COVID and KIDS
Omicron's Curve Ball is a Whole New Ballgame

Rob Graham, R.R.T./N.R.C.P.

I dedicate this column to the late Dr. Andrew (Andy) Shennan, the founder of the perinatal program at Women's College Hospital (now at Sunnybrook Health Sciences Centre). To my teacher, my mentor and the man I owe my career as it is to, thank you. You have earned your place where there are no hospitals and no NICUs, where all the babies do is laugh and giggle and sleep.

"I had hoped that by 2021's end, we would be looking at this virus through the rear-view mirror with our collective feet to the floor. Unfortunately, it is the windshield we are looking through, and the scenery is anything but pleasant."

I derive no pleasure covering COVID-19 (C-19) a second time since my first submission to NT. Like everyone else, I had hoped that by 2021's end, we would be looking at this virus through the rear-view mirror with our collective feet to the floor. Unfortunately, it is the windshield we are looking through, and the scenery is anything but pleasant.

It has been almost two years since the C-19 hit the world stage and its fondness for centre stage shows no signs of abating; indeed, the virus has all the makings of a "ham" with each performance (mutation) seemingly worse than the last.

While children, for the most part, seem to have been spared the devastating illness afflicting adults, and particularly the elderly, the more recent Delta variant (DV) and the newest Omicron variant (OV) seem to have their sights set on younger age brackets. Data from Arkansas show a marked increase in more severe illness from Delta with a significantly increased number of children hospitalized, in PICU, and mechanically ventilated (1). (This column's references may be from sources I would not typically use since data on new variants is lacking or are still in the proverbial pipeline). Of more concern are the reports on the OV out of South Africa (SA) (which has a very good public health system), indicating children under 5 (and particularly those under 2) are the second-largest cohort of C-19 patients in the hospital next to those over 60 (2,3). SA also has relatively low vaccination numbers, with just over 30% having at least one dose and 25% full vaccination at the time of writing (4). (The reference gives numbers in real-time).

The severity of OV disease in young children and infants is unclear and why so many young children are ending up in hospital; reasons for hospital admission are multifactorial and may reflect an overabundance of caution (5). A recent analysis shows the least risk at ages 3 to 10 years and states children are "better protected" from C-19 than adults and that C-19 mortality among children is lower than most other infectious diseases (6). Since this study was published in August 2021, it could not consider OV, and the Delta variant is also likely underrepresented. We know that C-19 can trigger multisystem inflammatory syndrome in children (MIS-C) in rare cases; whether or not OV is more or less likely to do so is unknown. Given the rarity in which MIS-C strikes children infected with C-19, it may be some time before we know this.

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We do know that evidence to date from the U.S. indicates that when it comes to C-19, not all children are created equal. Black and Latino children seem more at risk, although confounding factors may be at play here (7). Risk factors for severity of disease in children such as asthma, obesity, immune system compromise and chronic lung disease mirror those for adults. Those born prematurely are also at higher risk, as well as those under age 2 (8). It is too early to say with any certainty that OV poses the same or worse threat, although the number of young children being hospitalized is concerning. Children under age 5 are currently not eligible for available C-19 vaccines, and this is one possible reason for their disproportionate hospitalization numbers.

What about babies? We know that respiratory infections pose a potentially serious threat to babies (especially premature babies) because their smaller airways are more prone to obstruction from inflammation and secretions. We also know that C-19 can be contracted *in-utero*, although rarely (estimated at 1.1%), and early evidence indicates they do well and do not typically have respira-

tory problems related to C-19 (9). Again, this data is from 2020 and does not reflect either DV or OV.

Fortunately, babies are very inefficient aerosol generators. That aside, filters on the expiratory limb of the ventilator and care in an incubator, the likelihood of them transmitting the C-19 to caregivers is exceptionally low.

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The good news is that breast milk is protective and results in babies developing mucosal immunity when born to mothers exposed to C-19 (10) and those born to vaccinated mothers (11). Expressed breast milk should be given to babies if breastfeeding is not possible (12). The benefits of both kangaroo care and breastfeeding outweigh any risks when proper precautions are in place; C-19 should not be a factor in the decision to do either. (In the author's opinion, C-19 positive breastmilk banks should be investigated as a way to immunize shortly post-partum. Imagine that; breastmilk **is** the vaccine!).

In stating C-19 is transmitted via aerosol, particularly indoors, there are too many references to list. Had this been acknowledged much earlier, there might not need to be this much carnage. This fact mandates N-95s on mothers to protect both their babies and staff.

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A recent analysis by the Centres for Disease Control (CDC) showed an increased risk of stillbirth among C-19 positive women, particularly with DV (13). Evidence also shows that C-19 increases risks of morbidity and mortality in pregnant women, particularly DV (14). Again, whether or not OV mirrors this is not known.

The precautionary principle would have us act according to the worst-case scenario until the risks thereof are established. While we have learned a great deal about C-19 in record time, we have barely scratched the surface regarding long-term effects and sequelae. "Long covid" (LC) threatens to become a public health nightmare. Because children may not be able to describe symptoms of LC such as "brain fog" or fatigue, the already significant number of children diagnosed with it may be underreported (15,16). (An interview with one of the authors of reference 15 is listed as reference 17. It is frightening food for thought and a good read). We already know that C-19 crosses into the brain in humans (17). Rhesus macaque monkeys are genetically close enough to humans that a pathogen's effects on them should be of note. If that finding is Lewy bodies in the brains of those C-19 infected (17), that note should be in red block capital letters, followed by a string of exclamation marks. (!).

LC and evidence suggesting C-19 may remain in the body long after acute infection (15) should have us proceeding with extreme caution. We have no idea how C-19 affects the developing brain, and LC appearing in children with very mild symptoms of C-19 infection should raise a flag. Children should be vaccinated as rapidly as possible, and preventing infection in those who are ineligible for vaccination should be a top priority. As Dr. Anthony Leonardi states, "we are setting these children up to have a chronic illness." Think post-polio syndrome, shingles; in my opinion, the statement is not so far-fetched.

On the brighter side, researchers at McMaster University are set to start human trials on an inhaled C-19 that promises to achieve mucosal and hence a sterilizing immunity (18).

As 2021 comes to a close, so does the second year of my column submissions to NT. I hope, dear readers, that you have enjoyed them as much as I have enjoyed writing them. I've learned a lot. May you all enjoy the festivities that come with the darkness of winter, C-19 notwithstanding. Just get vaccinated, get boosted, and enjoy them safely!

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