Living Safely with Down Syndrome in the Age of COVID-19

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Global Down Syndrome Research and Medical Care Roundtable
NDSC

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Mommy, is this Armageddon?

Early March, 2020

• At Costco: - no toilet paper - no disinfectant wipes
  - No soup - Only 2 palettes of water per customer

• NO!

• Basic services are intact- water, electricity, traffic lights, sewers
• We have leaders, scientists, guidance, hope.
• We have each other
Corona Virus
Baltimore Group IV (±)ssRNA

2019 Novel Coronavirus (SARS CoV2)
Epidemic of Severe Febrile Pneumonia (COVID-19)

- Newly introduced zoonotic viral pathogen
  - 7th known coronavirus
  - 4 common cold viruses
  - 3 are serious
    - SARS
    - MERS
    - SARS CoV2 (COVID-19)

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Respiratory Viral Infections

- Upper respiratory tract: Rhinoviruses, Human coronaviruses, Adenoviruses, Parainfluenza viruses, Human metapneumovirus, Influenza viruses
- Lower respiratory tract: Parainfluenza viruses, Influenza viruses, Influenza viruses, Parainfluenza viruses, Human metapneumovirus, RSV

Pneumonia

Low Oxygen

Subbarao K, Mahanty S. Immunity 2020; https://doi.org/10.1016/j.immuni.2020.05.004
Infections as Cause of Death in Persons with Down Syndrome

Sweden
- Infections 52.0 – 57.1%
- Pneumonia 41.7 – 48.7%

Western Australia

Table 1 Causes of death among people with Down syndrome at different life stages

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Childhood and early adulthood (0–18 yr), % (n)</th>
<th>Adulthood (19–40 yr), % (n)</th>
<th>Senescence (&gt;40 yr), % (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congenital heart defects</td>
<td>12.8 (19)</td>
<td>23.1 (9)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Pneumonia and other respiratory infections</td>
<td>33.1 (49)</td>
<td>23.1 (9)</td>
<td>39.6 (44)</td>
</tr>
</tbody>
</table>

2009 H1N1 Influenza Epidemic
Adults with T21 and other adults had similar influenza symptom onset. However, adults with DS had:
- 16-fold increase in hospitalizations,
- 8-fold increase in intubation, and
- 335-fold increase in death

Increased incidence of bacterial and viral pneumonia with Down Syndrome, not all fatal.

Bittles. Eur J Pub Hlth 2006; 17:221
Distribution of SARS CoV2 Cases in Colorado
by June 22, 2020

<table>
<thead>
<tr>
<th>Age</th>
<th>Cases</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-19</td>
<td>8%</td>
<td>0.2%</td>
</tr>
<tr>
<td>20-59</td>
<td>67%</td>
<td>10%</td>
</tr>
<tr>
<td>60-80+</td>
<td>25%</td>
<td>90%</td>
</tr>
</tbody>
</table>

Risks for Hospitalization and Death
- Advanced age
- Hypertension
- Chronic lung disease
- Diabetes
- Vascular disease
- Immunocompromise
# Prevalence of COVID-19 in People with Down Syndrome

<table>
<thead>
<tr>
<th>Group</th>
<th>Frequency of documented COVID-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. population</td>
<td>1:103</td>
</tr>
<tr>
<td>Colorado population</td>
<td>1:162</td>
</tr>
</tbody>
</table>

**Unpublished early data:**

Compared with age-matched people, persons with Trisomy 21 show:

- **Increased** incidence of pneumonia of other causes
- **Decreased** frequency of vaccination for pneumonia

Relatively **similar** incidence of **COVID-19 infection**
- Similar outcomes
- More information needed

- Low exposure
- Immune integrity
- Good care
- Asymptomatic carriers?
Proposed Therapy of SARS CoV2

Drugs attempt to target different parts of the virus life cycle.

One drug with proven efficacy to date:

Remdesivir
- Shortens recovery

Sanders. JAMA 4/13/20
Some things we don't know yet about COVID-19

• How many people have been infected?
• The amount of virus it takes to make you sick?
• The role of children in spreading the virus?
• *Why some people get much sicker than others?
• *How long you will be immune (protected) after infection?
  - How long a vaccine will protect you?
How to avoid COVID-19

• Avoid exposure to sick people, and social distancing
• Wash hands (soap and water for 20 seconds)
• Avoid touching face
• Wipe down surfaces (alcohol, chlorox)
• Surgical mask: Prevents transmission, ? infection
• N95 mask: Caring for someone ill
  - difficult to wear for more than 30 minutes
• Eye protection (esp. HCW)
• Face Shield
Managing Social Isolation

- **Loneliness**: as bad as smoking. Increased mortality.
  - Stress → chronic release of stress hormones → decreased immune function and more inflammation

- **Exercise**
  - Reduces Stress; Enhances immune function
  - **Walk outside**, online yoga and fitness classes

- **Social “closening”**
  - Regular telephoning of friends (and email, social media)
  - Positive social relationships and ties (for you and others)

- **Mindfulness and/or prayer**
  - Reduces inflammation; Enhances immune function

- **Do small things for other people**

Amanda Ripley. NY Times 03/17/20
Living Safely with Down Syndrome in the Age of COVID-19

- SARS CoV2 is the virus; COVID-19 is the disease
- SARS CoV2 causes serious lung disease (pneumonia; low oxygen)
- Pneumonia is a major cause of disease and death with Down Syndrome
- To date, COVID-19 has similar incidence and outcome +/- Down Syn.
- Promising new medicines and vaccines are in development
- COVID-19 can be prevented by behavior and barriers
- Social Distancing can bring people together.