

## Rapid response

# COVID-19 mask-wearing in children and people with disabilities

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Evidence to Care  
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# Introduction

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## Purpose

Beginning July 7, 2020, wearing a mask or face covering will be required in indoor public spaces in the City of Toronto and mandatory mask by-laws are spreading across Canada. Individuals who cannot wear a mask for medical reasons or are unable to 'place, remove or use' a mask without assistance, children under 2 years of age, and other reasonable accommodations under the Human Rights Code are exempt from this requirement but little guidance is offered.<sup>1</sup> The purpose of this rapid response was to answer:

What do we know about COVID-19 mask-wearing in children and people with disabilities?

## Outcomes and phenomena of particular interest include:

- Considerations of mask-wearing
- Compliance with mask-wearing
- Experience of mask-wearing

## Review scope

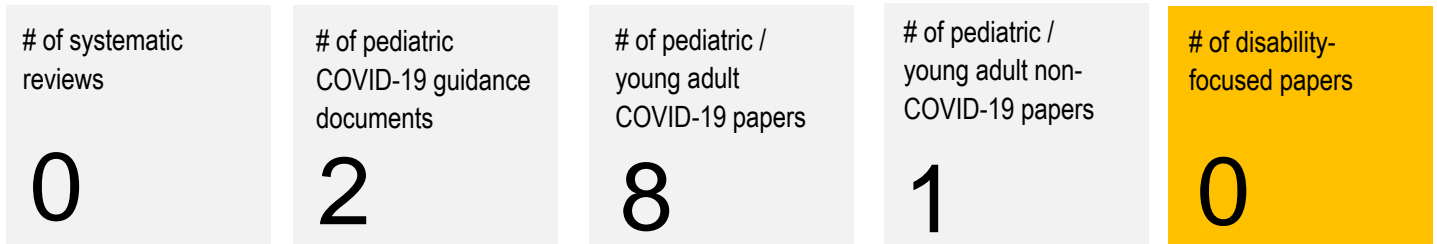
As information on COVID-19 is rapidly changing, this search was specific to publications released from 2019 on and conducted in MEDLINE and Google Scholar. Few publications were found meeting search criteria (e.g., 'mask wearing', 'mask use', 'face covering', 'children', 'disability') and a decision was made to include relevant papers for children and young adults (< 27 years) identified.

## Document outline

1. Current state of knowledge – Bottom line
2. Overview of best available evidence
3. Other sources: Internet Resources on Masking and Children/People with Disabilities
4. Report limitations: List of Literature Supporting Face Masks for General Public
5. Report working group
6. References

# Current state of knowledge – Bottom line

This is what we included in our targeted rapid review on mask wearing in children and people with disabilities:



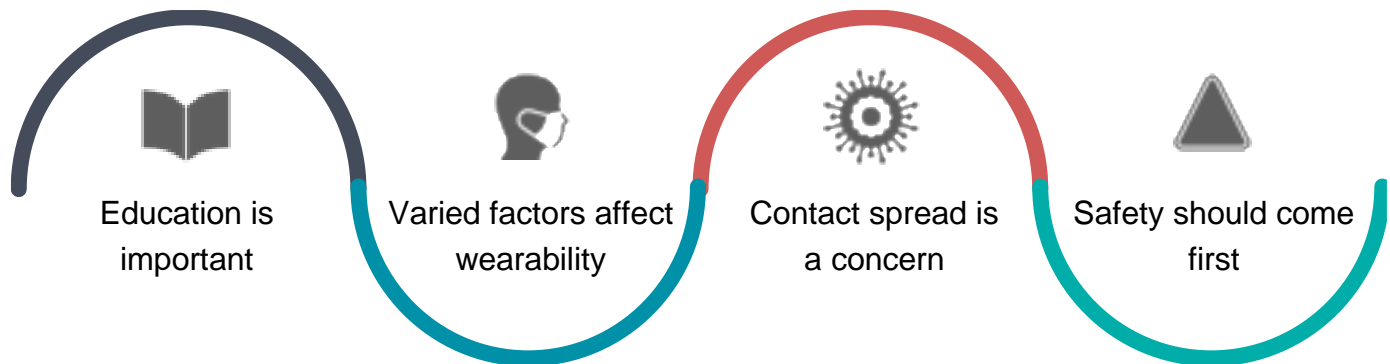
Two ‘return to school’ guidance documents by trusted organizations were identified with sections devoted to face coverings and protective physical equipment with considerations of children with special needs.<sup>2,3</sup>

Among peer-reviewed publications, four were commentaries: the first two explored the concept of universal masking in relation to children<sup>4</sup> (including a letter to the editor response)<sup>5</sup>, the third profiled lessons learned from a youth non-profit organization;<sup>6</sup> and the fourth raised concern over the impact of long-term wearing on ear protrusion in growing children.<sup>7</sup> The remaining five employed retrospective surveys (n=3)<sup>8,9,10</sup> or combination of questionnaire and observational component (n=2).<sup>11,12</sup> Studies included primary school students in Wuhan<sup>8</sup> and London<sup>12</sup>, youth experiencing homelessness in Philadelphia<sup>6</sup>, and young adult (< 27 years) university students in Taiwan<sup>11</sup> and Poland.<sup>9,10</sup>

No research studies involving children or adults with disabilities examining precautionary mask-wearing for COVID-19 were found.

## Key Findings

Within this literature, there is minimal evidence on precautionary mask-wearing in children and/or people with disabilities. Emerging guidance suggests:



# Overview of best available evidence

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## Considerations of mask-wearing

The American Academy of Pediatrics (AAP) and SickKids have both released 'return to school' guidance documents (June 2020) in which considerations of mask-wearing in children are discussed.<sup>2,3</sup>

Both documents offer similar statements regarding the emerging data on universal mask wearing and face coverings in the spread of COVID-19 and acknowledge that many questions still remain.

### When is masking helpful?

From SickKids: "Non-medical masks may reduce transmission from individuals who are shedding the virus.<sup>13</sup> However, the extent of this benefit is unknown (especially in children) and would only be potentially beneficial if done properly".<sup>3</sup>

From AAP: "Although many questions remain, the preponderance of evidence indicates that children and adolescents are less likely to be symptomatic and less likely to have severe disease resulting from SARS-CoV-2 infection. In addition, children may be less likely to become infected and to spread infection".<sup>2</sup>

### When is masking inappropriate?

Mask wearing should be developmentally appropriate, feasible and must be done safely. Certain diagnoses or medical conditions (e.g., developmental delay, respiratory concerns (asthma, allergies), tactile aversion, or other conditions) may make mask-wearing unsafe, uncomfortable, or intolerable.<sup>2,3</sup> "Children under 2 years and anyone who has trouble breathing or is unconscious, incapacitated, or otherwise unable to remove a face covering without assistance should not wear cloth face coverings".<sup>2</sup> SickKids further offers that "masks should not generally be used for children under age 6 who are not able to understand how to wear a mask or communicate if they become distressed".<sup>14</sup>

### What are the concerns or potential negative impacts of masking?

For children who can mask, if worn incorrectly, it could lead to increased risk of infection.<sup>3</sup> Increased irritability and face-touching, adjusting or playing with a face-covering may lead to increased contact spread.<sup>3,4,14</sup>

More broadly, individuals who are deaf or with hearing impairments, young children, and individuals learning the local language may experience difficulties with communication.<sup>2</sup> Speech may be 'muffled', hard to hear or discern, and reliance on facial recognition is limited.<sup>14</sup> Face coverings with clear panels to afford lip reading may be needed.<sup>2</sup>

### How can we improve the safety of masking?

Education is important and cooperation key.<sup>4</sup> Children and youth should be taught how to properly wear (cover nose and mouth); remove (hand hygiene and storage) for meals and physical activity; and maintain (washing regularly or proper disposable of) their face coverings.<sup>2,3</sup> Practice, behavior techniques and social

skills stories may help some children adapt to wearing a face covering when it is not medically contraindicated.<sup>2</sup>

## Compliance with mask-wearing

It is important to note that universal masking was not mandated within the contexts of the included studies. Good mask-wearing behaviors among primary school students in Wuhan, China during the COVID-19 epidemic were found to be influenced by:

- place of residence (i.e., degree of restriction in place)
- higher education level of mother and
- higher grade levels of students.<sup>8</sup>

Perceptions of peer behaviors and normative behaviors were also noted by health leaders in a non-profit organization providing housing and support services for youth experiencing homelessness as important considerations for driving adolescent mask-wearing.<sup>6</sup>

Experts at SickKids further acknowledge “that not all children, regardless of age, will be able or willing to wear a mask”.<sup>14</sup> No child should be forced.<sup>4</sup>

## Experience of mask-wearing

The following table highlights perspectives from children, adolescents and young adults on the experience of mask-wearing and perceptions of wearability from the 9 peer-reviewed publications identified.<sup>4-12</sup> At a high level:

<b>Breathing complications</b>
<ul style="list-style-type: none"><li>- Top issues:<ul style="list-style-type: none"><li>o Discomfort inhaling</li><li>o Moisture build-up</li><li>o Unpleasant odor from breath</li></ul></li><li>- Perceptions of breathing difficulty may cause children to remove masks</li></ul>
<ul style="list-style-type: none"><li>- Children less than 2 years of age should not wear masks owing to small airways and risk of suffocation</li></ul>
<b>Comfort/Discomfort</b>
<ul style="list-style-type: none"><li>- Fit and physical sensation:<ul style="list-style-type: none"><li>o Many masks are made for adults and not adaptable to smaller faces; recommend child-size masks when available</li><li>o Risk of pinching or sticking to skin if too small</li><li>o Different brands may have different perceived comfort, hotness, breathability and fit</li><li>o Cloth masks seem to be the most popular (availability may be a factor); N95 not recommended unless medically advised and child-sized</li></ul></li><li>- Face warmth:<ul style="list-style-type: none"><li>o Increased face warming and sweating can be uncomfortable</li><li>o Eyeglass misting or steaming can impede vision</li><li>o Physical activity and weather can increase complaints of hotness and breathability</li><li>o Feeling too hot can impact breathing</li></ul></li><li>- Surgical masks may be linked to lower risk of adverse reactions (e.g., skin irritation)</li><li>- Improper fit or discomfort may lead to increased face touching</li><li>- Constant pressure from long-term wear may lead to ear protrusion in growing children (expert opinion)</li></ul>
<b>Appearance</b>
<ul style="list-style-type: none"><li>- Mask appearance is an important aspect of perceived wearability</li><li>- Designs expressing personal style can increase compliance in mask-wearing (e.g., sports-themes)</li></ul>
<b>Handling</b>
<ul style="list-style-type: none"><li>- Knowledge of good mask behavior is important (i.e., when and how to use)</li><li>- Hand contact spread is a concern when putting on and taking off a mask</li><li>- Children and youth may not store their masks properly (e.g., bags, jacket/pant pockets)</li></ul>

## Other sources: Internet resources

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Given scant amount of published papers on mask-wearing in children and/or people with disabilities, a list of internet resources is compiled and attached for your information; see Appendix 1. These resources provide guidance as well as tips and tricks for parents and children. Most are in English and disability considerations focus primarily on autism spectrum disorder or developmental disabilities. Content from the Sick Kids webpage [Frequently asked questions about family/caregiver and patient masking](#) has been included in this report.<sup>14</sup> Hyperlinks are provided for ease of access.

## Limitations

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This report only profiled select commentaries, primary papers and guidance documents published in the COVID-19 era (from 2019 on). New information is released daily in this rapidly changing landscape.

This synthesis did not explore effectiveness of mask-wearing (e.g., mask vs no mask/face-shield) or of mask type (e.g., surgical vs non-surgical masks). At the time of this review, there are no randomised trials or definitive evidence available on effectiveness of face masks for children or person with disabilities. A list of literature supporting face masks for the general public is compiled and attached for your information; see Appendix 2.

## Report working group

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## References

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1. City of Toronto. [COVID 19: Mandatory Mask or Face Covering Bylaw](#). July 6, 2020.
2. American Academy of Pediatrics (AAP). [COVID-19 Planning Considerations: Guidance for School Re-entry](#). (PDF page 7-8 for Face coverings and PPE). June 25, 2020.
3. SickKids. [COVID-19: Recommendations for school reopening](#). June 17, 2020.
4. Esposito, S., & Principi, N. (2020). [To mask or not to mask children to overcome COVID-19](#). *European Journal of Pediatrics*. PMID: 32388722 [commentary]
5. Jin, K., Minm J., & Jin, X. (2020). [Re: Esposito et al.: To mask or not to mask children to overcome COVID\\_19](#). *European Journal of Pediatrics*. [commentary]
6. Davies, S.H. & Porta, A.D. (2020). [Lessons learned: Achieving critical mass in masking among youth living in congregate living](#). *Journal of Adolescent Health*: in press. [commentary]
7. Zanotti, B., Parodi, P.C., Riccio, M., De Fransesco, F., & Zingaretti, N. (2020). [Can the elastic of surgical face masks stimulate ear protusion in children?](#) *Aesthetic Plastic Surgery*, June 18. [commentary]
8. Chen, X, Ran, L., Liu, Q., Hu, Q., Du, X., & Tan, X. (2020). [Hand hygiene, mask-wearing behaviors and its associated factors during the COVID-19 epidemic: A cross-sectional study among primary school students in Wuhan, China](#). *International Journal of Environmental Research and Public Health*, 17, 2893.
9. Matusiak, Ł., Szeplietowska, M., Krajewski, P, Białynicki-Birula, R. & Szeplietowski, J.C. (2020). [Inconveniences due to the use of face masks during the COVID-19 pandemic: A survey of 876 young people](#). *Dermatologic Therapy*, e13567.
10. Matusiak, Ł., Szeplietowska, M., Krajewski, P, Białynicki-Birula, R. & Szeplietowski, J.C. (2020). [The use of face masks during the COVID-19 pandemic in Poland: a survey study of 2315 young adults](#). *Dermatologic Therapy*, e13909.
11. Chao, F. (2020). [Adolescents' face mask usage and contact transmission in novel Coronavirus](#). *Journal of Public Health Research*, 9, 1771.
12. Smart, N.R., Horwell, C.J., Smart, T.S., & Galea, K.S. (2020). [Assessment of the wearability of facemasks against air pollution in primary school-aged children in London](#). *International Journal of Environmental Research and Public Health*, 17, 3935.
13. Public Health Ontario. [COVID-19 - What We Know So Far... About Wearing Masks in Public](#). June 24, 2020.
14. SickKids. [Frequently asked questions about family/caregiver and patient masking](#). July 2, 2020.



## Appendix 1. Select Internet Resources on Masking and Children / People with Disabilities (July 9, 2020)

- Centers for Disease Control and Prevention (CDC). [Considerations for Wearing Cloth Face Coverings - Help Slow the Spread of COVID-19](#). June 28, 2020.  
See [Feasibility and Adaptations](#) for young children and people with disabilities.
- Challenging Behavior Foundation. [Coronavirus \(COVID-19\): Severe Learning Disability Information Cards](#). Information cards that contain all the information that the police or public need to understand why a relative is not following social distancing guidance or wearing a facemask. n.d. (PDF)
- Government of Canada. [COVID-19: How to safely use a non-medical mask or face covering](#). June 26, 2020. (PDFs available in other languages + video)
- Government of Canada. COVID-19 and people with disabilities in Canada, Section: [Infection prevention and control measures and personal protective equipment](#), items c, d & e. May 7, 2020.
- American Academy of Pediatrics (AAP). [COVID-19 Planning Considerations: Guidance for School Re-entry](#). (PDF page 7-8 for Face coverings and PPE). June 25, 2020.
- SickKids. [COVID-19: Recommendations for school reopening](#). (page 5 for mask wearing). June 17, 2020
- SickKids. [Frequently asked questions about family/caregiver and patient masking](#). July 2, 2020.
- Children's Hospital of Eastern Ontario (CHEO). [Kids and masks: tips from an expert](#). Dr. Jason Brophy, a pediatric infectious diseases physician, to share some tips and information on wearing face masks, including how and when kids, caregivers and families in our community should wear them. April 24, 2020.
- Children's Hospital of Eastern Ontario (CHEO). [Superheroes behind the mask: personal protective equipment \(PPE\) for kids](#) (video)
- Nationwide Children's Hospital, Columbus, OH. [Masks and New Routines: Helping Children with Special Needs During COVID-19](#). May 28, 2020.
- Children's Hospital of Richmond at VCU, Richmond, Virginia. [Making face masks fun: Tips for helping your child with special needs](#). May 27, 2020.
- [Autism & COVID-19 Webinar 4: Wearing Face Masks during the COVID-19 pandemic: Strategies to Overcome Sensory Issues](#). April 23, 2020. (Webinar)  
Webinar discussing strategies on helping children with autism wear face masks.
- Autism Speaks. [Making Mask-Wearing Easier for Autistic Adults and Those with Sensory Needs](#). (Video). Clinical psychologist Dr. Rebecca Shaffer of Cincinnati Children's Hospital reviews some easy steps to practice mask-wearing at home for autistic people so that you can be successful wearing masks as communities re-open. A second video is also offered [Caregiver tips to make mask-wearing easier for people with autism](#). May 15, 2020. (video)
- Autism Services, Education, Resources, and Training Collaborative (ASERT). [Wearing a Mask Social Story](#). (PDFs available in five other languages + animated social story video).
- [We Wear Masks - A Video Social Story about the coronavirus](#) (Mr. Mike)  
A Video Social Story about the coronavirus from Mr. Mike's Tips and Tutorials for Teachers and Parents.
- The Boggs Center on Developmental Disabilities and Children's Specialized Hospital. [Face Mask Resources for Children & Adults](#) (PDFs available in English & Spanish): [I can stay healthy by wearing a face mask](#); [Help your child feel good about using and seeing others wearing face masks](#);

and [A parent's guide: Helping your child wear a face mask](#) (PDF). Also has 2 resources for adults with intellectual/developmental disabilities.

- U.S. Minnesota Department of Health. [Best Practices for Masks: Considerations for People with Disabilities and Special Health Needs](#). May 22, 2020.
- CanChild McMaster. [Masks for Kids by Dr. Olaf Kraus de Camargo](#). June 19, 2020. (video).
- Autism Speaks; Werner, LJ & Marotta, A. [We wear masks](#). A simple story to support children in understanding why they see everyone wearing masks. (PDF)
- The Autism Program at Boston Medical Center. [I can wear a face mask!](#) (PDF)
- Action Learning Network. University of Alabama at Birmingham. [Tips for Helping Kids Wear Masks](#). (PDF)
- Harvard Health Publishing. Harvard Medical School. [Helping people with autism spectrum disorder manage masks and COVID-19 tests](#). Dr. Robyn Thom and Karen Turner offer tips for helping people with ASD adapt to wearing masks and/or experience of COVID-19 test. June 20, 2020. (Blog).
- UPMC Western Behavioral Health. [Making masking manageable](#). Three tips for children and those with ASD. (PDF)
- TVO Kids. [Dr. Cheddar: Wearing a mask](#). June 17, 2020. (Video)

## **Children Books**

- [Coronavirus: A Book for Children](#)  
The book answers key questions in simple language appropriate for 5 to 9 year olds.
- ["My Hero is You, How kids can fight COVID-19!"](#)  
This book is written for children around the world affected by the COVID-19 outbreak, aimed primarily at children aged 6-11 years old. (Available in five other languages).
- [Trinka and Sam fighting the big virus: Trinka, Sam and Littletown work together](#).  
This book is written for children and families to talk about experiences and feelings related to COVID-19 and sheltering in place. Masks are mentioned a few times. (Available in five languages). 2020. (PDF)

## **General information on COVID for people with disabilities and/or vulnerable populations**

- Green Mountain Self-Advocates. [COVID-19 Information by and for people with disabilities](#). (PDF)
- Center for Dignity in Healthcare for People with Disabilities. [Do you know your rights with COVID-19?](#) (PDF)
- World Health Organization. [Disability considerations during the COVID-19 outbreak](#). (PDF) March 26, 2020.
- Armitage, R and Nellums, L.B. [The COVID-19 response must be disability inclusive](#). (Commentary) March 27, 2020.
- COVID-19 Health Literacy Project. [COVID-19 Fact Sheets](#). A collection of fact sheets available in 30+ languages to help patients know when, and how to seek care; facts sheets available for children and adolescents.

## Appendix 2. Select Literature Supporting Face Masks for General Public (July 9, 2020)

### Guidances & Recommendations

- World Health Organization. [Advice on the use of masks in the context of COVID-19: interim guidance, 5 June 2020](#). No. WHO/2019-nCov/IPC\_Masks/2020.4. World Health Organization, June 5, 2020.
- American Academy of Pediatrics (AAP). [COVID-19 Planning Considerations: Guidance for School Re-entry](#). (PDF page 7-8 for Face coverings and PPE). June 25, 2020.
- SickKids. [COVID-19: Recommendations for school reopening](#). (page 5 for mask-wearing). June 17, 2020
- Centers for Disease Control and Prevention (CDC). [Evidence for Effectiveness of Cloth Face Coverings](#). June 28, 2020.
- Toronto Public Health. [Use of Cloth Masks or Face Covering](#). Covid-19 Fact Sheet. July 6, 2020. (PDF)
- Ministry of Health. Poster. [Wear a face covering when physical distancing is challenging](#). June 23, 2020. (PDF)
- Public Health Ontario. [COVID-19 - What We Know So Far... About Wearing Masks in Public](#). June 24, 2020.

### Articles / Commentary / Editorials, etc.

- Howard, J.; Huang, A.; Li, Z.; Tufekci, Z.; Zdimal, V.; van der Westhuizen, H.; von Delft, A.; Price, A.; Fridman, L.; Tang, L.; Tang, V.; Watson, G.L.; Bax, C.E.; Shaikh, R.; Questier, F.; Hernandez, D.; Chu, L.F.; Ramirez, C.M.; Rimoin, A.W. [Face Masks Against COVID-19: An Evidence Review](#). Preprints 2020, 2020040203 (doi: 10.20944/preprints202004.0203.v1). (PDF)
- Wang, J., Pan, L., Tang, S., Ji, J. S., & Shi, X. (2020). [Mask use during COVID-19: A risk adjusted strategy](#). Environmental Pollution, Volume 266, Part 1, 115099. doi.org/10.1016/j.envpol.2020.115099 (PDF)
- Chu DK, Akl EA, Duda S, et al. [Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis](#). Lancet. 2020;395(10242):1973-1987. doi:10.1016/S0140-6736(20)31142-9 (PDF)
- MacIntyre CR, Wang Q. [Physical distancing, face masks, and eye protection for prevention of COVID-19](#) [published correction appears in Lancet. 2020 Jun 5]. Lancet. 2020;395(10242):1950-1951. doi:10.1016/S0140-6736(20)31183-1 (**Comment on Chu's article**) (PDF)
- MacIntyre CR, Chughtai AA. [A rapid systematic review of the efficacy of face masks and respirators against coronaviruses and other respiratory transmissible viruses for the community, healthcare workers and sick patients](#). *Int J Nurs Stud*. 2020;108:103629. doi:10.1016/j.ijnurstu.2020.103629 (PDF)
- Greenhalgh T, Schmid MB, Czypionka T, Bassler D, Gruer L. [Face masks for the public during the covid-19 crisis](#). BMJ. 2020;369:m1435. Published 2020 Apr 9. doi:10.1136/bmj.m1435 (PDF)
- Lazzarino AI, Steptoe A, Hamer M, Michie S. [Covid-19: Important potential side effects of wearing face masks that we should bear in mind](#). BMJ. 2020;369:m2003. Published 2020 May 21. doi:10.1136/bmj.m2003 (**Comment on Greenhalgh's article**) (PDF)
- Sunjaya AP, Jenkins C. [Rationale for universal face masks in public against COVID-19](#). *Respirology*. 2020;25(7):678-679. doi:10.1111/resp.13834 (PDF)

- UHN. Library & Information Services. Emerging Evidence Search Request. [How effective is a 3-ply surgical mask in stopping COVID viral particular from travelling through the mask?](#) June 16, 2020.
- Alberta Health Services. COVID-19 Scientific Advisory Group Rapid Response Report. [Key Research Question: What is the effectiveness of wearing medical masks, including home-made masks, to reduce the spread of COVID-19 in the community?](#) June 19, 2020.
- Esposito, S. & Principi, N. [To mask or not to mask children to overcome COVID-19.](#) *European Journal of Pediatrics* May 9, 2020.
- Ma QX, Shan H, Zhang HL, Li GM, Yang RM, Chen JM. [Potential utilities of mask-wearing and instant hand hygiene for fighting SARS-CoV-2.](#) *J Med Virol.* 2020.

#### Internet News

July 3, 2020. [How to make COVID-19 mask-wearing a habit: Social scientists offer some suggestions](#) (CBC)

July 2, 2020. [Mandatory mask policies raise accessibility concerns for vulnerable populations](#) (Toronto Sun)

June 17, 2020. [Mandatory mask laws are spreading in Canada](#) (CBC)

May 11, 2020. [Some autistic people can't tolerate face masks. Here's how we're managing with our son.](#) (Washington Post).