Coronavirus Disease 2019 [COVID-19] and People with Intellectual/Developmental Disabilities [IDD]

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Disclosures

• No financial Conflicts of Interest to declare

• My research is funded by the CDC, but nothing I say in this webinar is meant to represent the CDC, the PHS, or the DHHS

• Knowledge about COVID-19 is increasing so quickly that it may turn out that much I say in this webinar may be out of date or untrue next week/month/year!
Outline

• What is COVID-19 or SARS-CoV-2 infection?
  • A bit of virology and history
  • Disease in adults
  • Disease in children
  • Transmission, Prevention
• What is different about COVID-19 among those with IDD?
Human Coronaviruses [HCoVs]—”Old”

- HCoVs 229E, OC43, NL63, HKU1
- Cause ~15-30% of common colds
- Immunity not durable, so can get again
- Mostly URIs; possibly LRIs in those with immunocompromised
- No known vaccines or antivirals
- Many CoVs appear to infect animals

- Large genome, RNA viruses
“Old” HCoV Disease

- About 8% of lower respiratory tract infection [LRTI] in hospitalized young children
- Found globally, in tropical and temperate regions
- Can see year-round, although concentrated in winter and spring
- Most of us [up to 90% of adults] have evidence of past infection [seropositive for antibody]
- Can be asymptomatic in children <5 y
- Incubation period about 3 days
Human Coronaviruses [HCoVs]—”NEW”

• SARS-CoV (2002-2004) Severe Acute Respiratory Syndrome
  • >8,000 cases with 10% mortality
  • From China to 32 countries over 3 mo
• MERS-CoV (2012-present) Middle East Respiratory Syndrome
  • From Middle Eastern countries → 27 globally, mostly Middle East
  • >2,500 cases with 34% mortality
• nCoV-19, SARS-CoV-2, COVID-19 (2019→ ??)
  • Globally, 1.33 million cases, 184 countries [~all]
  • Mortality not firmly known—estimated ~2-3%
Origins of Epidemic-Pandemic HCoVs

SARS-CoV

2019-nCoV

?

MERS-CoV

Human
Clinical Characteristics of Coronavirus Disease 2019 in China


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### Important points:
- Virtually all >15 y
- Severe disease skewed to >50 y, esp. >65 y
- Mean incubation 4 d

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Patients (N=1099)</th>
<th>Disease Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Nonsevere (N=926)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median (IQR) — yr</td>
<td>47.0 (35.0–58.0)</td>
<td>45.0 (34.0–57.0)</td>
</tr>
<tr>
<td>Distribution — no./total no. (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–14 yr</td>
<td>9/1011 (0.9)</td>
<td>8/848 (0.9)</td>
</tr>
<tr>
<td>15–49 yr</td>
<td>557/1011 (55.1)</td>
<td>490/848 (57.8)</td>
</tr>
<tr>
<td>50–64 yr</td>
<td>292/1011 (28.9)</td>
<td>241/848 (28.4)</td>
</tr>
<tr>
<td>≥65 yr</td>
<td>153/1011 (15.1)</td>
<td>109/848 (12.9)</td>
</tr>
<tr>
<td><strong>Female sex — no./total no. (%)</strong></td>
<td>459/1096 (41.9)</td>
<td>386/923 (41.8)</td>
</tr>
<tr>
<td><strong>Smoking history — no./total no. (%)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoked</td>
<td>927/1085 (85.4)</td>
<td>793/913 (86.9)</td>
</tr>
<tr>
<td>Former smoker</td>
<td>21/1085 (1.9)</td>
<td>12/913 (1.3)</td>
</tr>
<tr>
<td>Current smoker</td>
<td>137/1085 (12.6)</td>
<td>108/913 (11.8)</td>
</tr>
<tr>
<td><strong>Exposure to source of transmission within past 14 days — no./total no.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living in Wuhan</td>
<td>483/1099 (43.9)</td>
<td>400/926 (43.2)</td>
</tr>
<tr>
<td>Contact with wildlife</td>
<td>13/687 (1.9)</td>
<td>10/559 (1.8)</td>
</tr>
<tr>
<td>Recently visited Wuhan‡</td>
<td>193/616 (31.3)</td>
<td>166/526 (31.6)</td>
</tr>
<tr>
<td>Had contact with Wuhan residents‡</td>
<td>442/611 (72.3)</td>
<td>376/522 (72.0)</td>
</tr>
<tr>
<td><strong>Median incubation period (IQR) — days‡</strong></td>
<td>4.0 (2.0–7.0)</td>
<td>4.0 (2.8–7.0)</td>
</tr>
<tr>
<td><strong>Fever on admission</strong></td>
<td>473/1081 (43.8)</td>
<td>391/910 (43.0)</td>
</tr>
<tr>
<td>Patients — no./total no. (%)</td>
<td>473/1081 (43.8)</td>
<td>391/910 (43.0)</td>
</tr>
<tr>
<td>Median temperature (IQR) — °C</td>
<td>37.3 (36.7–38.0)</td>
<td>37.3 (36.7–38.0)</td>
</tr>
<tr>
<td>Distribution of temperature — no./total no. (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;37.5°C</td>
<td>608/1081 (56.2)</td>
<td>519/910 (57.0)</td>
</tr>
<tr>
<td>37.5–38.0°C</td>
<td>238/1081 (22.0)</td>
<td>201/910 (22.1)</td>
</tr>
<tr>
<td>38.1–39.0°C</td>
<td>197/1081 (18.2)</td>
<td>160/910 (17.6)</td>
</tr>
<tr>
<td>&gt;39.0°C</td>
<td>38/1081 (3.5)</td>
<td>30/910 (3.3)</td>
</tr>
</tbody>
</table>
Important points:

- ~50% fever
- ~70% cough
- 40% fatigue
- 20-40% SOB
- <5% diarrhea
- Very few if any of these 1,099 patients said to have immunodeficiency or IDD [but whether/how questions asked is ?]
COVID-19 in Adults, continued

Guan et al, NEJM 2020, China

- Median age 47 y
- 60%/40% M/F distribution
- Most common S&Sx: fever, cough, fatigue
- CT scans: Ground glass opacities, infiltrates
- Lymphocytopenia

Arentz et al, JAMA 2020, Washington State

- Similar for first 21 cases in Seattle, although their average age was 70 y [many from skilled nursing facility]
- Fever 52%, Cough 48%, SOB 76% [higher than Guan et al, but older patients]
- Higher mortality, but again, from an older group
More recent data from China—JAMA Feb 24, 2020

• ~72,000 cases in China up to 2/11/20
• ~45,000 confirmed by PCR in the report
• Age distribution of the 45,000:

<table>
<thead>
<tr>
<th>Age group</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;80 y</td>
<td>1,408</td>
<td>3%</td>
</tr>
<tr>
<td>30-79 y</td>
<td>38,680</td>
<td>87%</td>
</tr>
<tr>
<td>20-29 y</td>
<td>3,619</td>
<td>8%</td>
</tr>
<tr>
<td>10-19 y</td>
<td>549</td>
<td>1%</td>
</tr>
<tr>
<td>&lt;10 y</td>
<td>416</td>
<td>1%</td>
</tr>
</tbody>
</table>

• CFR 14.8% if >80 y; but 2.3% overall
• Disease: Mild 81%, Severe 14%, Critical 5%
TABLE 1. Reported outcomes among COVID-19 patients of all ages, by hospitalization status, underlying health condition, and risk factor for severe outcome from respiratory infection — United States, February 12–March 28, 2020

<table>
<thead>
<tr>
<th>Underlying health condition/Risk factor for severe outcomes from respiratory infection (no., % with condition)</th>
<th>Not hospitalized</th>
<th>Hospitalized, non-ICU</th>
<th>ICU admission</th>
<th>Hospitalization status unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total with case report form (N = 74,439)</td>
<td>12,217</td>
<td>5,285</td>
<td>1,069</td>
<td>55,868</td>
</tr>
<tr>
<td>Missing or unknown status for all conditions (67,277)</td>
<td>7,074</td>
<td>4,248</td>
<td>612</td>
<td>55,343</td>
</tr>
<tr>
<td>Total with completed information (7,162)</td>
<td>5,143</td>
<td>1,037</td>
<td>457</td>
<td>525</td>
</tr>
<tr>
<td>One or more conditions (2,692, 37.6%)</td>
<td>1,388 (27)</td>
<td>732 (71)</td>
<td>358 (78)</td>
<td>214 (41)</td>
</tr>
<tr>
<td>Diabetes mellitus (784, 10.9%)</td>
<td>331 (6)</td>
<td>251 (24)</td>
<td>148 (32)</td>
<td>54 (10)</td>
</tr>
<tr>
<td>Chronic lung disease (656, 9.2%)</td>
<td>363 (7)</td>
<td>152 (15)</td>
<td>94 (21)</td>
<td>47 (9)</td>
</tr>
<tr>
<td>Cardiovascular disease (647, 9.0%)</td>
<td>239 (5)</td>
<td>242 (23)</td>
<td>132 (29)</td>
<td>34 (6)</td>
</tr>
<tr>
<td>Immunocompromised condition (264, 3.7%)</td>
<td>141 (3)</td>
<td>63 (6)</td>
<td>41 (9)</td>
<td>19 (4)</td>
</tr>
<tr>
<td>Chronic renal disease (213, 3.0%)</td>
<td>51 (1)</td>
<td>95 (9)</td>
<td>56 (12)</td>
<td>11 (2)</td>
</tr>
<tr>
<td>Pregnancy (143, 2.0%)</td>
<td>72 (1)</td>
<td>31 (3)</td>
<td>1 (1)</td>
<td>36 (7)</td>
</tr>
<tr>
<td>Neurologic disorder, neurodevelopmental, intellectual disability (52, 0.7%)*</td>
<td>17 (0.3)</td>
<td>25 (2)</td>
<td>7 (2)</td>
<td>3 (1)</td>
</tr>
<tr>
<td>Chronic liver disease (41, 0.6%)</td>
<td>24 (1)</td>
<td>9 (1)</td>
<td>7 (2)</td>
<td>1 (0.2)</td>
</tr>
<tr>
<td>Other chronic disease (1,182, 16.5%)</td>
<td>583 (11)</td>
<td>359 (35)</td>
<td>170 (37)</td>
<td>70 (13)</td>
</tr>
<tr>
<td>Former smoker (165, 2.3%)</td>
<td>80 (2)</td>
<td>45 (4)</td>
<td>33 (7)</td>
<td>7 (1)</td>
</tr>
<tr>
<td>Current smoker (96, 1.3%)</td>
<td>61 (1)</td>
<td>22 (2)</td>
<td>5 (1)</td>
<td>8 (2)</td>
</tr>
<tr>
<td>None of the above conditions* (4,470, 62.4%)</td>
<td>3,755 (73)</td>
<td>305 (29)</td>
<td>99 (22)</td>
<td>311 (59)</td>
</tr>
</tbody>
</table>

Abbreviation: ICU = intensive care unit.

* Includes any of the following: asthma, chronic obstructive pulmonary disease, and emphysema.

† For neurologic disorder, neurodevelopmental, and intellectual disability, the following information was specified: dementia, memory loss, or Alzheimer’s disease (17); seizure disorder (5); Parkinson’s disease (4); migraine/headache (4); stroke (3); autism (2); aneurysm (2); multiple sclerosis (2); neuropathy (2); hereditary spastic paraplegia (1); myasthenia gravis (1); intracranial hemorrhage (1); and altered mental status (1).

§ For other chronic disease, the following information was specified: hypertension (111); hypothyroid disease (37); gastrointestinal disorder (32); hyperlipidemia (29); cancer or history of cancer (29); rheumatologic disorder (19); hematologic disorder (17); obesity (17); arthritis, nonrheumatoid, including not otherwise specified (16); musculoskeletal disorder other than arthritis (10); mental health condition (9); urologic disorder (7); cerebrovascular disease (7); obstructive sleep apnea (7); fibromyalgia (7); gynecologic disorder (6); embolism, pulmonary or venous (5); ophthalmic disorder (2); hypertriglyceridemia (1); endocrine (1); substance abuse disorder (1); dermatologic disorder (1); genetic disorder (1).

* All listed chronic conditions, including other chronic disease, were marked as not present.
COVID-19 in Children
Dong Y et al, China

Important points:
- Not many—2,141 [731 confirmed]—but more than other reports to date
- Still almost 60/40 male
- Severe disease uncommon
- Median incubation 3 d
- Median age 10 y
Important points:
- Severe disease skewed to those infants and toddlers.

Table 2 Different Severity of Illness by Age Group

<table>
<thead>
<tr>
<th>Age group*</th>
<th>Asymptomatic</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Critical</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>7 (7.4)</td>
<td>205 (18.8)</td>
<td>127 (15.3)</td>
<td>33 (29.5)</td>
<td>7 (53.8)</td>
<td>379 (17.7)</td>
</tr>
<tr>
<td>1-5</td>
<td>15 (16.0)</td>
<td>245 (22.5)</td>
<td>197 (23.7)</td>
<td>34 (30.4)</td>
<td>2 (15.4)</td>
<td>493 (23.0)</td>
</tr>
<tr>
<td>6-10</td>
<td>30 (31.9)</td>
<td>278 (25.5)</td>
<td>191 (23.0)</td>
<td>22 (19.6)</td>
<td>0 (0)</td>
<td>521 (24.3)</td>
</tr>
<tr>
<td>11-15</td>
<td>27 (28.7)</td>
<td>199 (18.2)</td>
<td>170 (20.5)</td>
<td>14 (12.5)</td>
<td>3 (23.1)</td>
<td>413 (19.3)</td>
</tr>
<tr>
<td>&gt;15</td>
<td>15 (16.0)</td>
<td>164 (15.0)</td>
<td>146 (17.5)</td>
<td>9 (8.0)</td>
<td>1 (7.7)</td>
<td>335 (15.7)</td>
</tr>
<tr>
<td>Total</td>
<td>94</td>
<td>1091</td>
<td>831</td>
<td>112</td>
<td>13</td>
<td>2141 (100)</td>
</tr>
</tbody>
</table>

Data were presented with number and percent (%); *Two cases had missing values.
US Pediatric Data—April 6, 2020 MMWR Early Release

- As of April 2, 2020: 239,279 cases and 5,443 deaths in US
  - 149,082 cases with known age data
    - 2,572 (1.7%) were <18 y
    - Yet, 22% of the US population is <18 y of age

- Median age 11 y [range 0-17 y]
- 91% had exposure to a patient in household or in community
- 9% travel-associated

- Only 3 deaths reported to date
FIGURE 1. COVID-19 cases in children* aged <18 years, by date reported to CDC (N = 2,549)† — United States, February 24–April 2, 2020§

* Includes infants, children, and adolescents.
† Excludes 23 cases in children aged <18 years with missing report date.
§ Date of report available starting February 24, 2020; reported cases include any with onset on or after February 12, 2020.
Important points:

- Children: less common than in adults, but still predominance of {Fever, cough, or shortness of breath} 73% vs 93%
- Less myalgia; less headache; still rare GI signs/symptoms
Children with known hosp status \([n=745]\), grouped by age & hosp status

- Infants more likely hospitalized
- But ICU uncommon in all
Transmission & Prevention

- Transmission is by DROPLET SPREAD in community settings
  - 5-10 µM droplets such as those in cough or sneeze
  - They can move ~3 ft, and be on contaminated surfaces “fomites” for a few hours

- Hence, SOCIAL DISTANCING 6 ft, HANDWASHING, & MASK use should prevent transmission for the most part
  - Aerosol transmission [long distance through air, e.g., measles] is ONLY relevant with selected medical procedures
Social Distancing

Social distancing: What should I do?

Working from home
- Advised
  - For anyone aged 0-69
- Strongly advised
  - Anyone 70+
  - Those with an underlying health conditions
  - Pregnant women

Use less public transport
- Advised
  - For anyone aged 0-69
- Strongly advised
  - Anyone 70+
  - Those with an underlying health conditions
  - Pregnant women

Visits from friends and family
- Advised against
  - For anyone aged 0-69
- Strongly advised against
  - Anyone 70+
  - Those with an underlying health conditions
  - Pregnant women

Socialising outside home
- Advised against
  - For anyone aged 0-69
- Strongly advised against
  - Anyone 70+
  - Those with an underlying health conditions
  - Pregnant women

Those with serious underlying health conditions: as above but further guidance will be provided by the NHS

Source: Public Health England
Confused about social distancing?

Are you at home?

YES

NO

Go home

NO

Are you home now?

YES

NO

Good job! Stay there!

STOP THE SPREAD
Stay Six Feet Apart | Wash Your Hands
“Flattening the Curve” to try to avoid high peak case loads
What is Different About COVID-19 Among Those with IDD?

??

[No data!]

[Image 0x-0 to 792x526]
What is Different About COVID-19 Among Those with IDD, continued

I. **Medical Comorbidities**
   A. Obesity, neurologic disease, respiratory disease, including tracheostomy, home ventilators
   B. Communication difficulties

II. **Self-Care “Comorbidities”**
   A. May be partly or entirely dependent on others for self-care—such that exposed to more people, perhaps lesser degrees of handwashing
   B. May be harder to socially distance in homes
What is Different About COVID-19 Among Those with IDD?

III. Intellectual “Comorbidities”
   A. All of this—social distancing, quarantine—is hard for anyone to grasp!
   B. Those living with IDD are not always facile with rapidly [and rather radically] changing routines

IV. Potential Ethical Issues with Pandemic Care
   A. Triage of ventilators, medical care MUST be allocated equitably, fairly, and rationally [American with Disabilities Act; American College of Physicians; many state governments incl. PA, MN, NY; many bioethicists]
   B. But some may judgmentally consider IDD as “excludable”
Pandemic Medical Resource Triage

• Originally developed for combat
• Over past 20y, modified for bioterrorism, chemical terrorism, and pandemic influenza planning
• First real test seems to be COVID-19; will we “get it right”?

• Inappropriate:
  • “first come, first serve”
  • “sickest first”

• APPROPRIATE: a balance of:
  • Patient need
  • Effectiveness [likelihood that tx will help pt recover]
  • Objective Prognosis [best clinical evidence—NOT simply “life-years” which are inherently biased against IDD and elderly]
One possible framework

• EL Daugherty Biddison et al, Chest 2019;155:848-54 [cited by White & Lo, JAMA 3/27/20 as basis for Univ of Pittsburgh policy]

• 4 principles each of which has a point system assigned:
  • Prognosis for short-term survival [SOFA or PELOD-2 scoring]
  • Prognosis for long-term survival [none vs severe comorbid conditions with life expectancy <1 y]
  • Life Cycle considerations [pregnancy with healthy fetus or children-49 y; then 50-69 y; 70-84 y; >85 y]
  • Fair chance for ties [response to previous tx, possibly tx order or lottery]

• Clinically experienced Triage team distinct from clinicians caring for the patients as decision-making AND communicating team
Other considerations

• Early fill Rx, 90 d overrides, etc. to help people with IDD avoid medication interruption
• Attention to continuing routine immunization!
• Telehealth & Telemedicine visits
• Infection Prevention to protect both HCW, caregivers
• Attention to food insecurity!
• Mental health assistance for people with IDD AND caregivers
  • SAMHSA.hhs.gov Talking with Children [Tips during outbreaks]
  • Disability Rights Education & Defense Fund [DREDF]
  • NASP/NASM Helping Children Cope...
• AADMD [https://www.aadmd.org/coronavirus-center]
Thank you!