COVID-19 (SARS Co-V-2):
UPDATE AND FOCUS ON COLLEGES AND UNIVERSITIES

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Disclosures: Consultant-PDI, Germitec, Pfizer; Past Consultant-Merck, Lumagenics
COVID-19: NEW INFORMATION

- Increasing cases in US; largest increase in the 18-45 year age range
- Percent of population that has had COVID-19 (CDC): 2% TO 5% (outlier, NYC = 23%)
- Percent of asymptomatic infections: 20% to 80% (depends on study population)
- Among symptomatic persons: mild disease, 80%; severe disease, 15%; critical disease, 5%
- Data suggests that airborne (>6 feet) transmission does NOT occur
- Duration of infectiousness: Ambulatory patients, <11 days (5 studies); hospitalized patients, <20 days (2 studies)
- Viral mutations: Mutations with increased transmissibility reported; but similar virulence
- Likely effective therapies: Remdesivir, Dexamethasone, prone ventilation
- Vaccine: Likely not available in 2020
- Masks very effective in preventing transmission when worn by infected persons, and in preventing acquisition when worn by uninfected persons
- Continued challenges: Limited testing capacity; shortages of Remdesivir
CDC SEROPREVALENCE DATA FROM COMMERCIAL LABS, 10 SITES IN THE US

COVID-19, US

Outbreak curve in US substantially increasing

Worldwide >14,700,000 cases (>609,000 deaths)
US >3,844,000 cases, 25% of world’s total (>140,000 deaths):
- deaths undercounted; leading cause of death in the US
NC >101,000 cases (>1,670 deaths; 1,086 hospitalized)
NC >1,423,000 COVID-19 tests (~10% positive)

COVID-19 EPIDEMIOLOGY: INCREASING CASES IN PERSONS 18-49 YEARS OF AGE

US

UNC MEDICAL CENTER

AEROSOL TRANSMISSION INCLUDES DROPLET AND AIRBORNE

- Large droplets (>100 μm): Fast deposition due to the domination of gravitational force
- Medium droplets between 5 and 100 μm
- Small droplets or droplet nuclei, or aerosols (< 5 μm): Responsible for airborne transmission

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Wei J, Li Y. Am J Infect Control 2016;44:S102-S108
Factors affecting acquisition of a viral respiratory infection

1. Virus must survive drying and UV
2. To cause infection, virus must be delivered in infectious dose (i.e., survive dispersal/dilution)

Risk reduced by:
1. Physical distancing
2. Infected persons wearing a mask
3. Non-infected persons wearing a mask
DISPERAL OF DROPLETS AND
REDUCTION BY FACE COVERINGS

- **Goal:** Assess ability of face coverings to reduce droplet dispersal
- **Methods:** Qualitative visualizations of emulated coughs and sneezes to reduce droplet-laden respiratory jets
- **Conclusion:** Well-fitted homemade masks with multiple layers of quilting fabric, off-the-shelf cone style masks, proved to be the most effective in reducing droplet dispersal


<table>
<thead>
<tr>
<th>Mask type</th>
<th>Material</th>
<th>Threads/in.</th>
<th>Average jet distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncovered</td>
<td>...</td>
<td>...</td>
<td>~8 ft</td>
</tr>
<tr>
<td>Bandana</td>
<td>Elastic T-shirt material</td>
<td>85</td>
<td>~3 ft 7 in.</td>
</tr>
<tr>
<td>Folded handkerchief</td>
<td>Cotton</td>
<td>55</td>
<td>1 ft 3 in.</td>
</tr>
<tr>
<td>Stitched mask</td>
<td>Quilting cotton</td>
<td>70</td>
<td>2.5 in.</td>
</tr>
<tr>
<td>Commercial mask</td>
<td>Unknown</td>
<td>Randomly assorted fibres</td>
<td>8 in.</td>
</tr>
</tbody>
</table>

*CVS Cone Face Mask.*
ABSENCE OF TRANSMISSION OF SARS-CoV-2 FROM COVID-19 INFECTED HAIR STYLISTS WITH A UNIVERSAL FACE COVERING POLICY

- Exposure evaluation of clients to 2 hair stylists who had COVID-19
  - Stylist A worked for 8 days while ill; stylist B worked 5 days while ill (she acquired infection from A)
  - 139 clients seen by stylists A and B while they were symptomatic
  - There was a citywide ordinance recommending face coverings for both stylists and clients during their interactions

- Results
  - None of the 139 clients or their secondary contacts developed COVID-19

## PHYSICAL DISTANCING AND FACE MASKS
PROTECTING AGAINST ACQUISITION OF COVID-19

<table>
<thead>
<tr>
<th>Studies and participants</th>
<th>Relative effect (95% CI)</th>
<th>Anticipated absolute effect (95% CI), eg, chance of viral infection or transmission</th>
<th>Difference (95% CI)</th>
<th>Certainty</th>
<th>What happens (standardised GRADE terminology)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical distance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥1 m vs &lt;1 m</td>
<td>Nine adjusted studies (n=7782); 29 unadjusted studies (n=10738)</td>
<td>aOR 0.18 (0.09 to 0.38); unadjusted RR 0.30 (95% CI 0.20 to 0.44)</td>
<td>Shorter distance, 12.8%</td>
<td>-0.2% (-1.5 to -7.5)</td>
<td>Moderate†</td>
</tr>
<tr>
<td>Face mask vs no face mask</td>
<td>Ten adjusted studies (n=2647); 29 unadjusted studies (n=10170)</td>
<td>aOR 0.15 (0.07 to 0.34); unadjusted RR 0.34 (95% CI 0.26 to 0.45)</td>
<td>No face mask, 17.4%</td>
<td>-14.3% (-15.9 to -10.7)</td>
<td>Low‡</td>
</tr>
</tbody>
</table>

COVID-19 TESTING

- A negative COVID-19 RT-PCR test does NOT exclude COVID-19 infection if the person is within the 14 day incubation period.
- A positive antibody test does NOT exclude infectious COVID-19 if the person is symptomatic.
- A positive antibody test does not necessarily indicate immunity to re-infection.
- The rapid point-of-care antigen test is only 80% sensitive and has NOT been validated for testing asymptomatic persons.
- Current turnaround time for commercial tests is 5-10 days.
SUMMARY OF CDC RECOMMENDATIONS FOR INSTITUTIONS OF HIGHER LEARNING

- COVID prevention: Physical distancing, masks when in public, hand hygiene, and surface disinfection
- Key recommendations
  - Maintain physical distancing in classrooms and cafeterias
  - Provide face coverings, hand hygiene products, and disinfectants
  - Provide messaging to students to achieve compliance with physical distancing, masks, and reporting illness (on campus and off campus)
  - If ill with symptoms consistent with COVID-19, do NOT come to campus or attend classes – report to Campus Health (students) or call Occupational Health (faculty and staff)
  - Plan for testing symptomatic faculty/staff and students; persons exposed to COVID-19 case
  - Plan to rapidly perform exposure evaluations with appropriate testing (may involve asymptomatic persons), and dorms for exposed but asymptomatic, COVID-19 infected, and healthy
  - Ability to track COVID-19 cases: Testing of symptomatic students, faculty, staff; testing of athletes participating in contact sports; testing as part of exposure evaluations
- No recommendation for testing of all arriving students or routine testing of asymptomatic persons