Disclaimer

This document and corresponding briefing is provided as an informational resource only and should not be considered legal or medical or engineering advice. If professional advice is desired, please consult appropriate sources. These are only suggestions for your consideration and any implementation should reflect your own unique circumstances and community.
Agenda

• Virus
  – Current status
  – Transmission drivers
  – Schools
• Testing accuracy and timing
• Vaccine
  – Status
  – Prioritization
  – Distribution schedule
• Infection Pathways and Airborne Transmission Risk Review
• How do masks help?
• How do I travel and eat out safely?
Virus – Current Status

• Transmission is widespread and likely to surge
  – Multiple surveys ~40% of Americans planned Thanksgiving of 10 or more people
  – Return of college students
  – Expect infections to increase by the end of next week

• Hospital utilization is at the highest levels recorded at 101,487 (12/7)
  – During spring and summer peaks never exceeded 60,000
  – Reports of informal rationing of care – University of Utah Health Center no longer providing ECMO care
  – Several states are having to move COVID patients out of state
  – Available beds are not the issue – it’s availability of staff – Mayo Clinic reported at one-point 1000 staff were out due to COVID issues
  – Potential for implementation of Crisis of Care Standards
Virus – Transmission

- COVID “Fatigue” contributing to current spike in numbers
  - Survey 15,000 people each month April to November from 50 states
    - State with worst social distancing in April is better than state with best in Apr
    - People been in rooms with people outside household in past 24 hours grew from 26% in April to 45% in October
    - In last 24 hours visited bar or restaurant 3X higher in Oct than Apr
    - Spending time in groups of 11-100 tripled

- Transmission appears to be driven by high-risk points of interest - [https://www.nature.com/articles/s41586-020-2923-3](https://www.nature.com/articles/s41586-020-2923-3)
  - Analysis of 98 million people mobility patterns from March to May
  - 10% of points of interest account for 80% of infections
    - Restaurants, fitness centers, cafes, snack bars, doctor’s offices and others
    - As example, in Chicago 10% of POIs account for 85% of infections
  - Key point is that occupancy rate can have a significant impact
    - Reopen at 20% capacity only loses 42% of overall visits
    - Model estimates reduction in infections of 80%
Virus - Schools

- Primary and secondary schools don’t appear to drive the spread
  - Ongoing survey – (11/8) 3.96M in person students (11/22) 1.6M

Case rates in schools among elementary and middle school students is lower than the rate in the overall community.

Among schools that had Covid cases...

- 65% had only one case
- Two cases 22%
- Three cases 7.5%
- Four to six cases 4.5%
- Seven cases or more 1%

Source: Analysis of New York state school data by Emily Oster.
Virus – Transmission

• Differentials between adults and children
  – About 1 in 5 colds that kids get are from Coronavirus family
  – Appears some of those antibodies may also block SARS-CoV-2
  – 5% of adults retain some immunity but 43% of children do

https://science.sciencemag.org/content/early/2020/11/05/science.abe1107
• Not all tests are equal – PCR vs Antigen vs Antibody
• Sensitivity of tests driven by sample collection
  – Significant deviation based on skill of technician – Nasal Swab
    Study at Irish hospital studied staff and only 38% took effective samples
  – Saliva based samples can be 10% to 10 times less sensitive
• Test timeline after exposure – PCR tests
  – 1 day – 0% chance of returning positive
  – 4 days – 36%
  – 5 days – 62%
  – 8 days when symptomatic – 80%
• A negative test does not mean you do not have the virus
• Lucira Health announced EUA for first nucleic acid at home test – initially only available CA and FL
Vaccine

• Four primary vaccine candidates
  – Pfizer and Moderna
  – Astra Zeneca – Potential challenges due to “confusing” data
  – Johnson and Johnson – 1 dose and regular refrigeration

• Moderna and Pfizer will be reviewed first
  – Both near initial efficacy of 95%
  – Pfizer FDA EUA meeting Dec 10th – EUA for 16 y/o and older
  – Moderna FDA EUA meeting Dec 17th (expected)
  – First shots given to prioritized groups December/January
  – Both vaccines require follow-up shots

• Wide deployment unlikely until March / April timeframe
• Effectiveness/side effects still need to be measured
• Need 70-80% for “herd immunity”
• May still become infectious even if vaccinated
• Vaccines will still require additional mitigation measures
## Vaccine – Side Effects

Typically resolve within 1-2 days

### Data from published Phase I/II trials

**Adults 18–55 years of age**

<table>
<thead>
<tr>
<th></th>
<th>Moderna¹</th>
<th>Pfizer²</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>N=15</td>
<td>N=12</td>
</tr>
<tr>
<td><strong>100µg</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>Post-dose 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Post-dose 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>5 (33%)</td>
<td>6 (50%)</td>
</tr>
<tr>
<td>Moderate</td>
<td>1 (7%)</td>
<td>2 (17%)</td>
</tr>
<tr>
<td>Severe</td>
<td></td>
<td></td>
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<tr>
<td><strong>Fever</strong></td>
<td></td>
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<tr>
<td></td>
<td>—</td>
<td></td>
</tr>
<tr>
<td><strong>Headache</strong></td>
<td>4 (27%)</td>
<td>3 (25%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Myalgia</strong></td>
<td>1 (7%)</td>
<td>1 (8%)</td>
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<tr>
<td></td>
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<td></td>
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<tr>
<td><strong>Fever</strong></td>
<td></td>
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<tr>
<td></td>
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</tr>
<tr>
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<td>1 (8%)</td>
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<tr>
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</tr>
</tbody>
</table>

²Walsh et al. Safety and immunogenicity of two RNA-Based COVID-19 vaccine candidates. NEJM 2020; online publication Oct 14.
Vaccine Distribution

- Pfizer vaccine requires ultra-cold storage -70º C
  - Developed “Thermal Shippers”
    - Store for 10 days during transit
    - Once opened good for 15 more days with dry ice replenishment
    - Only opened twice a day for a minute
  - Vials are concentrated and can be refrigerated for 5 days
    - Must be diluted (1:5)
    - Once diluted must be used with 6 hours
  - Shipped in 975 does units

- Moderna vaccine is more stable
  - Requires storage at -20º C
  - No dilution
  - Once thawed stable for 30 days when refrigerated
  - Shipped in 100 dose units
Vaccine Prioritization

• Pfizer – 22.5M doses in 2020 and up to 1.3B 2021
• Moderna – 18M doses 2020 and 500M to 1B 2021
• Vaccine distribution governed by State distribution plans
  – Draft plans have been delivered
  – Likely updated after CDC guidance published
• CDC will make recommendations on priority
  – National Academies of Science Study on Framework for Distribution
  – ACIP – Advisory Committee on Immunization Practices
    • Met 11/23 to discuss and propose Phases 1A, 1B and 1C
    • Met 12/1 for an emergency vote
    • Approved adding elderly residing in long term care facilities to healthcare workers as part of Phase IA
• DHS plans to rerelease Critical Workers Guidance with cover letter how it can be used for vaccine prioritization
Vaccine Prioritization – ACIP Plan

- Presented 11/23 – strong support for essential workers in 1b
- ACIP voted 12/1 to approve Phase 1a
Vaccine Prioritization – Original NAS Plan

<table>
<thead>
<tr>
<th>PHASE 1</th>
<th>PHASE 2</th>
<th>PHASE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1a &quot;Jumpstart Phase&quot;:</td>
<td>• K-12 teachers and school staff and child care workers</td>
<td>• Young adults</td>
</tr>
<tr>
<td>• High-risk health workers</td>
<td>• Critical workers in high-risk settings—workers who are in industries essential to the functioning of society and at substantially higher risk of exposure</td>
<td>• Children</td>
</tr>
<tr>
<td>• First responders</td>
<td>• People of all ages with comorbid and underlying conditions that put them at moderately higher risk</td>
<td>• Workers in industries and occupations important to the functioning of society and at increased risk of exposure not included in Phase 1 or 2</td>
</tr>
<tr>
<td>Phase 1b:</td>
<td>• People in homeless shelters or group homes for individuals with disabilities, including serious mental illness, developmental and intellectual disabilities, and physical disabilities or in recovery, and staff who work in such settings</td>
<td></td>
</tr>
<tr>
<td>• People of all ages with comorbid and underlying conditions that put them at significantly higher risk</td>
<td>• All older adults not included in Phase 1</td>
<td></td>
</tr>
<tr>
<td>• Older adults living in congregate or overcrowded settings</td>
<td></td>
<td>• Everyone residing in the United States who did not receive the vaccine in previous phases</td>
</tr>
</tbody>
</table>

**Equity is a crosscutting consideration**

In each population group, vaccine access should be prioritized for geographic areas identified through CDC’s Social Vulnerability Index or another more specific index.
Indiana Interim Draft Distribution Plan

• Updated 10/20/20
• Looks to be modeled after NAS versus recent ACIP guidance
• Phase 1A – Reinforce healthcare infrastructure
  – Hospitals, LTC, EMS, etc.
• Phase 1B – Protect the vulnerable
  – Those at “particular risk of morbidity and mortality”
• Phase 2 – Mitigate Spread
  – Those at elevated risk due to living or working conditions
  – Correctional facilities, shelters “individuals whose in-person work is essential…social distancing not possible and transmission risk is high”
• Phase 3 – General Public
Vaccine Timelines – Rough Estimate

**Assumptions**
- Total US population 331M – Children (0-11) 48M
- Approximately 10-15% of US population previously infected ~35M
- Vaccinatable population 331M – 48M = 283M
- 35M “vaccinated”/recovered so current percent is 12%
- Moderna/Pfizer require 2 doses so immunity lags a month

<table>
<thead>
<tr>
<th>Month</th>
<th>Percent Vaccinated (30M Doses per mo.)</th>
<th>Percent Vaccinated (20M Doses per mo.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January (20M)</td>
<td>19%</td>
<td>19%</td>
</tr>
<tr>
<td>February</td>
<td>30%</td>
<td>27%</td>
</tr>
<tr>
<td>March</td>
<td>41%</td>
<td>34%</td>
</tr>
<tr>
<td>April</td>
<td>51%</td>
<td>41%</td>
</tr>
<tr>
<td>May</td>
<td>62%</td>
<td>48%</td>
</tr>
<tr>
<td>June</td>
<td>72%</td>
<td>55%</td>
</tr>
<tr>
<td>July</td>
<td>83%</td>
<td>62%</td>
</tr>
<tr>
<td>August</td>
<td>94%</td>
<td>76%</td>
</tr>
<tr>
<td>September</td>
<td>100%+</td>
<td>83%</td>
</tr>
</tbody>
</table>
How do I become infected?

- Two key points to become infected
  - Viable virus – meaning it’s alive and infectious
  - Sufficient dose to infect you

- From surfaces
  - Someone who is actively infectious must deposit a significant amount of virus on surface that remains viable / “alive”
  - While virus is viable someone has to wipe enough of that virus onto their hand and then provide a pathway of enough virus to be infectious into the body e.g. eyes, nose, mouth

- Through breathing
  - Someone has to exhale enough viral particles near you so that you inhale them
  - Larger particles have more virus (more infectious), are likely viable longer, but don’t travel very far
  - Smaller particles can travel much further than 6’ but contain less virus and likely remain viable for less time
How does the virus become airborne?

- As people breathe, talk, sing, cough, sneeze, etc. they release varying levels of the virus.
- The more forceful exhalation, generally the more virus they exhale, good example is super spreader event in WA choir.
- The amount depends on the person – India performed 575K person contact tracing study:
  - 8% of people responsible for 60% of infections.
  - 70% weren’t linked to any new infections.
  - No known way to know who is a super spreader.
  - Illustrates why everyone must wear a mask.
How does it spread? Is it infectious?

- What is the source term?
- What is the volume of space?
  - Enclosed or outdoors
- Any filtering?
- How long are you there?

Notice difference in movement and permanence of aerosolized particles
- 3 Micron Blue above
- 50 Micron red above
Do masks help?

- YES
- If you can reduce the source term, the amount of viral particles someone puts into the air, you reduce the risk for everyone
- Several studies put the efficacy of masks at 75-90% or higher depending on material used (https://www.nature.com/articles/s41598-020-72798-7)
How do I Travel and Eat Out Safely?

• **Driving** is relatively low risk
  – Surface contamination at gas stations relatively low
  – Time spent inside getting food/water is relatively low
  – Bathrooms are largest potential risk

• **Flying**
  – Wear a high-quality mask in the airport and on the plane ([www.accumed.com](http://www.accumed.com)) and wear it continuously
  – Choose an airline that blocks the middle seat
  – Sit in the window seat
  – Have overhead air continuously blowing on you
  – Be careful in the bathroom

• **Restaurants**
  – Indoor dining is a risk
    • Random bad luck could have you downwind of super spreader
    • Viral loads will build and HVAC systems will move virus around
    • Korean coffee house woman infected multiple people
  – Outdoor eating with appropriate social distancing and mask wearing staff is relatively low risk – low viral concentration
“Getting through the tunnel”

Dark and difficult times lie ahead. Soon we must all face the choice between what is right and what is easy.
ABA Seeks Pandemic Survey Participants

ABA is seeking participants for an anonymous survey on how the COVID-19 pandemic has affected bank operations in recent months. The survey covers how and when banks will allow employees to return to offices/facilities, health screening policies, viral mitigation measures as well as travel policies due to COVID-19. Participating bankers will receive free access to the survey report. The survey closes Dec. 11. Take the survey

https://aba.qualtrics.com/jfe/form/SV_do0d9R7EOwNDi5v