What is the State of COVID-19 today and what may the future bring

Speaker: George Rutherford M.D.
**FUTURE webtalks**

Webinars are scheduled for Wednesdays at 10:30 AM unless otherwise indicated

- **June 24**  Panel Discussion: How is TAS going after 3 months? Where are we on re-entry?
- **July 1**  Topic to be Determined
- **July 8**  A Conversation with Dr. Carla Perissinotto, Geriatrician UCSF, on loneliness and health
- **July 15**  Topic to be Determined
- **July 22**  1:30 – 3:00 pm Dr. Cordula Dick-Muehlke
- **July 29**  Topic to be Determined
Dr. George Rutherford - UCSF

Head of the Division of Infectious Disease & Global Epidemiology in the Department of Epidemiology & Biostatistics, and Director of Global Strategic Information (GSI) in the Institute for Global Health Sciences, University of California San Francisco.
2019 novel coronavirus disease (COVID-19)
California Association of Adult Day Services

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U.S. DEATHS NEAR 100,000, AN INCALCULABLE LOSS

They Were Not Simply Names on a List.
They Were Us.

Numbers alone cannot possibly measure the impact of the coronavirus on America, whether it is the number of patients treated, jobs interrupted or lives cut short. As the country nears a grim milestone of 100,000 deaths attributed to the virus, The New York Times records obituaries and death notices of the victims. The 1,000 people here reflect just 1 percent of the toll. None were mere numbers.

Patricia Devd, 37, San Jose, Cali., was the youngest child of a Silicon Valley family. Marion Krueger, 85, Kirkwood, Wash., great-grandmother with an easy laugh. Jermaine Ferro, 77, Lee County, Fla., is in a vehicle with a little life to enjoy a new marriage. Daniels Lawyer, 81, Bellevue, Wash., a sharecropper's son. Loretta Mendoza Donio, 68, Los Angeles, cancer survivor born in the Philippines.


Ann Younger Smoler, 74, New York City, had a passion for social justice. Thomas Waters, 56, New York City, armed the affordable housing movement with data and analysis. Luke Workoff, 83, Huntington, N.Y., his relentless passion was for his family and friends. José Diaz-Ayala, 58, Palm Beach, Fla., served with Bill Clinton in the White House.

A newspaper's role was to be a voice of the people. Caroleen Haver, 92, Minnesota, her favorite thing was meeting new people. Tori Hamilton Howard, 26, Waterbury, Conn., gentle giant, athlete and musician.


It's important to remember the lives lost and the impact of the pandemic on our families and communities.
COVID-19 cases and deaths, United States, 2020

New reported cases by day in the United States

2,137,731 cases

New reported deaths by day in the United States

116,963 deaths

Where new cases are increasing
Older adults are at higher risk

8 out of 10 deaths reported in the U.S. have been in adults 65 years old and older.

See below for estimated percent of adults with confirmed COVID-19 reported in the U.S:

<table>
<thead>
<tr>
<th></th>
<th>Adults 65 – 84</th>
<th>Adults 85+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitalizations</td>
<td>31-59%</td>
<td>31-70%</td>
</tr>
<tr>
<td>Admission to intensive care</td>
<td>11-31%</td>
<td>6-29%</td>
</tr>
<tr>
<td>Deaths</td>
<td>4-11%</td>
<td>10-27%</td>
</tr>
</tbody>
</table>
Cumulative rates of hospitalization for COVID-19 by age group, United States, 2020

<table>
<thead>
<tr>
<th>Age group</th>
<th>Hospitalizations per 100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-64 years</td>
<td>136.1</td>
</tr>
<tr>
<td>≥65 years</td>
<td>273.8</td>
</tr>
<tr>
<td>65-74 years</td>
<td>198.7</td>
</tr>
<tr>
<td>75-84 years</td>
<td>329.3</td>
</tr>
<tr>
<td>≥85 years</td>
<td>513.2</td>
</tr>
</tbody>
</table>
NOTE: Provisional death counts are based on death certificate data received and coded by the National Center for Health Statistics as of the date of analysis and do not represent all deaths that occurred in that period.

SOURCE: NCHS, National Vital Statistics System. Estimates are based on provisional data.
Age-adjusted COVID-19-associated hospitalization rates by race and ethnicity, COVID-NET, March – June 6, 2020

- Non-Hispanic American Indian or Alaska Native: 193.8
- Non-Hispanic Black: 171.8
- Hispanic / Latino: 150.3
- Non-Hispanic Asian or Pacific Islander: 44.9
- Non-Hispanic White: 37.8
Alarming spikes across the U.S.

States in the South, West and Southwest are seeing upticks in their coronavirus case counts — and in some cases setting records — as a troubling pattern emerges in areas that began lifting restrictions earlier than others.

As maskless New Yorkers crowd outside bars, Cuomo threatens to shut the city back down

Despite Trump’s claim, the increase in new coronavirus cases isn’t just a function of testing
COVID-19 cases and deaths, California, 2020

Bay Area
- 17,789 cases
- 505 deaths

California
- 159,076 cases
- 5,200 deaths

United States
- 2,137,731 cases
- 116,963 deaths
Total and new COVID-19 cases by county, California, June 16, 2020
COVID-19 cases and deaths, San Francisco Bay Area Counties, 2020

Bay Area
- 17,789 cases
- 505 deaths
  - 224 on June 16
  - 7 on June 16

California
- 159,076 cases
- 5,200 deaths
  - 3,331 on June 16
  - 85 on June 16

United States
- 2,137,731 cases
- 116,963 deaths
  - 23,705 on June 16
  - 836 on June 16

7-day average
Proportion of COVID-19 cases and deaths by age group, California, 2020
COVID-19 cases by day and county, San Francisco Bay Area, 2020
COVID-19 cases by week, San Francisco County, 2020

Shelter in place
COVID-19 and long-term care facilities

• A disproportionate number of deaths have occurred in residents of long-term care and assisted living facilities
  • 33% of all deaths in the United States
  • 51% of all deaths in California
• Concentration of elderly plus elderly with chronic underlying conditions that increase risk (hypertension, cardiovascular disease, diabetes)

Survival of 35 residents with confirmed SARS-CoV-2 infection in a skilled nursing facility, Illinois, 2020
Nursing home outbreaks

• COVID-19 outbreaks in long-term care and assisted living facilities are common
• Involves residents, staff and visitors
• Transmission often occurs from residents who are asymptomatic or presymptomatic limiting utility of symptom screening
• Evolving standard is frequent testing of staff and residents

Figure 1. Confirmed Cases of Covid-19 Linked to Facility A. Shown are cases of Covid-19 in Washington that had been epidemiologically linked to Facility A as of March 18, 2020.

Presymptomatic and asymptomatic transmission in a nursing home

Table 2. Follow-up symptom assessment 1 week after testing for SARS-CoV-2 among 13 residents of a long-term care skilled nursing facility who were asymptomatic on March 13, 2020 (date of testing) and had positive test results — facility A, King County, Washington, March 2020

<table>
<thead>
<tr>
<th>Symptom status 1 week after testing</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymptomatic</td>
<td>3 (23.1)</td>
</tr>
<tr>
<td>Developed new symptoms</td>
<td>10 (76.7)</td>
</tr>
<tr>
<td>Fever</td>
<td>8 (61.5)</td>
</tr>
<tr>
<td>Malaise</td>
<td>6 (46.1)</td>
</tr>
<tr>
<td>Cough</td>
<td>5 (38.4)</td>
</tr>
<tr>
<td>Confusion</td>
<td>4 (30.8)</td>
</tr>
<tr>
<td>Rhinorrhea/Concentration</td>
<td>4 (30.8)</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>3 (23.1)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>3 (23.1)</td>
</tr>
<tr>
<td>Sore throat</td>
<td>1 (7.7)</td>
</tr>
<tr>
<td>Nausea</td>
<td>1 (7.7)</td>
</tr>
<tr>
<td>Dizziness</td>
<td>1 (7.7)</td>
</tr>
</tbody>
</table>


### COVID-19 cases and deaths in nursing homes, San Francisco and California, 2020

<table>
<thead>
<tr>
<th>Facility</th>
<th>Residents Cases</th>
<th>Residents Deaths</th>
<th>Staff Cases</th>
<th>Staff Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIFORNIA PACIFIC MEDICAL CENTER - DAVIES CAMPUS HOSPITAL D/P SNF</td>
<td>-</td>
<td>-</td>
<td>10 or fewer</td>
<td>-</td>
</tr>
<tr>
<td>CITY VIEW POST ACUTE</td>
<td>-</td>
<td>-</td>
<td>10 or fewer</td>
<td>-</td>
</tr>
<tr>
<td>HERITAGE ON THE MARINA</td>
<td>10 or fewer</td>
<td>-</td>
<td>10 or fewer</td>
<td>-</td>
</tr>
<tr>
<td>JEWISH HOME &amp; REHAB CENTER D/P SNF</td>
<td>12</td>
<td>-</td>
<td>10 or fewer</td>
<td>-</td>
</tr>
<tr>
<td>LAGUNA HONDA HOSPITAL &amp; REHABILITATION CTR D/P SNF</td>
<td>17</td>
<td>-</td>
<td>31</td>
<td>-</td>
</tr>
<tr>
<td>LAUREL HEIGHTS COMMUNITY CARE</td>
<td>10 or fewer</td>
<td>10 or fewer</td>
<td>10 or fewer</td>
<td>-</td>
</tr>
<tr>
<td>LAWTON SKILLED NURSING &amp; REHABILITATION CENTER</td>
<td>19</td>
<td>-</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>PACIFIC HEIGHTS TRANSITIONAL CARE CENTER</td>
<td>23</td>
<td>10 or fewer</td>
<td>11</td>
<td>10 or fewer</td>
</tr>
<tr>
<td>PORTOLA GARDENS</td>
<td>13</td>
<td>10 or fewer</td>
<td>10 or fewer</td>
<td>-</td>
</tr>
<tr>
<td>SAN FRANCISCO GENERAL HOSPITAL D/P SNF</td>
<td>10 or fewer</td>
<td>-</td>
<td>10 or fewer</td>
<td>-</td>
</tr>
</tbody>
</table>
COVID-19, quarantine and the mental health of the elderly

“Self-isolation will disproportionately affect elderly individuals whose only social contact is out of the home, such as at daycare venues, community centres, and places of worship. Those who do not have close family or friends, and rely on the support of voluntary services or social care, could be placed at additional risk, along with those who are already lonely, isolated, or secluded.”

## Prevention in adult day services

<table>
<thead>
<tr>
<th>Factor</th>
<th>Potential mitigation activities according to level of community transmission or impact of COVID-19 by setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>None to Minimal</strong></td>
<td></td>
</tr>
<tr>
<td>Assisted living facilities, senior living facilities and adult day programs</td>
<td>• Know where to find local information on COVID-19.</td>
</tr>
<tr>
<td></td>
<td>• Know the signs and symptoms of COVID-19 and what to do if clients/residents or staff become symptomatic.</td>
</tr>
<tr>
<td></td>
<td>• Review and update emergency operations plan (including implementation of social distancing measures) or develop a plan if one is not available.</td>
</tr>
<tr>
<td></td>
<td>• Encourage personal protective measures among staff, residents and clients who live elsewhere (e.g., stay home or in residences when sick, handwashing, respiratory etiquette).</td>
</tr>
<tr>
<td></td>
<td>• Clean frequently touched surfaces daily.</td>
</tr>
<tr>
<td></td>
<td>• Ensure hand hygiene supplies are readily available in all buildings.</td>
</tr>
<tr>
<td><strong>Minimal to moderate</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Implement social distancing measures:</td>
</tr>
<tr>
<td></td>
<td>• Reduce large gatherings (e.g., group social events).</td>
</tr>
<tr>
<td></td>
<td>• Alter schedules to reduce mixing (e.g., stagger meal, activity, arrival/departure times)</td>
</tr>
<tr>
<td></td>
<td>• Limit programs with external staff</td>
</tr>
<tr>
<td></td>
<td>• Consider having residents stay in facility and limit exposure to the general community</td>
</tr>
<tr>
<td></td>
<td>• Limit visitors, implement screening</td>
</tr>
<tr>
<td></td>
<td>• Temperature and respiratory symptom screening of attendees, staff, and visitors.</td>
</tr>
<tr>
<td></td>
<td>• Short-term closures as needed (e.g., if cases in staff, residents or clients who live elsewhere) for cleaning and contact tracing.</td>
</tr>
<tr>
<td><strong>Substantial</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Longer-term closure or quarantine of facility.</td>
</tr>
<tr>
<td></td>
<td>• Restrict or limit visitor access (e.g., maximum of 1 per day).</td>
</tr>
</tbody>
</table>

**SARS-CoV-2 testing? Masks?**
Testing Guidelines for Nursing Homes

Interim SARS-CoV-2 Testing Guidelines for Nursing Home Residents and Healthcare Personnel

Updated June 13, 2020

Red Cross volunteers in Piedmont, Calif., making masks in October 1918. Edward (Doc) Rogers/MediaNews Group/Oakland Tribune, via Getty Images
San Francisco and the 1918-19 influenza epidemic

A family wearing masks in San Francisco on November 21, 1918. San Francisco History Center, San Francisco Public Library

A family with their masks off in San Francisco on November 21, 1918. San Francisco History Center, San Francisco Public Library
Comparative excess mortality per 100,000 by days since 7 September 1918, United States

Masks reduce airborne transmission
Infectious aerosol particles can be released during breathing and speaking by asymptomatic infected individuals. No masking maximizes exposure, whereas universal masking results in the least exposure.

Particle size (\(\mu m\))

- 100
- 10
- 1
- 0.1

Infected, asymptomatic

Healthy

\(\uparrow\) Maximum exposure

\(\downarrow\) Minimum exposure

GRAPHIC: V. ALTOUMANI/SCIENCE
Kimberly A. Prather et al. Science 2020;science.abc6197
Face Masks Against COVID-19: An Evidence Review

Jeremy Howard\textsuperscript{a,c,1}, Austin Huang\textsuperscript{b}, Zhiyuan Li\textsuperscript{k}, Zeynep Tufekci\textsuperscript{m}, Vladimir Zdimal\textsuperscript{n}, Helene-Mari van der Westhuizen\textsuperscript{f,g}, Arne von Delft\textsuperscript{f,g}, Amy Price\textsuperscript{n}, Lex Fridman\textsuperscript{d}, Lei-Han Tang\textsuperscript{i,j}, Viola Tang\textsuperscript{l}, Gregory L. Watson\textsuperscript{h}, Christina E. Bax\textsuperscript{e}, Reshma Shaikh\textsuperscript{e}, Frederik Questier\textsuperscript{r}, Danny Hernandez\textsuperscript{p}, Larry F. Chu\textsuperscript{n}, Christina M. Ramirez\textsuperscript{h}, and Anne W. Rimoin\textsuperscript{1}

- Masks as droplet source control (rather than PPE)
  - Effectiveness of blocking droplets during speech when droplets are at low pressure and have not desiccated to smaller sizes (<1µm)
- Surgical masks block coronaviruses of all sizes (Leung, Nat Med 2020)
- Cotton masks block 96% of viral load within 8 inches of mask of COVID-19 patient (Base, Ann Intern Med 2020)
- 0 of 25 passengers and flight attendants near a COVID-19 patient with a mask developed infection on flight from China to Toronto (Schwartz, CMAJ 2020)
- Compliance increased in Mexico City in 2009 when masks became mandatory rather than voluntary (Condon, Health Pol 2010)

\[ R_0 = 2.4 \]

Reduction factor \((1 - e^{-pm})^2\)

\[ \text{Adherence } \% \]

\[ \text{Efficacy of mask } \% \]

Fig. 1. Impact of public mask wearing under the full range of mask adherence and efficacy scenarios. The color indicates the resulting reproduction number \(R_0\) from an initial \(R_0\) of 2.4 (7).
Modeling benefit of universal masking post-shelter-in-place

The outbreak that didn’t happen: Masks credited with preventing coronavirus spread inside Missouri hair salon

Springfield, Mo., health officials braced for an outbreak. Now they say face coverings prevented one.

- 2 PCR-positive hairdressers in Springfield, Mo.
  - One exposed 84 customers
  - The other exposed 56 customers
- Posted sign “a mask is required to enter salon”
- Hairdressers and customers all wore masks
- **No** secondary cases detected
Thank you for joining us today!