found to be positive is not useful in my view. Agree the opportunity was missed, but they are being missed now and will be missed until the promised million plus tests are actually fielded and results obtained in an actionable timeframe.

Whatever is going on/went on between cdc and fda and the laboratory community that created this delay will be dissected by someone in the future, but it still is not fixed for us to be able to do what other countries have done or for me as a local public health official to get vital data on what is really going on.

Frustrating doesn't capture it. You know what I am saying.

Eric

**From:** [Gruber, David \(DSHS\)](#)

**Sent:** Tuesday, March 10, 2020 9:58 AM

**To:** [Dr. Eva Lee](#); [McDonald, Eric](#)

**Cc:** [Carter Mecher](#); [Borio, Luciana](#); [Brian Benson](#); [Lawler, James V](#); [Tracey McNamara](#); [Duane Caneva](#); [Dr. Eva K Lee](#); [Tom Bossert](#); [Baric, Ralph S](#); [Mecher, Carter \(VA.GOV\)](#); [Hunt, Richard \(OS/ASPR/EMMO\)](#); [Richard Hatchett](#); [WILKINSON, THOMAS](#); [M.D.](#); [David](#); [Gregory J](#); [Walters, William \(STATE.GOV\)](#); [HAMILTON, CAMERON](#); [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR/IO\)](#); [Hanfling, Dan](#); [Wade, David](#); [TARANTINO, DAVID A](#); [KAUSHIK, SANGEETA](#); [Lee, Scott \(OS/ASPR/EMMO\)](#); [Larry G](#); [Ryan Morhard](#); [Steven Jt\(CHFStDPH\)](#); [Adams, Jerome \(HHS/OASH\)](#); [Mansoura, Monique K](#); [Fantinato, Jessica \(USDA.GOV\)](#); [DC](#); [@usuhs.edu](#); [Cordts, Jerome \(CTR\)](#); [Schnitzer, Jay J](#); [Ignacio, Joselito](#); [Will Gaskins](#); [CHRISTOPHER ALLEN](#); [Kevin Montgomery](#); [Parker Jr, Gerald W](#); [Logan, Linda L](#); [LLogandakar](#)

**Subject:** RE: Red Dawn Raging Start March 4

As a state public health official who is in agreement that NPIs must be strongly enacted early; I'm looking for help from this group to find tools that make the case for NPIs. The target audience is those outside of health.

I'm attaching an example slide (admittedly and intentionally rudimentary) that might be used to support this argument and explain the totality of NPIs. Do others see this as something that might aid in influencing and, if so, are there data sources that I might tap into showing the impacts of NPIs directly on epi curves and how these NPIs would impact other community foundations?

Thanks  
Dave

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**From:** [Carter Mecher](#)

**Sent:** Tuesday, March 10, 2020 10:30 AM

**To:** [Gruber, David \(DSHS\)](#); [Dr. Eva Lee](#); [McDonald, Eric](#)

**Cc:** [Borio, Luciana](#); [Brian Benson](#); [Lawler, James V](#); [Tracey McNamara](#); [Duane Caneva](#); [Dr. Eva K Lee](#); [Tom Bossert](#); [Baric, Ralph S](#); [Mecher, Carter \(VA.GOV\)](#); [Hunt, Richard \(OS/ASPR/EMMO\)](#); [Richard Hatchett](#); [WILKINSON, THOMAS](#); [M.D.](#); [A@CDPH](#); [Gregory J](#); [Walters, William \(STATE.GOV\)](#); [HAMILTON, CAMERON](#); [@gmail.com](#); [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [@utmb.edu](#); [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR/IO\)](#); [Hanfling, Dan](#); [Wade, David](#); [TARANTINO, DAVID A](#); [KAUSHIK, SANGEETA](#); [Lee, Scott \(OS/ASPR/EMMO\)](#); [Larry G](#); [Ryan Morhard](#); [Steven Jt\(CHFStDPH\)](#); [Adams, Jerome \(HHS/OASH\)](#); [Mansoura, M](#); [@usuhs.edu](#); [Cordts, Jerome \(CTR\)](#); [Schnitzer, Jay J](#); [Ignacio, Joselito](#); [Will Gaskins](#); [CHRISTOPHER ALLEN](#); [Kevin Montgomery](#); [Parker Jr, Gerald W](#); [Logan, Linda L](#); [LLogandakar](#)

**Subject:** RE: Red Dawn Raging Start March 4

Back in 2007, there was modeling for estimating the economic impact of a pandemic (unmitigated with no NPIs) and a mitigated pandemic plus the costs of NPIs. I can see if I can dig that up. The bottom line is that when you add in the cost associated with lives lost in an unmitigated pandemic, additional healthcare costs due to greater numbers of those who are ill and hospitalized, economic costs due to lost productivity due to increased illness, the NPI costs pale in comparison. I will see what additional info I can find to help you.

I'm listening to the arguments for not closing schools: (1) kids may not be important in disease transmission and when kids do become infected, their illness is mild; (2) closing schools is too disruptive, it will require parents to stay home from work to mind their children (and this absenteeism could adversely impact critical sectors such as healthcare); (3) large number of kids depend upon school meals and the closure of schools could have serious consequences; (4) by keeping kids home, they have more time to be around older adults in the household and potentially transmit disease to more vulnerable groups (the thinking is that it would be safer to keep them at school for at least 8 hrs of the day to decrease contact time with older adults in the household); and (5) kids will just mix again the community (that kids will "hang out at malls").

Just something to think about.

Schools are closing now for 1 week for spring break (many this week and some in the next week or two). This is happening at a critical point of the acceleration of this outbreak in the US. In the next couple of weeks our healthcare system is likely to be stressed. A good number of parents take time off over spring break to be with their kids (many times both parents for two parent households). Below is a graph of annual leave usage rates in VA. It is very consistent from year to year (looks a lot like an EKG tracing. You see a spike at Thanksgiving, another huge spike round Christmas/New Years, another small bump in the spring (spring break), and another broad bump (that looks like a T wave on an EKG) in the summer months when families tend to take vacations (because kids are out of school).

Given the argument of those opposed to closing schools, should we cancel spring break and keep the schools open so that parents don't have to stay home to mind their kids at this particularly vulnerable time when our healthcare system is about to be hammered? Should we also keep the schools open so that kids are kept away from older adults in the household for much of the day during this period of acceleration? That is pretty much the extension of illogical logic.

We close schools for 1 week for spring break and the world does not fall apart. The nutrition of children does not suffer. Do we think if schools closed for two weeks, that the world would come crashing down? Why not close for two weeks and then reassess (at least it gives us time). We can never get that time back.

Last thing. Many of you have kids, do any of them hang out at malls? In my neighborhood I don't even see kids outside—they are all inside texting, on Instagram, playing games with their friends online or whatever they do these days. Hardly see them riding their bikes around. I understand that "going to the mall" is code for kids re-congregating outside of school. Even if they do they are in a less socially dense environment and in much smaller groups. The whole school doesn't all go together anywhere, except to school.

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**From:** [Dr. Eva K Lee](#)

**Sent:** Tuesday, March 10, 2020 1:46 PM

**To:** [Carter Mecher](#)

**Cc:** [Gruber, David \(DSHS\)](#); [Dr. Eva Lee](#); [McDonald, Eric](#); [Borio, Luciana](#); [Brian Benson](#); [Lawler, James V](#); [Tracey McNamara](#); [Duane Caneva](#); [Tom Bossert](#); [Baric, Ralph S](#); [Mecher, Carter \(VA.GOV\)](#); [Hunt, Richard \(OS/ASPR/EMMO\)](#); [Richard Hatchett](#); [WILKINSON, THOMAS; M.D.](#); [David](#); [REDACTED] CDPH; [Gregory J. Walters, William \(STATE.GOV\)](#); [HAMILTON, CAMERON](#); [REDACTED] @gmail.com; [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [REDACTED] @utmb.edu; [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR/IO\)](#); [Hanfling, Dan](#); [Wade, David](#); [TARANTINO, DAVID A](#); [KAUSHIK, SANGEETA](#); [Lee, Scott \(OS/ASPR/EMMO\)](#); [Larry G](#); [Ryan Morhard](#); [Steven Jt\(ICHFSTDPH\)](#); [Adams, Jerome \(HHS/OASH\)](#); [Mansoura, Monique K.](#); [Fantinato, Jessica \(USDA.GOV\)](#); [DC](#); [REDACTED] @usuhs.edu; [Cordts, Jerome \(CTR\)](#); [Schnitzer, Jay J](#); [Ignacio, Joselito](#); [Will Gaskins](#); [CHRISTOPHER ALLEN](#); [Kevin Montgomery](#); [Parker Jr, Gerald W](#); [Logan, Linda L](#); [LLogandakar](#)

**Subject:** RE: Red Dawn Raging Start March 4

Europe gives me an extraordinary good example. Germany held out really well when it was infected from the one Chinese subject. But the few cases and very mild nature allowed healthcare to contain them in no time.

With Italy so well-connected to all its neighbours, it viral spread triggers a radial cascading effect that is another textbook example. We are just like Europe in terms of connectivity by air (and less by trains). We may be a little slower because of our normal distance from each other. But if you go to any university or any school, you will notice everyone packs together and intertwines so tightly.

Churches, synagogues, mosques, temples, we need to encourage the worshippers to do all these online. These sites have high percentage of vulnerable populations, we need to spread the words. I think the religious leaders can take the lead.

[REDACTED]  
[REDACTED]

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**From:** [Carter Mecher](#) [REDACTED]

**Sent:** Tuesday, March 10, 2020 12:52:56 PM

**To:** [Dr. Eva K Lee](#) [REDACTED]

**Cc:** [Gruber, David \(DSHS\)](#) <[\[REDACTED\]@dshs.texas.gov](mailto:[REDACTED]@dshs.texas.gov)>; [Dr. Eva Lee](#) [REDACTED]; [McDonald, Eric](#) [REDACTED] <[\[REDACTED\]@county.ca.gov](mailto:[REDACTED]@county.ca.gov)>; [Borio, Luciana](#) <[\[REDACTED\]](mailto:[REDACTED])>; [Brian Benson](#)

[REDACTED]@icloud.com>; Lawler, James V <[REDACTED]@unmc.edu>; Tracey McNamara <[REDACTED]@westernu.edu>; Duane Caneva <[REDACTED]a@hq.dhs.gov>; Tom Bossert <[REDACTED]@me.com>; Baric, Ralph S <[REDACTED]c@email.unc.edu>; Mecher, Carter (VA.GOV) <[REDACTED]@va.gov>; Hunt, Richard (OS/ASPR/EMMO) <[REDACTED]t@hhs.gov>; Richard Hatchett <[REDACTED]t@cepi.net>; WILKINSON, THOMAS <[REDACTED]N@hq.dhs.gov>; M.D. <[REDACTED]@mgh.harvard.edu>; David <[REDACTED]som.umaryland.edu>; Charity A@CDPH <[REDACTED]@cdph.ca.gov>; Gregory J <[REDACTED]ov>; Walters, William (STATE.GOV) <[REDACTED]2@state.gov>; HAMILTON, CAMERON <[REDACTED]@hq.dhs.gov>; <[REDACTED]>; Dodgen, Daniel (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; DeBord, Kristin (OS/ASPR/SPPR) <Kristin.DeBord@hhs.gov>; Phillips, Sally (OS/ASPR/SPPR) <[REDACTED]s@hhs.gov>; Matthew J CIV USARMY (USA) <[REDACTED]civ@mail.mil>; Lisa Koonin <[REDACTED]n1@gmail.com>; HARVEY, MELISSA <[REDACTED]v@hq.dhs.gov>; WOLFE, HERBERT <[REDACTED]FE@hq.dhs.gov>; Eastman, Alexander <[REDACTED]>; EVANS, MARIEFRED <[REDACTED]@associates.hq.dhs.gov>; <[REDACTED]@b.edu> <[REDACTED]c@utmb.edu>; Johnson, Robert (OS/ASPR/BARDA) <[REDACTED]nson@hhs.gov>; Yeskey, Kevin <[REDACTED]ev@hhs.gov>; Disbrow, Gary (OS/ASPR/BARDA) <[REDACTED]w@hhs.gov>; Redd, John (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Hassell, David (Chris) (OS/ASPR/IO) <[REDACTED]@hhs.gov>; Hamel, Joseph (OS/ASPR/IO) <[REDACTED]l@hhs.gov>; Hanfling, Dan <[REDACTED]@lgt.org>; Wade, David <[REDACTED]@hq.dhs.gov>; TARANTINO, DAVID A <[REDACTED]o@cbp.dhs.gov>; KAUSHIK, SANGEETA <[REDACTED]@hq.dhs.gov>; Lee, Scott (OS/ASPR/EMMO) <[REDACTED]@hhs.gov>; Larry G <[REDACTED]@state.gov>; Ryan Morhard <[REDACTED]@weforum.org>; Steven Jt(tCHFStDPH) <[REDACTED]k@ky.gov>; Adams, Jerome (HHS/OASH) <[REDACTED]@hhs.gov>; Mansoura, Monique K. <[REDACTED]mitre.org>; Fantinato, Jessica (USDA.GOV) <[REDACTED]o@usda.gov>; DC <[REDACTED]y@usda.gov>; <[REDACTED]u@usuhs.edu> <[REDACTED]@usuhs.edu>; Cordts, Jerome (CTR) <[REDACTED]s@associates.hq.dhs.gov>; Schnitzer, Jay J <[REDACTED]er@mitre.org>; Ignacio, Joselito <[REDACTED]@fema.dhs.gov>; Will Gaskins <[REDACTED]@efila.com>; CHRISTOPHER ALLEN <[REDACTED]10@msn.com>; Kevin Montgomery <[REDACTED]@collaborate.org>; Parker Jr, Gerald W <[REDACTED]r@cvm.tamu.edu>; Logan, Linda L <[REDACTED]@cvm.tamu.edu>; LLogandakar <[REDACTED]mail.com>  
Subject: RE: Red Dawn Raging Start March 4

I see that NJ just announced its first death (man in his 60s). Don't know the details but if this is not a travel related case, they ought to be ready to implement NPIs.

NY Governor announced need for school closures in New Rochelle (NY is now up to 173 cases with 31 new cases announced today). The superintendent does not agree.

<https://www.msn.com/en-us/news/us/cuomo-says-new-rochelle-schools-may-close-superintendent-disagrees/ar-BB10X67F>

From: [Gruber, David \(DSHS\)](#)

Sent: Tuesday, March 10, 2020 2:03 PM

To: [Carter Mecher](#); [Dr. Eva K Lee](#)

Cc: [Dr. Eva Lee](#); [McDonald, Eric](#); [Borio, Luclana](#); [Brian Benson](#); [Lawler, James V](#); [Tracey McNamara](#); [Duane Caneva](#); [Tom Bossert](#); [Baric, Ralph S](#); [Mecher, Carter \(VA.GOV\)](#); [Hunt, Richard \(OS/ASPR/EMMO\)](#); [Richard Hatchett](#); [WILKINSON, THOMAS](#); [M.D.](#); [David](#); [CDPH](#); [Gregory J](#); [Walters, William \(STATE.GOV\)](#); [HAMILTON, CAMERON](#); [m](#); [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#) <[REDACTED]@utmb.edu>; [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR/IO\)](#); [Hanfling, Dan](#); [Wade, David](#); [TARANTINO, DAVID A](#); [KAUSHIK, SANGEETA](#); [Lee, Scott \(OS/ASPR/EMMO\)](#); [Larry G](#); [Rvan Morhard](#); [Steven Jt\(tCHFStDPH\)](#); [Adams, Jerome \(HHS/OASH\)](#); [Mansoura, Monique K.](#); [Fantinato, Jessica \(USDA.GOV\)](#); DC; <[REDACTED]@usuhs.edu>; [Cordts, Jerome \(CTR\)](#); [Schnitzer, Jay J](#); [Ignacio, Joselito](#); [Will Gaskins](#); [CHRISTOPHER ALLEN](#); [Kevin Montgomery](#); [Parker Jr, Gerald W](#); [Logan, Linda L](#); [LLogandakar](#)  
Subject: Re: Red Dawn Raging Start March 4

Another strategic approach to looking at the situation.

Applying the, "Adano Principles" to manage an adversity such as COVID19:

1. Recognition and acknowledgement of the existence or potential of an adversity
2. Identifying the specific characteristics of the adverse environment
3. Applying a network centric/systems approach to countering the adversity to include development of process and associated metrics that define success points and end-state

4. Incorporating continuous analysis and quality improvement to maintain progress and prevent reversion from success
5. Recognition of when the adversity is neutralized or eliminated to allow for return to baseline operations

---

From: [Carter Mecher](#)

Sent: Tuesday, March 10, 2020 3:01 PM

To: [Gruber,David \(DSHS\)](#); [Dr. Eva K Lee](#)

Cc: [Dr. Eva Lee](#); [McDonald, Eric](#); [Borio, Luciana](#); [Brian Benson](#); [Lawler, James V](#); [Tracey McNamara](#); [Duane Caneva](#); [Tom Bossert](#); [Baric, Ralph S](#); [Mecher, Carter \(VA.GOV\)](#); [Hunt, Richard \(OS/ASPR/EMMO\)](#); [Richard Hatchett](#); [WILKINSON, THOMAS](#); [M.D.](#); [@CDPH](#); [Gregory J](#); [Walters, William \(STATE.GOV\)](#); [HAMILTON, CAMERON](#); [.com](#); [Dodgen, Daniel \(OS/ASPR/SPPR\)](#); [DeBord, Kristin \(OS/ASPR/SPPR\)](#); [Phillips, Sally \(OS/ASPR/SPPR\)](#); [Matthew J CIV USARMY \(USA\)](#); [Lisa Koonin](#); [HARVEY, MELISSA](#); [WOLFE, HERBERT](#); [Eastman, Alexander](#); [EVANS, MARIEFRED](#); [@utmb.edu](#); [Johnson, Robert \(OS/ASPR/BARDA\)](#); [Yeskey, Kevin](#); [Disbrow, Gary \(OS/ASPR/BARDA\)](#); [Redd, John \(OS/ASPR/SPPR\)](#); [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#); [Hamel, Joseph \(OS/ASPR/IO\)](#); [Hanfling, Dan](#); [Wade, David](#); [TARANTINO, DAVID A](#); [KAUSHIK, SANGEETA](#); [Lee, Scott \(OS/ASPR/EMMO\)](#); [Larry G](#); [Ryan Morhard](#); [Steven Jt\(ICHFSTDPH\)](#); [Adams, Jerome \(HHS/OASH\)](#); [Mansoura, Monique K](#); [Fantinato, Jessica \(USDA.GOV\)](#); [DC](#); [@usuhs.edu](#); [Cordts, Jerome \(CTR\)](#); [Schnitzer, Jay J](#); [Ignacio, Joselito](#); [Will Gaskins](#); [CHRISTOPHER ALLEN](#); [Kevin Montgomery](#); [Parker Jr, Gerald W](#); [Logan, Linda L](#); [LLogandakar](#)

Subject: RE: Red Dawn Raging Start March 4

Italy is about where Hubel was on Feb 2. Feb 2 was day 62 on the graph below. Imagine that. The question is whether Italy retraces Hubel or Wuhan? That means we are at about day 50 or so.

<B5B96EDAA5B54CFAAAD14BD37A08490C.png>

From: [@charter.net](#)

Date: Wed, Mar 11, 2020 at 12:15 PM

Subject: Re: Red Dawn Raging Start March 4

To: [@net](#)

Cc: [Richard Hatchett](#) <[@cepi.net](#)>, [Gruber,David \(DSHS\)](#) <[r@dshs.texas.gov](#)>, [Dr. Eva K Lee](#) <[h@pm.me](#)>, [Dr. Eva Lee](#) <[lee64@gmail.com](#)>, [McDonald, Eric](#) <[d@sdcounty.ca.gov](#)>, [Borio, Luciana](#) <[@igt.org](#)>, [Brian Benson](#) <[n@icloud.com](#)>, [Lawler, James V](#) <[@unmc.edu](#)>, [Tracey McNamara](#) <[@westernu.edu](#)>, [Duane Caneva](#) <[va@hq.dhs.gov](#)>, [Tom Bossert](#) <[rt@me.com](#)>, [Baric, Ralph S](#) <[@email.unc.edu](#)>, [Mecher, Carter \(VA.GOV\)](#) <[mecher@va.gov](#)>, [Hunt, Richard \(OS/ASPR/EMMO\)](#) <[t@hhs.gov](#)>, [WILKINSON, THOMAS](#) <[@hq.dhs.gov](#)>, [M.D.](#) <[@mgh.harvard.edu](#)>, [David](#) <[zi@som.umaryland.edu](#)>, [CDPH](#) <[n@cdph.ca.gov](#)>, [Gregory J](#) <[@state.gov](#)>, [Walters, William \(STATE.GOV\)](#) <[@state.gov](#)>, [HAMILTON, CAMERON](#) <[@hq.dhs.gov](#)>, [@gmail.com](#) <[@gmail.com](#)>, [Dodgen, Daniel \(OS/ASPR/SPPR\)](#) <[@hhs.gov](#)>, [DeBord, Kristin \(OS/ASPR/SPPR\)](#) <[@hhs.gov](#)>, [Phillips, Sally \(OS/ASPR/SPPR\)](#) <[@hhs.gov](#)>, [Matthew J CIV USARMY \(USA\)](#) <[n@civil@mail.mil](#)>, [Lisa Koonin](#) <[1@gmail.com](#)>, [HARVEY, MELISSA](#) <[vey@hq.dhs.gov](#)>, [WOLFE, HERBERT](#) <[FE@hq.dhs.gov](#)>, [Eastman, Alexander](#) <[@hq.dhs.gov](#)>, [EVANS, MARIEFRED](#) <[@associates.hq.dhs.gov](#)>, [uc@utmb.edu](#) <[uc@utmb.edu](#)>, [Johnson, Robert \(OS/ASPR/BARDA\)](#) <[n@hhs.gov](#)>, [Yeskey, Kevin](#) <[ke@hhs.gov](#)>, [Disbrow, Gary \(OS/ASPR/BARDA\)](#) <[@hhs.gov](#)>, [Redd, John \(OS/ASPR/SPPR\)](#) <[dd@hhs.gov](#)>, [Hassell, David \(Chris\) \(OS/ASPR/IO\)](#) <[@hhs.gov](#)>, [Hamel, Joseph \(OS/ASPR/IO\)](#) <[el@hhs.gov](#)>, [Hanfling, Dan](#) <[g@igt.org](#)>, [Wade, David](#) <[de@hq.dhs.gov](#)>, [TARANTINO, DAVID A](#) <[o@cbp.dhs.gov](#)>, [KAUSHIK, SANGEETA](#) <[s@kaushik@hq.dhs.gov](#)>, [Lee, Scott \(OS/ASPR/EMMO\)](#) <[e@hhs.gov](#)>, [Larry G](#) <[LG@state.gov](#)>, [Ryan Morhard](#) <[rd@weforum.org](#)>, [Steven Jt\(ICHFSTDPH\)](#) <[k@ky.gov](#)>, [Adams, Jerome \(HHS/OASH\)](#) <[ams@hhs.gov](#)>, [Mansoura, Monique K.](#) <[ra@mitre.org](#)>, [Fantinato, Jessica \(USDA.GOV\)](#) <[nato@usda.gov](#)>, [DC](#) <[olbv@usda.gov](#)>, [u@usuhs.edu](#) <[au@usuhs.edu](#)>, [Cordts, Jerome \(CTR\)](#) <[dts@associates.hq.dhs.gov](#)>, [Schnitzer, Jay J](#) <[er@mitre.org](#)>, [Ignacio, Joselito](#) <[acio@fema.dhs.gov](#)>, [Will Gaskins](#) <[ns@efila.com](#)>, [CHRISTOPHER ALLEN](#) <[\\_10@msn.com](#)>, [Kevin Montgomery](#) <[n@collaborate.org](#)>, [Parker Jr, Gerald W](#) <[@cvm.tamu.edu](#)>, [Logan, Linda L](#) <[n@cvm.tamu.edu](#)>, [LLogandakar](#) <[r@gmail.com](#)>

I notice a lot of HHS email addresses on this email and group and you all have been quiet for most of the discussion over the past several weeks. I would urge you to read the article I just sent out and upbraid your boss. This is the key message that they need to hear and they have little time left to act.

1. Don't misunderstand what happened in China and what has happened in Hong Kong and Singapore. COVID doesn't fade away on its own. The reason is reMore data for forecasting report: <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>
2. South Korea has done an extraordinary effort to test its citizens (more than 222,000 tested to date). South Korea has a population of 51M. An equivalent effort in the US would equal 1.4 M tested. How many have we tested in the US to date?
3. Italy is really struggling right now and time will tell if their extraordinary efforts they now are employing will mitigate the outbreak. A lot of eyes are watching and hoping they are successful.
4. The US (along with most of Europe) is less than 2 weeks behind Italy. We should be learning from the experiences of China, Hong Kong, Singapore, South Korea and Italy. If we fail to learn from them, we do so at our peril. History will long remember what we do and what we don't do at this critical moment. It is the time to act, and it is past the time to remain silent. This outbreak isn't going to magically disappear on its own. If that is the conclusion some are taking, they are misinformed and dead wrong.

---

**From:** Tom Bossert [REDACTED]@me.com>

**Sent:** Wednesday, March 11, 2020 23:05

**To:** Carter Mecher

**Cc:** Dr. Eva K Lee; Richard Hatchett; Gruber, David (DSHS); Dr. Eva Lee; McDonald, Eric; Borio, Luciana; Brian Benson; Lawler, James V; Tracey McNamara; Duane Caneva; Baric, Ralph S; Mecher, Carter ([VA.GOV](mailto:VA.GOV)); Hunt, Richard (OS/ASPR/EMMO); WILKINSON, THOMAS; M.D.; David; Charity A@CDPH; Gregory J; Walters, William ([STATE.GOV](mailto:STATE.GOV)); HAMILTON, CAMERON; [REDACTED]@gmail.com; Dodgen, Daniel (OS/ASPR/SPPR); DeBord, Kristin (OS/ASPR/SPPR); Phillips, Sally (OS/ASPR/SPPR); Matthew J CIV USARMY (USA); Lisa Koonin; HARVEY, MELISSA; WOLFE, HERBERT; Eastman, Alexander; EVANS, [REDACTED]@utmb.edu; Johnson, Robert (OS/ASPR/BARDA); Yeskey, Kevin; Disbrow, Gary (OS/ASPR/BARDA); Redd, John (OS/ASPR/SPPR); Hassell, David (Chris) (OS/ASPR/IO); Hamel, Joseph (OS/ASPR/IO); Hanfling, Dan; Wade, David; TARANTINO, DAVID A; KAUSHIK, SANGEETA; Lee, Scott (OS/ASPR/EMMO); Larry G; Ryan Morhard; Steven Jt(tCHFSIDPH); Adams, Jerome (HHS/OASH); Mansoura, Monique K.; Fantinato, Jessica ([USDA.GOV](mailto:USDA.GOV)); DC; [REDACTED]@usuhs.edu; Cordts, Jerome (CTR); Schnitzer, Jay J; Ignacio, Joselito; Will Gaskins; CHRISTOPHER ALLEN; Kevin Montgomery; Parker Jr, Gerald W; Logan, Linda L; LLogandakar

**Subject:** Re: Red Dawn Raging Start March 4

Can anyone justify the European travel restriction, scientifically? Seriously, is there any benefit? I don't see it, but I'm hoping there is something I don't know.

-Tom

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**From:** Parker Jr, Gerald W [REDACTED].lamu.edu>

**Sent:** Wednesday, March 11, 2020 23:15

I do not see it. No use now. I saw it for China. But not now. We should focus on targeted, layered community mitigation measures. Maybe we could use a hurricane analogy that many understand. COVID19 is like a storm coming to our communities, but rather than evacuation or shelter in place orders, the analogous move is community mitigation. At this stage they must be aggressive because we do not have the time luxury of a hurricane in the Atlantic.

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On Thursday, March 12, 2020 12:09 AM, Lawler, James V <[REDACTED]@unmc.edu> wrote:

Fuck no. This is the absolute wrong move.

James Lawler, MD, MPH, FIDSA  
Director, International Programs & Innovation  
Global Center for Health Security, and  
Associate Professor of Medicine  
Division of Infectious Diseases  
University of Nebraska Medical Center

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From: Parker Jr, Gerald W

Sent: Thursday, March 12, 2020 12:16 AM

Not to worry..... this is a large group of friends cleared to car pool confidential level....

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On Thursday, March 12, 2020 12:20 AM, Richard Hatchett <[REDACTED]@cepi.net> wrote:

No justification that I can see, unless we want to put up similar geographic cordons in the US - there is plenty of disease already in the US to cause spread domestically.

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On Thursday, March 12, 2020 12:26 AM, Richard Hatchett <[REDACTED]@cepi.net> wrote:

Gerry - I thought yesterday about the incoming hurricane analogy as well and think it is a good one. This is a Cat 5 threat to safety that is coming too Jr. communities and fast, and we can either prepare and do the epidemic equivalent of evacuate to safer ground (i.e., TLC/CMG) or take our chances. It's a lot harder to evacuate when the winds are above 100 miles an hour on their way up to 190 at the eyeball.

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On Thursday, March 12, 2020 12:28 AM, Dr. Eva K Lee <[REDACTED]> wrote:

I was hoping he would mention about schools, government and private sector tele-work, community gatherings, things that really need everyone to actively engage in. And also extra resources for healthcare providers. We really need to protect providers who care for covid-19 patients. We must protect them because they are invaluable resources and we don't have enough. They are not like equipment that the President could ask a manufacturer to produce more.

Here in Georgal, students are partitioning the universities to do lectures online, but universities are not agreeing so far. I am sure they would listen to the President. But now they will wait until a teacher has covid-19. Spring break is a dangerous time, as we can see from Italy.

I wonder, closing all flights from Europe would mean that many Americans will be stuck in Europe. Or all those who want to come home will race and get a ticket to fly back on Friday before closing. And they will be quarantine for 14 days.

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On Thursday, March 12, 2020 12:38 AM, Carter Mecher <[REDACTED]> wrote:

There is no value to these travel restrictions. A waste of time and energy. The lesson from Mann Gulch was to drop those things that are not essential. That lesson was not heeded. I wouldn't waste a moment of time on travel restrictions or travel screening. We have nearly as much disease here in the US as the countries in Europe.

Wrt community mitigation, I think we ran out of time for Seattle. But there are other cities and communities where we still can make a difference. I don't understand why California and NYC are not acting more aggressively. Time to focus on other parts of the country where mitigation measures might still work and where governors, mayors and public health officials are more receptive to doing what works. It feels like a replay of 1918. Some state and local leaders will make poor decisions and unfortunately the Americans who live in those communities are going to pay dearly for the choices being made by their leaders. It is a shame those lessons were not learned.

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**On Thursday, March 12, 2020 12:56 AM, Dr. Eva K Lee [REDACTED] > wrote:**

Yes, aggressive community mitigation will work in some states, and some we are losing the battleground. I am still very confused by testing ability. What exactly is our level of throughput now? 10,000 a day? Or 100,000 a day? When I talked to local today, they had no idea and their requests for test are still delayed. Who is in charge of testing resource and statistics? Maybe there's a leader who is in charge of all the vendors, and he/she can tell us the throughput statistics? Now, we can strategize testing, or perhaps it is too widespread across the US and we just have to test a lot, like S. Korea. Some states are still better than others.

I know I always talk about "1 case" or "1% infection". In mathematics, we always look for the smallest things that are of great significance. And then we look for largest things that we can solve. I think "1" is a very good number yet a very dangerous number that requires hard decisions when it comes to infectious disease. I understand having 1 as a trigger for action is a very hard decision. But in infectious disease,  $1=1+\text{many unknowns}$ , hence it is rather big already. I really learn a lot from all of you. I found that you are all very mathematical :). Now I will go back to my equations again to see which cities are still in good shape to contain successfully.

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**On Thursday, March 12, 2020 7:08 AM, Tom Bossert [REDACTED]@me.com> wrote:**

We are making great progress. My message today on US TV will be as follows:

- The biggest misunderstanding about #coronavirus interventions is they are an à la carte menu of options to be selectively implemented. This is dead wrong. They ALL must be implemented to achieve a layered effect. Removing any one can defeat all. For instance, close schools AND cancel events.

- There's little value to European travel restrictions. Poor use of time & energy. Earlier, yes. Now, travel restrictions and screening are less useful. We have nearly as much disease here in the US as the countries in Europe. We MUST focus on layered community mitigation measures-Now!

-Tom

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**On Thursday, March 12, 2020 7:34 AM, Lawler, James V [REDACTED]@unmc.edu> wrote:**

Like it Tom. The message is : let's be Singapore and Hong Kong, not Italy. And given the current state of our public health infrastructure we need to implement all NPI in affected communities

James Lawler, MD, MPH, FIDSA  
Director, International Programs & Innovation  
Global Center for Health Security, and  
Associate Professor of Medicine  
Division of Infectious Diseases



University of Nebraska Medical Center

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On Thu, Mar 12, 2020 at 1:14 PM Hunt, Richard (OS/ASPR/EMMO) <[REDACTED]@hhs.gov> wrote:

Reflecting on this from Tom, "They ALL must be implemented to achieve a layered effect."

As my 24 y/o told me, "the nation needs to go to war against this virus."

Rick

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On Thursday, March 12, 2020 1:16 PM, Dr. Eva Lee <[REDACTED]@gmail.com> wrote:

Indeed, systems inter-dependencies give you the holistic benefits. You can see isolated actions are not sufficient, because the brake has to be very big!!! We are too late, so we have no choice but to roll them all out.

---

From: "Lawler, James V" <[REDACTED]@u>

Date: Thursday, March 12, 2020 at 1:28 PM

To: Carter Mecher <[REDACTED]@t>, "Dr. Eva K Lee" <[REDACTED]@>  
[REDACTED]

We are making every misstep leaders initially made in table-tops at the outset of pandemic planning in 2006. We had systematically addressed all of these and had a plan that would work – and has worked in Hong Kong/Singapore. We have thrown 15 years of institutional learning out the window and are making decisions based on intuition.

Pilots can tell you what happens when a crew makes decisions based on intuition rather than what their instruments are telling them.

And we continue to push the stick forward...

James Lawler, MD, MPH, FIDSA  
[REDACTED]

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From: Eva Lee <[REDACTED]@om>

Thursday, March 12, 2020 1:28 PM

To: Lawler, James V <[REDACTED]@u>

Yes, very very sad – it's all the planning and we must execute and we can't execute!

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From: Carter Mecher <[REDACTED]@t>

Thursday, March 12, 2020 1:28 PM

To: Lawler, James <[REDACTED]@u>, Dr. Eva K Lee <[REDACTED]@>

Plan continuation bias. Right into the ground.

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On Thursday, March 12, 2020 5:46 PM, Dr. Eva K Lee <[REDACTED]@> wrote:

Great! If we can only make the president, or some of these leaders, to say something at news conferences – so that every infected State could respond in a timely manner, that would truly work. We are all connected, so we need to synchronize, that way, there's no room for the virus to wriggle.

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From: Carter Mecher <[REDACTED]>

Date: Thursday, March 12, 2020 at 8:08 PM

To: "Dr. Eva K Lee" [REDACTED]

Cc: "Lawler, James V" [REDACTED] Tom Bossert...

This coming Saturday will mark two weeks since the first death in the US. On Saturday (likely by then we will have ~2,500 cases and 75 deaths given the current trajectory), ask yourself, what do you wish we would have done 2 weeks earlier on Feb 29? I don't think shutting down travel with Europe would have made the list. If you can answer that question truthfully now, then what are we waiting for?

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On Mar 13, 2020, at 6:04 PM, Parker Jr, Gerald W <[REDACTED]> wrote:

Carter and others - article just published in Politico Pro. CDC suggests school closures will not have much impact. There is a discussion of short term versus longer term... Is this misleading? What are your thoughts?

<pastedImage.png>

From: Tom Bossert <[REDACTED]>

Sent: Friday, March 13, 2020 6:07:00 PM

That article snippet seems misleading. I wonder if the CDC guidance it's based on is equally unclear.

-----Tom

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From [REDACTED] charter.net

To: "[REDACTED] charter.net"

Cc: "Dr. Eva Lee", James V", "Dr. Eva K Lee", "CHRISTOPHER ALLEN", "[REDACTED]@gmail.com", "Tom Bossert", Gerald W", "Richard Hatchett", David (DSHS)", Eric", Luciana", "Brian Benson", "Tracey McNamara", "Duane Caneva", Ralph S", Carter (VA.GOV)", Richard (OS/ASPR/EMMO)", THOMAS", "M.D.", "[REDACTED] CDPH", "Gregory J", William (STATE.GOV)", CAMERON", [REDACTED] mail.com", tDanielt(OS/ASPR/SPPR)", Kristin (OS/ASPR/SPPR)", Sally (OS/ASPR/SPPR)", "Matthew J CIV USARMY (USA)", "Lisa Koonin", MELISSA", HERBERT", Alexander", [REDACTED].edu", Robert (OS/ASPR/BARDA)", Kevin", Gary (OS/ASPR/BARDA)", John (OS/ASPR/SPPR)", David (Chris) (OS/ASPR/IO)", Joseph (OS/ASPR/IO)", Dan", David", DAVID A", SANGEETA", Scott (OS/ASPR/EMMO)", "Larry G", "Ryan Morhard", "Steven Jt(tCHFStDPH)", Jerome (HHS/OASH)", Monique K.", Jessica (USDA.GOV)", "DC", [REDACTED]hs.edu", Jerome (CTR)", Jay J", Joselito", "Will Gaskins", "Kevin Montgomery", Linda L", "LLogandakar"

Sent: Friday March 13 2020 7:09:26AM

Subject: Re: Red Dawn Raging Start March 4

This is what leadership looks like.

"We whole-heartedly endorse the bold and decisive decisions of our Governor here today. This is not about a healthcare system; this is about all of us. We can all fight back against this virus, and in fact, we need to. The health care system can treat those who are ill; and across all of Maryland, we're readying ourselves in case we need to. However, by putting aggressive steps in place that the Governor just outlined with regard to social distancing, closures of schools, teleworking – these are steps we can all adopt...the earlier we do this, the more layers we put in place, the less this virus can be transmitted. That's the key." Dr. Marcozzi, at a press conference hosted by Governor Larry Hogan announcing major steps in the state of Maryland's COVID-19 response. Those steps included

- o Maryland Emergency Management Agency increase activation to highest level
- o Activate national guard

- o All state government is raised to elevated level 2 - all non-essential employees who can telework required to do so
- o Public access to state buildings restricted
- o No gatherings of more than 250+ people (including sports and religious gatherings)
- o All senior centers closed
- o All state and local government buildings with more than 250+ people must follow social distancing
- o Close cruise ship terminal in Baltimore
- o Extension of expiration dates on permits including drivers licenses, license plates, professional licenses, until 30 days after end of state of emergency
- o All hospitals adopt new visitor policies to stop spread of COVID-19
- o All prisons will suspend visits
- o All non-essential functions of government are now managed by Lt Gov Rutherford so Gov Hogan can focus solely on COVID-19
- o Monday, March 16 through Friday, March 27 - all public schools closed
- o Measures taken to provide child care for essential workers/first responders

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 On Friday, March 13, 2020 6:30 PM, Lawler, James V <jlawler@va.gov> wrote:

CDC is really missing the mark here. By the time you have "substantial community transmission" it is too late. It's like ignoring the smoke detector and waiting until your entire house is on fire to call the fire dept. Plus, how are you supposed to know when you have community transmission when they haven't been able to provide a diagnostic assay that can be used widely and at high volume?

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**From:** Carter Mecher [REDACTED]

**Sent:** Friday, March 13, 2020 7:13:19 PM

**To:** Dr. Eva K Lee; [REDACTED]

[REDACTED] Lawler, James V; Parker Jr, Gerald W; Caneva, Duane; Tom Bossert; Hanfling, Dan; Gruber, David (DSHS); Dr. Eva Lee; CHRISTOPHER ALLEN; [REDACTED] Hatchett; McDonald, Eric; Borio, Luciana; Brian Benson; Tracey McNamara; Baric, Ralph S; Mecher, Carter ([VA.GOV](http://VA.GOV)); Hunt, Richard (OS/ASPR/EMMO); WILKINSON, THOMAS; M.D.; David; Charity A@CDPH; Gregory J; Walters, William ([STATE.GOV](http://STATE.GOV)); HAMILTON, CAMERON; Dodgen, Daniel (OS/ASPR/SPPR); DeBord, Kristin (OS/ASPR/SPPR); Phillips, Sally (OS/ASPR/SPPR); Matthew J CIV USARMY (USA); Lisa Koonin; HARVEY, MELISSA [REDACTED].edu; Johnson, Robert (OS/ASPR/BARDA); Yeskey, Kevin; Disbrow, Gary (OS/ASPR/BARDA); Redd, John (OS/ASPR/SPPR); Hassell, David (Chris) (OS/ASPR/IO); Hamel, Joseph (OS/ASPR/IO); Wade, David; TARANTINO, DAVID A; KAUSHIK, SANGEETA; Lee, Scott (OS/ASPR/EMMO); Larry G; Ryan Morhard; Steven Jt(tCHFStDPH); Adams, Jerome (HHS/OASH); Mansoura, Monique K.; Fantinato, Jessica ([USDA.GOV](http://USDA.GOV)); DC [REDACTED].edu; Cordts, Jerome (CTR); Schnitzer, Jay J; Ignacio, Joselito; Will Gaskins; Kevin Montgomery; Logan, Linda L; LLogandakar [REDACTED] [takeda.com](http://takeda.com)

**Subject:** RE: Red Dawn Raging Start March 4

I don't think the intent is to close schools for only 2 weeks. Longer term school closure will be necessary.

What CDC is not accounting for is that we have been flying blind for weeks with essentially no surveillance. This was due to the delays associated with the diagnostic test developed by CDC and the very narrow CDC definition of a PUI that really hampered our ability to even identify community transmission. We have raised this concern repeatedly. Our general sense was that community transmission was already occurring several weeks ago (and we stated so at the time over email and on conference calls), but nobody could prove it because CDC would only perform confirmatory testing on cases meeting the PUI definition. And the PUI criteria by definition excluded any potential case of community transmission. It was very circular. CDC placed state and local public health in a bit of a Catch 22.

So after a long delay we finally have the ability to test more broadly. If you recall, CDC only expanded the PUI incrementally at first to include severely ill patients with no travel hx or link to a known case. It was only later that testing was opened up more broadly. Can a model incorporate that amount of confusion into the initial conditions?

Once testing began in earnest, the numbers of cases exploded. It was like popcorn (also as we predicted). Cases were appearing everywhere. I would challenge anyone to provide an accurate estimate of prevalence in the US. I'd be interested in how certain they would be of that estimate +/-?

The difference between models and real life is that with models we can set the parameters. How would they model what happened in Italy?

The difference between models and real life is that with models we can set the parameters as if they are known. In real life, these parameters are as clear as mud.

To check the accuracy of the model for predicting real life, I would ask that they run Italy for us to show us how well handwashing and isolation would work. How would they model what happened in Italy? On Feb 20, Italy had 3 cases and no deaths. On that day the modelers and the guidance CDC just released would not advise to take any aggressive action. On Feb 21, they had 1 death and 20 cases with 6 patients in the ICU. This is a country of 51 M. What would CDC guidance have advised Italy to do on Feb 21? On Feb 22, Italy had a cumulative total of 2 deaths, 63 cases with 7 patients in the ICU. How would CDC have described what was going on in Italy? Would this meet their definition of widespread community transmission? I doubt it. CDC and the CDC modeler would have recommended sitting tight. Italy responded extremely aggressively. This is what happened since. I think the public health officials and political leaders in Italy acted very quickly and very aggressively—much more quickly and aggressively than what we did when the outbreak began in Seattle two weeks ago. I would ask the modeler and CDC when they would have pulled the trigger in Italy. We have the actual data. The modeler can run his models and can point out what he/she would do and when it should be done. I suspect early on in Italy we would have heard exactly what we are hearing now.

I don't pretend to have perfect knowledge of the extent of disease in the US. There is a lot of uncertainty. But given this uncertainty, isn't the safest approach to close the schools until we know more? We can always reopen the schools. If we delay our response and the outbreak takes off like Italy, we will have made a terrible gamble with the lives of Americans, over what, an extend spring break? Which side of the bet would you take if you were the responsible official (mayor, governor, public health official)?

Again, nobody is advocating a short closure of schools. I don't think it would be prudent to play it cute and try to play chicken with this virus and hold out to the last moment to pull the trigger. It is like thinking you can time the market. You don't do that when thousands of lives potentially hang in the balance. That is what I would tell my mayor, or my governor, or my President.

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From: "Parker Jr, Gerald W" <[REDACTED]@cvm.tamu.edu>

Date: Saturday, March 14, 2020 at 1:16 AM

CDC school closure guidance

<https://www.cdc.gov/coronavirus/2019-ncov/downloads/considerations-for-school-closure.pdf>

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**From:** Carter Mecher

**Sent:** Saturday, March 14, 2020 7:58 AM

**To:** Parker Jr, Gerald W; Dr. Eva K Lee; [REDACTED]@gmail.com

**Cc:** Lawler, James V; Caneva, Duane; Tom Bossert; Hanfling, Dan; Gruber, David (DSHS); Dr. Eva Lee; CHRISTOPHER ALLEN; [REDACTED]@gmail.com; Richard Hatchett; McDonald, Eric; Borio, Luciana; Brian Benson; Tracey McNamara; Baric, Ralph S; Mecher, Carter (VA.GOV); Hunt, Richard (OS/ASPR/EMMO); WILKINSON, THOMAS; M.D.; [REDACTED]; Gregory J; Walters, William (STATE.GOV); HAMILTON, CAMERON; Dodgen, Daniel (OS/ASPR/SPPR); DeBord, Kristin (OS/ASPR/SPPR); Phillips, Sally (OS/ASPR/SPPR); Matthew J CIV USARMY (USA); Lisa Koonin; HARVEY, MELISSA; WOLFE, HERBERT; Eastman, Alexander; EVANS, MARIEFRED; [REDACTED]b.edu; Johnson, Robert (OS/ASPR/BARDA); Yeskey, Kevin; Disbrow, Gary (OS/ASPR/BARDA); Redd, John (OS/ASPR/SPPR); Hassell, David (Chris) (OS/ASPR/IO); Hamel, Joseph (OS/ASPR/IO); Wade, David; TARANTINO, DAVID A; KAUSHIK, SANGEETA; Lee, Scott (OS/ASPR/EMMO); Larry G; Ryan Morhard; Steven JI(ICHFSIDPH); Adams, Jerome (HHS/OASH); Mansoura, Monique K.; Fantinato, Jessica (USDA.GOV); DC; [REDACTED]du; Cordts, Jerome (CTR); Schnitzer, Jay J; Ignacio, Joselito; Will Gaskins; Kevin Montgomery; Logan, Linda L; LLogandakar; [REDACTED]akeda.com

**Subject:** RE: Red Dawn Raging Start March 4

Most of you have been involved in table top exercises of an outbreak. In those exercises they commonly show a map of the US with the number of cases noted and extent of spread. At various points in the scenario, a facilitator will ask the participants what actions should be taken. I took the graphic of the US map from the NYTimes and created a PowerPoint movie from Mar 4 (the first day that the NYTimes presented that map) through today.

In this scenario, the facilitator pauses now on March 14. At this point the virus has already spread to more than 120 countries. The virus is highly transmissible with an  $R_0$  of about 2.5 and has a CFR of 0.5%-1.0%. The elderly and those with chronic medical conditions are at greatest risk. The response has been hindered by serious delays in the ability to confirm disease with diagnostic testing. This testing capacity is limited. Case ascertainment is limited due to the testing constraints. It is believed that over the next two weeks capacity for testing should improve. However, the demand for testing is anticipated to increase exponentially over the next 2 weeks. A few areas in the US have been particularly hard hit—Washington and California. The current US case count is 2,654 with 49 deaths. What actions would you take on March 14?

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-----On Saturday, March 14, 2020  
12:43 PM, Dr. Eva K Lee [REDACTED]

This is so very sad, yes, everything we talked about and everything we have anticipated. Yes, you can see from the curves in the graphs when they have the first confirmed death, they're **at least 2 weeks behind**. I don't understand the screening at the airport, not even a little advice on self-quarantine coming in from any countries. Yes, children will die too if they have no support in the hospitals. There are many with co-existing conditions. Beds are critical. That is all I am counting (when we have one bed, we need everything that goes with it in the support). Healthcare workers and anyone in service to assist this covid-19 operations must stay healthy. But of course we know they will be quarantined at some stage. I know people may think school closure is over-reacting. It isn't if you think about the inter-dependencies. **You can imagine a million different scenarios. Just a simply one** -- a little child got infected from school. He came home and infected his mother who was a nurse. The nurse went to work without any noticeable symptoms, and she infected the ICU patients that she cared for. Ok, this is one case -- and again -- one case is ALL we need to worry about. The cascading effect -- we don't want to even think about.

But as a country, we must fight for everyone and every state. I truly believe and in my calculations, those states that took the pre-emptive steps -- they are going to have the resources to contain their own infection and at some point, can help those states in needs. Here we go about sending patients around -- not 7 -- but many -- when we must lend the help when needed (and if we could do so at all). Now, everyone is fighting their local fire, and it's already quite stressful for everyone. I don't even know if anyone has extra resources. It is really resource-intense. Can you imagine --India, and the African countries start to pick up? It frightens me. Hence pre-emptive is a must.

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**From:** Carter Mecher <[REDACTED]>  
**Sent:** Saturday, March 14, 2020 4:32:54 PM  
**To:** Parker Jr, Gerald W <[REDACTED]>; Dr. Eva K Lee <[REDACTED]>; [REDACTED] <[REDACTED]@gmail.com>  
**Cc:** Lawler, James V <[REDACTED]@unmc.edu>; Caneva, Duane <[REDACTED]@hq.dhs.gov>; Tom Bossert <[REDACTED]@me.com>; Hanfling, Dan <[REDACTED]@qt.org>; Gruber, David (DSHS) <[REDACTED]@dshs.texas.gov>; Dr. Eva Lee <[REDACTED]>; CHRISTOPHER ALLEN <[REDACTED]@msn.com>; [REDACTED] <[REDACTED]@gmail.com>; [REDACTED] <[REDACTED]@gmail.com>; Richard Hatchett <[REDACTED]@cepi.net>; McDonald, Eric <[REDACTED]@sdcounty.ca.gov>; Borio, Luciana <[REDACTED]@iqt.org>; Brian Benson <[REDACTED]@icloud.com>; Tracey McNamara <[REDACTED]@westernu.edu>; Baric, Ralph S <[REDACTED]@email.unc.edu>; Mecher, Carter (VA.GOV) <[REDACTED]@va.gov>; Hunt, Richard (OS/ASPR/EMMO) <[REDACTED]@hhs.gov>; WILKINSON, THOMAS <[REDACTED]@hq.dhs.gov>; M.D. <[REDACTED]@mgh.harvard.edu>; David <[REDACTED]@umaryland.edu>; Charity A@CDPH <[REDACTED]@cdph.ca.gov>; Gregory J <[REDACTED]@state.gov>; Walters, William (STATE.GOV) <[REDACTED]@state.gov>; HAMILTON, CAMERON <[REDACTED]@hq.dhs.gov>; Dodgen, Daniel (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; DeBord, Kristin (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Phillips, Sally (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Matthew J CIV USARMY (USA) <[REDACTED]@mail.mil>; Lisa Koonin <[REDACTED]@il.com>; HARVEY, MELISSA <[REDACTED]@hq.dhs.gov>; WOLFE, HERBERT <[REDACTED]@hhs.gov>; Eastman, Alexander <[REDACTED]@hhs.gov>; EVANS, MARIEFRED <[REDACTED]@utmb.edu>; Johnson, Robert (OS/ASPR/BARDA) <[REDACTED]@hhs.gov>; Yeskey, Kevin <[REDACTED]@hhs.gov>; Disbrow, Gary (OS/ASPR/BARDA) <[REDACTED]@hhs.gov>; Redd, John (OS/ASPR/SPPR) <[REDACTED]@hhs.gov>; Hassell, David (Chris) (OS/ASPR/IO) <[REDACTED]@hhs.gov>; Hamel, Joseph (OS/ASPR/IO) <[REDACTED]@hhs.gov>; Wade, David <[REDACTED]@hq.dhs.gov>

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[REDACTED]takeda.com>

Subject: RE: Red Dawn Raging Start March 4

Non-UNMC email

Is anyone at CDC monitoring ILI?

Here is the latest flu surveillance for Hong Kong, South Korea, US; the states of CA, OR, WA, TX; and the cities of Seattle, NYC, and Chicago (LA hasn't reported week 10 yet).

Why did the US ILI curve deflect up this week, while influenza positive tests are tracing down? Seeing the same wrt ILI increasing in WA, OR, Seattle, Chicago, and NYC. Is this influenza A, COVID, or both? Chicago and NYC are concerning because their influenza virus detection is going down and ILI is going up.

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From: Dr. Eva Lee [REDACTED]

Sent: Tuesday, March 17, 2020 7:03:58 AM

To: Carter Mecher [REDACTED]

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**Subject:** Re: Red Dawn Responding, Start 16 March

Carter, this truly frightens me. one case is one too many, **I hope political leaders can act and act quickly.** We must do so or else we can't help these other cities that are escalated so rapidly. And globally, every country has to tighten, because we are running out of resources to do proper quarantine. We are already running out of healthcare resources, NYP has already canceled all elective procedures March 16. And many other hospitals who need care for covid-19 are facing the same issue. The medical tents appendices are needed and must be planned. I don't know what medical reserve we have and we have multiple fires burning simultaneously!

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On Tue, Mar 17, 2020 at 9:53 AM Carter Mecher [REDACTED]

[REDACTED] Bossert said on GMA this morning that like 1918, this will be a tale of many cities. What happens in the cities impacted the earliest in the US including Seattle, San Francisco, and NYC will likely be very different from what we see in other cities (just like 1918, timing of implementing TLC in individual cities in their individual epi curves will matter). The hardest message to convey to political leaders, public health leaders, and the public was the need to take action before the storm arrived and when the sun was shining.

Interesting to look at the regional variation in Italy.

It is looking just like what we observed in Hubei (including Wuhan) vs. Wuhan.

It will be important to look a little more closely inside the US—the aggregate numbers miss the real story. The storyline of the articles written about the variation in outcomes in US cities in 1918, is now unfolding and writing itself in real time before our very eyes.