Children & COVID-19: Focus on vaccination

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COVID-19 Vaccines are effective and safe
(however most of the data on effectiveness is from Delta / other variants)

Effectiveness

- Delta:
  - Highly effective at protecting against MIS-C
- Omicron
  - Provides excellent protection against severe disease
    - And in youth does prevent even the small number of severe outcomes.
  - Measured vaccine efficacy against disease in adults is low after 2 doses – moderate after 3 doses

Safety

- Surveillance ongoing (as always) including IMPACT
- 12-18 –
  - Mostly mild vaccine reactions
  - Very rare: Myo/pericarditis about 2-3 per 100,000 doses - mostly after dose 2 & more common with Moderna product (higher dose)
- 5-12 –
  - Mostly mild vaccine reactions
  - Very rare: Myo/pericarditis – so far 11 cases after 8 million vaccines (likely lower than 12-18)

Does COVID-19 vaccine prevent MIS-C?

- MIS-C affects 0.5-3.1% of children diagnosed with SARS-CoV-2
- Estimated vaccine effectiveness of 2 doses of Pfizer-BioNTech vaccine against MIS-C in 12-18 year olds was **91% (95% CI = 78%–97%).**
- Among critically ill MIS-C case-patients requiring life support, all were unvaccinated.
  - Data from the US: Zambrano LD, Newhams MM, Olson SM, et al. Effectiveness of BNT162b2 (Pfizer-BioNTech) mRNA Vaccination Against Multisystem Inflammatory Syndrome in Children Among Persons Aged 12–18 Years — United States, July–December 2021. MMWR Morb Mortal Wkly Rep. ePub: 7 January 2022. DOI: http://dx.doi.org/10.15585/mmwr.mm7102e1external icon.
  - Similar Data from France: Levy M, Recher M, Hubert H, et al. Multisystem Inflammatory Syndrome in Children by COVID-19 Vaccination Status of Adolescents in France. *JAMA.* Published online December 20, 2021. doi:10.1001/jama.2021.23262

Who is at risk for more severe disease?

- ** Even “higher risk” children rarely have severe disease – to this point in the pandemic, about 50% of hospitalisations with COVID-19 are for reasons other than COVID-19
- Risk factors:
  - Multiple comorbidities
  - Chronic cardiac or lung disease
  - Obesity
  - Neurological disorders
  - Anemia / hemoglobinopathies
  - Immunodeficiency

Vaccine Hesitancy: Challenging and time consuming conversations

- Key elements:
  - Acknowledge the parent's concerns & build trust (especially for family's who have experienced racism, trauma, colonialism)
  - Focus on the right risks –
    - For a vaccine to be approved, the benefits of the vaccine must outweigh the risk
  - Describe the trustworthiness of Canada's immunization system
    - Vaccine safety monitoring
  - Make a strong recommendation
- Note: There is good evidence that appealing to people's collective responsibility to protect the community & contribute to herd immunity is not effective – it worsens vaccine hesitancy – focus instead on the benefit to them / their child
- The Family Immunization Clinic at BC Children's Hospital does vaccine hesitancy consultations (including by telehealth so they are available throughout the province).

Myo/pericarditis: what to do with vaccination afterwards?

- Defer future mRNA COVID-19 vaccines (if confirmed myo- / pericarditis within 6 weeks of vaccine)
- If patient had symptoms of pericarditis but normal workup (or no workup) → vaccinate after 90 days
- If patient chooses to get an additional dose after myocarditis (weighing risks and benefits) – offer Pfizer-BioNTech 30mcg vaccine (instead of Moderna vaccine) due to side effect profile
- Consider referring to **BCCH Family Immunization Clinic's Special Immunization Clinic** for family counseling / most up to date recommendations.
  - http://www.bcchildrens.ca/our-services/clinics/family-immunization
- Note:
  - Myocarditis from SARS-CoV-2 infection: 450 cases / million infections

Vaccine interval: 21 days? 8 weeks?

Earlier interval

- Earlier protection (although this likely will not change the omicron wave)

Later interval

- Less myocarditis (especially in youth 12-18)
- Better / more durable protection well established in adults (data still emerging in children and youth)

Vaccines & pregnant women

- Evidence from other respiratory pathogens (influenza, pertussis) that infants get less disease / less severe disease in the first 6 months of life when mothers are vaccinated in the 3rd trimester
- Vaccinating families will help protect the newborn / children too young to be vaccinated.

Where to get reliable information about vaccination in children?

- NACI - https://www.canada.ca/en/public-health/services/immunization/national-advisory-committee-on-immunization-naci.html
- CPS - https://cps.ca/en/tools-outils/covid-19-information-and-resources-for-paediatricians
- Canadian Immunization Guide - https://www.canada.ca/en/public-health/services/immunization/national-advisory-committee-on-immunization-naci/summary-covid-19-vaccine-chapter-canadian-immunization-guide-december-23-2021.html -
- BCCDC Vaccination resources - http://www.bccdc.ca/health-professionals/clinical-resources/covid-19-care/covid-19-vaccinations
- For pregnant women ➔ SOGC - https://sogc.org/common/Uploaded%20files/Latest%20News/SOGC_Statement_COVID-19_Vaccination_in_Pregnancy.pdf

Combatting vaccine hesitancy: Resources

- CPS Statement – Working with Vaccine Hesitant Parents https://cps.ca/documents/position/working-with-vaccine-hesitant-parents
- Online Module (CME accredited) – Our Best Shot at Beating COVID-19: Overcoming Vaccine Hesitancy: https://pedagogy.cps.ca/#/course-bundles/fa04fc8b-475f-49fb-9a5f-53a147e37050
- BCCDC – Immunization Communication Course: http://www.bccdc.ca/health-professionals/education-development/immunization-courses/immunization-communication-course

BC Children's Hospital
Provincial Health Services Authority

Additional slides

COVID-19: Delta variant & pediatric hospitalisations in US

- Among children and adolescents with SARS-CoV-2 infection admitted to six hospitals during July–August 2021, 77.9% were hospitalized for acute COVID-19.
  - 1/3 of those <5 years had a viral coinfection (approximately two thirds of which were respiratory syncytial virus)
  - ~ two thirds of those aged 12–17 years had obesity
  - 0.4% of age-eligible patients were fully vaccinated.

https://www.cdc.gov/mmwr/volumes/70/wr/mm705152a3.htm?s_cid=mm705152a3_x

European Journal of Pediatrics
https://doi.org/10.1007/s00431-021-04338-y

REVIEW

SARS-CoV-2 in pediatric cancer: a systematic review

Sandy Schlage[1] · Thomas Lehrnbecher[2] · Reinhard Berner[1] · Arne Simon[3] · Nicole Toepfner[1]

- >1000 pediatric COVID-19 cancer patients
- Where info was available, most children acquired COVID-19 from a family member
- Severity
  - At least 23.9% asymptomatic (detections will depend on testing strategies)
  - Mild-moderate in 41.7%
  - Severe – 11.1%
  - 2.5% died – but challenging to assess what the impact of COVID-19 vs the underlying malignancy.
- but also: the attributable mortality may be up to 10 times higher than hospitalized children without comorbidities.

European Journal of Pediatrics
https://doi.org/10.1007/s00431-021-04345-z

ORIGINAL ARTICLE

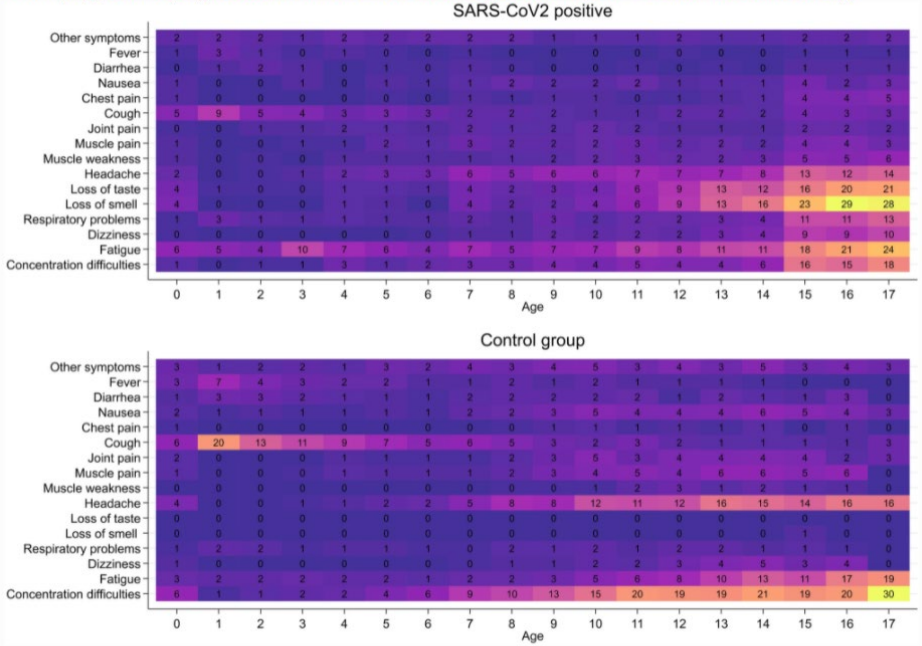
Long COVID symptoms and duration in SA — a nationwide cohort study

Luise Borch[1] · Mette Holm[2] · Maria Knudsen[3] · Svend Ellerma

- Population based cohort study of 37,522 cases (who had COVID019) and 78,037 controls with Parental surveys to both groups
- **0.8%** of SARS-CoV-2 positive children reported symptoms lasting >4 weeks ('long COVID'), when compared to a control group.
- The most common 'long COVID' symptoms were **fatigue, loss of smell and loss of taste, dizziness, muscle weakness, chest pain and respiratory problems.**
- These 'long COVID' symptoms cannot be assigned to psychological sequelae of social restrictions.
- Symptoms such as concentration difficulties, headache, muscle- and joint pain as well as nausea are not 'long COVID' symptoms (were more common in controls)
- In most cases 'long COVID' symptoms resolve within 1-5 months.

Fig. 3

From: Long COVID symptoms and duration in SARS-CoV-2 positive children — a nationwide cohort study



Heatmap illustrating reported symptoms lasting for > 4 weeks by SARS-CoV-2 infected children (upper panel) and controls (lower panel). The numbers represent percentage of children reporting the given symptom by one-year age groups