NORTH SHORE HEALTH DEPARTMENT

Serving the communities of Bayside, Brown Deer, Fox Point, Glendale, River Hills, Shorewood and Whitefish Bay, Wisconsin

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From: Ann Christiansen, MPH
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North Shore Health Department

RE: Question about COVID-19 Transmission in North Shore Schools

The North Shore Health Department (NSHD) has been asked about whether transmission has been occurring in our North Shore schools. While it is important to understand the impact of COVID-19 on our students and teachers, it is also very difficult to quantify. There are several reasons for this challenge. One is the data system the State uses to track diseases (WEDSS) was not set up to answer this question. Health department disease investigators ask questions during interviews with our cases about where transmission might occur, but these questions are not designed to definitively determine the specific place where transmission occurred. The disease interview questions ask the person if they were in school while they were infectious and if they participated in any sports or extracurricular activities. Additionally, many of the interviews are conducted with parents because students are under 18 years. Some parents allow their children to be interviewed, but this is not always the case. Some parent responders are not aware or are not willing to share all the people their child may have interacted with or the places the child was during the infectious period, leading health department or school contact tracers to have incomplete information.

The second challenge, especially with our private schools, is some students and staff reside outside North Shore municipalities. These health departments, if they have the capacity, conduct the disease investigation and may either notify our department or may have those individuals notify the school. If that is the case, the person may not be known to NSHD to be able to recognize the person as being from a North Shore school or school district. At the beginning of the school year, NSHD anticipated that we would not know all the school case information and expected that the schools would end up being the most accurate source of information on cases.

Despite the challenges with our data system in quantifying the number of cases that result in school-based transmission, our case managers and school nurses do have some insights into this question from their interviews and experience. From our experience these last few months with managing COVID-19 in the North Shore area schools, the health department would separate our understanding of school-based transmission into two areas. One is **classroom-based transmission** and one is **school-related transmission**. Classroom transmission would occur solely as a result of a student being seated in a class with a positive student. An exposed student would have had no other encounter with a positive case. When we consider examples of **classroom-based transmission**, the health department has observed limited instances of classroom-based transmission. Our only way to assume these situations were classroom-based is because the exposed individuals developed disease while in quarantine from an exposure that happened in school. We have identified several cases where students and staff likely got COVID in classrooms where guidelines, like maintaining six feet of space between desks, were not followed and someone with COVID was in the class while infectious. We have also seen cases in day care settings where children have not been physically distant where transmission likely occurred between children and between children and childcare staff.

NSHD has identified more instances of **school-related transmission**. These would be situations in which there are other opportunities for exposure beyond the classroom setting and transmission may be occurring. Some of these include teacher to teacher transmission during staff meetings or during lunch time, transmission through sports teams, and transmission from students who were in the same carpool or on the same bus.

Most of NSHD's school cases are likely the result of exposures happening in the community. However, this is not definitive because discerning who in a family is a household index (first person in household with COVID) case is difficult. To date, student cases of COVID seem to be occurring from exposure happening from parents, other private gatherings, other sports activities, and day care and after school care, as a few examples. Data on community transmission helps predict the impact these cases will have on our schools because with high case counts, we expect to see higher numbers of students and teachers with COVID. Some of these cases will be in the school buildings with COVID because their infectious period can occur two days before symptom onset.

There are limits to what we know about people who are exposed and in quarantine if those individuals are not tested prior to returning to work or school. There may also be cases of classroom-based and school-related transmission that are the result of asymptomatic spread. Again, our thought on some household cases is that the students may have been positive before a parent, but the parent is the one tested first. When the student is tested after the parent, we generally attribute the exposure to the parent, when the situation may have been the reverse.

Finally, the North Shore schools have put strong mitigation measures in place. This includes schools that have been operating remotely or in hybrid learning models for some or all of the current school year. We would not expect to see classroom-based transmission from virtual schools and minimal from schools operating in hybrid models. North Shore schools, including the private and parochial schools, have applied mitigation layers like physical distancing in the classroom, mask wearing, ventilation, and cleaning and disinfecting. These mitigation approaches make a large difference in whether a student or teacher who has COVID-19 at school goes on to infect others in school. More generally, when mitigation is not in place or is limited, we do see transmission rates increase.

On Table 1 provides a breakdown of NSHD's COVID-19 cases by age, as well as the number of new COVID-19 cases in the past two weeks for these age groups. COVID-19 cases have certainly increased in our area, and this includes cases among our school-aged children. While their experiences with COVID-19 are generally mild, we have had situations where parents and grandparents have been significantly impacted by COVID-19. For several of these, the household transmission likely began with the child as the first case in the household. Table 2 shows the distribution of hospitalizations by age.

I hope this additional information gives some insight into this complex question. In summary, COVID-19 continues to impact our communities. Our best strategy, until a vaccine is widely available, is to continue strong mitigation measures at home, at work and at school. As the schools balance what learning models best allow them to achieve strong mitigation to protect students and staff, our department will continue to support them with data and information such as I am sharing with you today.

Table 1: Age Distribution of COVID-19 Cases, North Shore, December 4th, 2020

Age	Cumulative Confirmed Cases (as of 12/3)	Percent of Total Confirmed Cases	New Cases 11/20-12/3	Percent Increase 11/20-12/3	Burden (total number of new cases per 100,000)
<5	68	2%	15	**28%**	420
5 to 9	111	3%	23	**26%**	578
10 to 14	124	4%	11	**10%**	256
15 to 17	129	4%	25	**24%**	919
18 to 24	460	13%	73	**19%**	1608
25 to 34	548	16%	89	**19%**	1252
35 to 44	481	14%	64	**15%**	768
45 to 54	491	14%	72	**17%**	719
55 to 64	412	12%	70	**20%**	751
65 to 74	310	9%	54	**21%**	1072
75 to 84	187	5%	32	**21%**	895
85+	131	4%	20	**18%**	1220
TOTAL	3452	100%	548	**19%**	843

Table 2: Age Distribution of Residents who have been Hospitalized with COVID-19, North Shore, December 4th, 2020

Age	Number Hospitalized in North Shore - 12/4/2020
0-9	**<5**
10-19	**<5**
20-29	6
30-39	15
40-49	20
50-59	18
60-69	29
70-79	46
80-89	49
90+	17
Total	**202**