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SARS-CoV-2 Cluster in Nursery, Poland

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We report a cluster of surprisingly high spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) associated with a single nursery in Poland. Our findings contrast with the presumed negligible role of children in driving the SARS-CoV-2 pandemic. Children 1–2 years of age might be effective SARS-CoV-2 spreaders.

Despite robust research, knowledge about coronavirus disease (COVID-19) spread and effective control measures is still limited. Until recently, research has indicated that children rarely spread the infection to adults and are not the primary drivers of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission (1).

We describe characteristics of the cluster of SARS-CoV-2 cases that emerged in a single nursery in Poland within 2 weeks of its reopening. We anonymized all data and collected no sensitive data. The Bioethics Committee of the Medical University of Warsaw approved the study protocol.

The nursery at issue was reopened after a nationwide lockdown on May 18, 2020. On May 31, a nursery worker reported family contact with a symptomatic SARS-CoV-2-infected person, and the nursery was closed. During the 14 days the nursery was open, a mean of 25 children attended the nursery daily. Children spent ≈8 hours there, divided into 3 groups, each cared for by 2 caregivers (Appendix, <https://wwwnc.cdc.gov/EID/article/27/1/20-3849-App1.pdf>). Neither children nor caregivers moved across multiple classes. Caregivers wore facemasks when in contact with children. Parents did not enter the building when dropping off and picking up children. Contacts between parents and nursery workers lasted <15 minutes, with facemasks on. Family members of different children did not mix.

The index case of SARS-CoV-2 infection (in a nursery worker with family contact) was confirmed on June 4. Subsequent PCR testing of nursery staff, children attending the facility, and family members (2 initial case-patients plus 104 other persons) (Appendix) revealed positive results in an additional 4 nursery workers (of whom 1 was also a parent of a child attending the facility), 3 children of the nursery workers, 8 children attending the facility, 3 siblings of those children, 8 parents, and 1 grandparent. The cluster involved a total of 29 persons; 8 were children attending the nursery, and 12 were children's family members who did not enter the facility (Table). One child with a negative result had 2 parents with positive results. One child's parent tested negative in this cluster but had tested positive within the previous 2 weeks, involved in another cluster.

The overall positivity rate in our cluster was 27%. COVID-19 prevalence in Poland is low. The number of tests conducted in the voivodeship was 124,194 in June, whereas the number of positive cases was 1,374, which corresponded to a positivity rate of 1% (2). Thus, local SARS-CoV-2 circulation in society is not sufficient to explain the positivity rate in our cluster.

Table. Severe acute respiratory syndrome coronavirus 2 testing outcomes of potentially infected persons in a nursery setting, Poland, 2020

Person	No. tested	No. positive by PCR	% Positive
Children attending the nursery	28	8	29
Parents of children attending nursery*	31	8	26
Siblings of children attending nursery	16	3	19
Grandparent of children attending nursery	1	1	100
Nursery workers	25	5	20
Spouses of nursery workers	2	1	50
Children of nursery workers	3	3	100
Total	106	29	27

*One of the parents of children attending the nursery was also a nursery worker; she is counted as a worker in this table.

The case of the COVID-19–negative child with positive parents could have been a false-negative result or a negative result after being infected. The result might also have been a true negative, and the parents were infected from another source. However, other potential exposures could not explain infections in all parents involved in our cluster.

We depict probable chains of transmission in the Figure. Of note, physical contact between nursery workers and children’s family members who were infected was strictly limited, and the only close contacts for these groups of adults were children. Given that most COVID-19–positive persons were asymptomatic and tested on the same day, determining with certainty whether children transmitted the virus to their parents or the workers is not possible. Nevertheless, children seemed to be effective mediators of infection between adults.

Several reports concerning clusters of COVID-19 in childcare settings imply little to no SARS-CoV-2 transmission among children and from children to

adults (1,4,5; A. Fontanet, unpub. data, <https://doi.org/10.1101/2020.06.25.20140178>; R.M. Viner, unpub. data, <https://doi.org/10.1101/2020.05.20.20108126>). However, such estimations are open to bias, given that most published data were obtained at the time of lockdown, when children’s social contacts were limited to family members. Another limitation of those publications is that they applied mostly to school-age children.

The high infection attack rate among children in our cluster could be explained by prolonged close contact between very young children, who are less able to adjust to control measures. Similarly, specific intimate contact between toddlers and their family members could have led to effective spread within families. This observation might be particularly important in light of novel findings that nasopharyngeal SARS-CoV-2 levels are the highest in the youngest children (6). Moreover, the airborne transmission route in the nursery rooms’ confined environment could have played an important role (7).

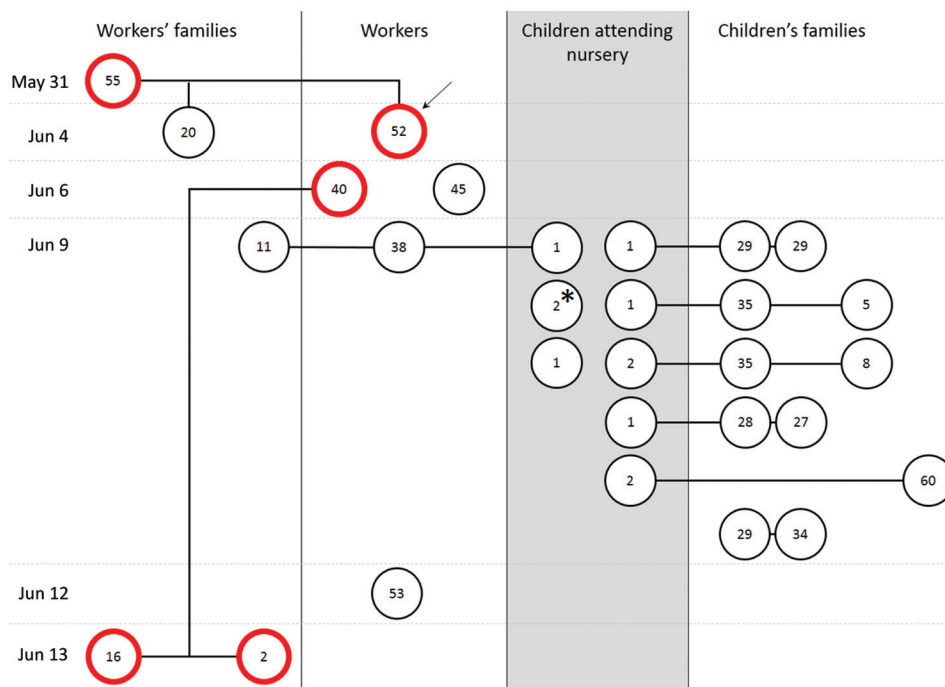


Figure. All persons testing positive for severe acute respiratory syndrome coronavirus 2 infection in a cluster associated with a nursery, Poland 2020. Dates to left indicate first positive results in consecutive case-patients. Circles indicate infected case-patients; numbers in circles indicate age in years. Red circles indicate infected case-patients with symptoms. Circles connected by lines indicate case-patients who are members of the same household. Arrow indicates the probable index case-patient. Asterisk indicates child whose parent tested negative in this cluster but tested positive within the previous 2 weeks.

Our study has some potential limitations. We could not determine whether the infection in the nursery worker was the real index case because one of the children's parents had tested positive within the previous 2 weeks and that child could also have been the primary case. Moreover, we could not verify the information we obtained from the nursery about the facility's prevention methods.

Our report questions the role of young children in driving the COVID-19 pandemic. Of note, most children in our study were asymptomatic, and this cluster would likely not have been detected without subsequent testing of persons who had direct contact with the index case-patient. We believe further studies are needed to clarify young children's role in the transmission of SARS-CoV-2.

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Developing Endemicity of Schistosomiasis, Corsica, France

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Urogenital schistosomiasis was diagnosed in a man from Germany who had never traveled outside Europe. He likely acquired the infection in Corsica, France, but did not swim in the Cavu River, which was linked to a previous outbreak. This case highlights that transmission of schistosomiasis in Corsica is ongoing.

A 49-year-old man from Germany experienced macrohematuria in June 2020 and underwent cystoscopy in August 2020. Histologic analysis of a bladder biopsy specimen showed ova of *Schistosoma* spp. He was referred to the outpatient department for tropical medicine at LMU Hospital Munich.

The patient had never traveled outside Europe. He had, however, traveled twice to Corsica, France, in 2013 and 2019. He never swam in the Cavu River, which has been associated with cases of schistosomiasis in recent years (1–3).

The patient visited Corsica during August 22–September 4, 2019. By using GPS data from his smartphone and camera, he reconstructed his bathing sites precisely. During August 22–24, he swam

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Appendix

Detailed Characteristics of Children's Groups and Testing Sequence

Children in the nursery were divided into 3 groups according to age (group A, the youngest; group B, medium; group C, the oldest). The mean number of children attending the nursery every day was 10–12 for group A, and 5–7 for groups B and C. The total number of children attending group A was 16, and 12 in both groups B and C.

When the first COVID-19 cases were identified among the nursery workers, children were split into "direct contact" and "indirect contact" groups. Children from group A were considered "direct contacts" and thus were tested together with all their household members. Children from groups B and C were "indirect contacts," and only children were tested. Of note, 1 nursery worker was a parent of a child from group A and worked with children from group B. She tested positive, but all children with whom she worked tested negative, and thus their families were not tested.

The sequence of testing was as follows.

1. The index case, who was a caregiver in group A, tested positive on June 4, together with her adult child.
2. Two more nursery workers working in close contact with the index case tested positive on June 6 (one of them was another caregiver in group A).
3. On June 9, all children from group A (16 children) and all their household members (32 parents, 16 siblings, and 1 grandparent) were tested.
4. The rest of children attending the nursery (groups B and C, 12 children) were tested on consecutive days, and none of them tested positive. Their family members were not tested. Similarly, the rest of the nursery workers, who did not have direct contact with the first 3 cases, were tested on consecutive days.

5. Two more children of one nursery worker were tested 7 days after she tested positive, and they were positive.

Testing practices implemented in the nursery by a local sanitary-epidemiological station complied with standard testing procedures in the country at that time. They involved testing symptomatic people and contacts of confirmed COVID-19 cases.

PCR Testing

The testing was done in a single validated laboratory at the local sanitary-epidemiological station.

The isolation phase of the reaction was performed on Veri-Q Prep M16 Nucleic Acid Extraction Device using Viral DNA/RNA Prep/kit-Airway Sample (Humanitas Global Logistics, <https://hglmedical.com/>). The amplification phase was performed on Veri-Q PCR 316 Gene Amplification Device using nCoV19 Detection PCR Kit.

Clinical Picture

There were no symptomatic cases among children attending the facility and their family members. A total of 5 people had COVID-19 symptoms. The family member of the index case was diagnosed and treated in the hospital. Two nursery workers and 2 children of 1 of them had mild symptoms of the disease.

Seven children attending the nursery and 2 of their siblings were evaluated in the hospital. Laboratory testing and chest x-ray revealed no abnormalities except for an 11-year-old girl who had elevated transaminase levels (alanine transaminase 297 U/I, aspartate transaminase 167 U/I) that normalized within 1 week.