COVID-19 and Schools FAQs

This guide was developed by Megan Culler Freeman MD, PhD, Glenn Rapsinski MD, PhD, and Michael Green, MD, MPH from UPMC Children's Hospital of Pittsburgh Division of Pediatric Infectious Disease to provide school staff and personnel with the most up-to-date information on COVID-19. COVID-19 is evolving rapidly, and this document will be updated frequently to reflect the current situation.

If you have an immediate question or concern that is not addressed by this document **please contact 2-1-1**. Their staff are trained to assist school staff with navigating COVID-19 in the school setting.

Have a question about COVID-19 that isn't on this document and would be helpful to schools? Submit your question here to be added to the document.

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SARS-CoV-2 Infection and Transmission

1. ***What is COVID-19 (SARS-CoV-2)?***

   COVID-19 is the name of the illness caused by the virus, SARS-CoV-2, that has resulted in the worldwide pandemic. This virus had never infected people until this outbreak began but now has gained the ability to easily move from one person to another.

2. ***How is SARS-CoV-2 transmitted?***

   The main way that the virus that causes COVID is transmitted is through respiratory droplets. These are the droplets that emerge from a person's mouth and nose whenever they talk, sing, shout, cough, or sneeze. These droplets travel about six feet from the person. If they land on another person's nose, mouth or eyes, that person can become infected. Similarly, if droplets land on a surface, then another person touches the contaminated surface, then touches their own face, that person can be infected that way too. (Called 'contact.'). It is possible that there is some degree of 'airborne' or 'aerosol' spread (the idea that someone could be infected by walking through the air that a previously exposed person had been in, like a cloud of perfume), but this is not the main route of transmission.

3. ***How long after being exposed do symptoms of COVID-19 start and how long do they last?***

   The most common time that people who are exposed to COVID-19 develop symptoms of illness is around 1 week after exposure but can be as early as two days and as late as 14 days after being exposed. In most patients with COVID-19, symptoms are improving around one week into the illness though for some patients some symptoms may last longer. As with all illnesses, it is important to make sure your child is continuing to improve. If your child seems to be getting worse, you should call your doctor.

4. ***Are asymptomatic people contagious? For how long?***

   Infected people can show symptoms in different ways. They can have typical symptoms of fever, cough, and shortness of breath, or they can have no symptoms at all. We call infected people without symptoms 'asymptomatic.' These people are still infected and can spread the coronavirus from person to person. Asymptomatic Infected individuals are considered contagious for 10 days from learning that they have a positive test.

5. ***Can infected children spread the infection to others? What if they don't have symptoms?***

   Yes. Infected children CAN infect others. Even if the children don't have symptoms. The data are limited as to whether different ages of children transmit the infection more effectively.

6. ***What symptoms do infected children have?***

   In general, children have very mild disease when infected, with minor symptoms that appear like a 'cold' or the flu, or no symptoms at all. While admission to hospital can be required for children with COVID-19, this happens much less commonly in children than in adults. A small subset of children develop an inflammatory condition, called MIS-C, weeks after infection with SARS-CoV-2 and can require advanced medical care and hospitalization. This syndrome occurs in a very small number of children who are infected. Symptoms can include multiple days of fever, fatigue, abdominal pain, rash, swelling of hands and feet, redness of eyes or lips.

7. ***Are children with chronic illnesses more likely to do poorly if they get COVID-19?***

   While many children with chronic illnesses do experience more important infections with many viruses, the experience from China, Europe and the United States seems to suggest that severe illness from COVID-19 may be less common than with viruses like influenza and RSV. While we may identify some types of chronic illnesses that may lead to more important illness, the experience to date is reassuring that many, if not most, children with chronic illnesses will recover without needing to be admitted to the hospital. If your child with COVID-19 seems to be getting worse as the illness goes on, you should call your doctor.

8. ***What are the long term complications of COVID-19? Are these linked to how severe someone's symptoms were?***

   It is too soon to know what the long term complications of COVID-19 will be. Most long term complications reported have been associated with adults and have been associated with varying severities of disease.

9. Does a child's age determine if they are more or less likely to contract COVID-19?

Children tend to represent a smaller number of cases than expected, which has led to some speculation that they may be relatively protected from infection. There are several potential reasons for this finding, including that the mostly symptom-based testing strategies may miss children with mild disease or asymptomatic infection. Young children also have less expression of the receptor needed for SARS-CoV-2 to enter cells and replicate in their airway. Lastly, there are differences in the immune response of children as compared to adults that may account for these differences. In general, teens are biologically more similar to adults.

Very importantly, children of all ages are able to be infected by and spread SARS-CoV-2.

Surfaces and Disinfecting

10. How long does the coronavirus last on surfaces?

SARS-CoV-2 can survive and be infectious for up to 24 hours on soft surfaces like paper and clothing and up to 72 hours on harder surfaces such as metal and plastic.

11. How do we disinfect surfaces?

We recommend cleaning and disinfecting frequently touched surfaces (playground equipment, door handles, shared equipment) between uses as much as possible. Limit shared objects/supplies. A number of different cleaning products can be used. Cleaning products containing hydrogen peroxide, bleach, and ethanol are all effective against SARS-CoV-2, but additional information including use instructions and effectiveness against SARS-CoV-2 can be found on the EPA website.

https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2-covid-19

12. Should bathrooms be disinfected between each use?

It is unlikely to be practical to disinfect bathrooms after each use. Bathrooms, and other frequent use areas, should be disinfected more often than the usual schedule, especially after high traffic times of day. Hand hygiene should be performed after use.

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Masking, Social Distancing, and Hand Hygiene

13. Do masks help prevent transmission?

Yes, wearing a mask helps prevent transmission in two ways. The first and most important way is that the mask helps protect others by catching and trapping any infectious droplets produced by the wearer in their own mask. Because we know that people without symptoms can spread the virus, everyone should be wearing masks to help prevent spread. Masks also help protect uninfected individuals by limiting their potential exposure to infectious droplets produced by people they may come in contact with. Masks only accomplish both of these goals when they are worn correctly, covering BOTH the mouth and nose. Masks should be washed frequently, as both the interior and exterior of a mask should be considered 'contaminated' after wearing.

14. Who should mask at school? Kids? Staff?

With rare exception, everyone over the age of two should be wearing a mask to help prevent spread.

15. Can kids wear face shields instead of masks?

While face shields may provide some degree of protection from infection and transmission, they are less effective than face masks. The CDC does NOT recommend face shields as a replacement for masks. Face shields can be added to masking to provide eye protection.

16. If everyone is masked, do they need to be six feet apart?

In general, the closer, longer, and more frequent the interaction between people, the greater the risk of respiratory droplets being passed between them. The CDC recommends keeping a distance of at least six feet from other people whenever possible in addition to using other risk-reduction strategies like wearing masks whenever outside of your home or car, especially if you are likely to encounter other people. Wearing a mask in combination with distancing is the best way to keep each other safe, even when seated at the desk in a room with others, as coughs and sneezes can easily propel droplets for long distances.

17. What precautions should schools take for students that cannot wear a mask?

If a student is truly unable to wear a mask, they should be kept six feet apart from others. While inferior to masks, face shields can provide some degree of protection and could be considered in certain scenarios. If the unmasked student has an aide or other care assistant who works closely with them, that individual should be masked. These individuals could also consider the distance learning option, if feasible for their families.

18. What do we do if we can't keep students six feet apart?

The use of other strategies may help protect against the spread of COVID-19 for school settings that cannot keep students six feet apart. These strategies include placing plastic barriers between people, cohorting students and keeping small groups of students and their teacher together throughout the day while limiting contacts with students not in these groups. In addition, teaching outside when able and increasing air flow within the classroom by opening windows can also help to limit the likelihood of spread within the classroom. Finally, desks should face the same direction (towards the front of the room) and not face each other.

19. How do we distance on a school bus?

Masks should be required on the bus. Reduced numbers of riders seated in distanced seats would be the safest. Seats should be clearly taped/marked to denote open or not available. Surfaces should be frequently disinfected. Use of hand hygiene products before and after getting on the bus is encouraged.

20. What kind of hand hygiene should be used?

Hand washing should be encouraged frequently, in particular before putting on or taking off masks, prior to eating or touching one's face, and after touching contaminated surfaces. In a school setting, this should also include upon arrival to the classroom, going to and from recess or the bathroom and upon leaving school at the end of the day. Hands should be washed with soap and water for 20 seconds or cleaned with alcohol-based hand sanitizer of at least 60% alcohol. Both of these methods are effective at killing the virus and which strategy is used may be determined by the situation and access to soap and water.

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COVID-19 Testing and Staying Home/Return to School

21. Who should stay home from school or be sent home from school?

Parents should think carefully about sending their sick child to school, even when they have mild symptoms. Parents should keep their child home if they have fever OR illnesses including cough or shortness of breath. If your child has these symptoms you should contact your child's doctor who may recommend that that COVID testing be performed. **If the COVID test results NEGATIVE,** children should be allowed back to school when they have been fever free for at least 24 hours without using a medicine to control their temperature and when their other symptoms are improved.

22. When can my child go back to school IF they test Positive for COVID-19?

If your child tests positive for COVID-19, they should stay home for 10 days since the onset of symptoms AND until fever free for 24 hours without taking fever reducing medicines and their other symptoms are improving.

23. What do I do if my child has a fever or respiratory symptoms who is sent home from the hospital without being tested for COVID-19?

Some children with symptoms that might be consistent with COVID-19 may not be tested. The decisions on whether to test a child for COVID-19 are made more on whether the test will change care (for now) while testing availability is somewhat limited. While testing is being performed for those who are very sick, most children with COVID-19 do not get very ill and care will not change IF they are found to be positive.

For children like this, we would recommend following the recommendations as if your child had a positive COVID-19. For families with other household members with chronic illnesses, consideration should be given to try to have that person stay with another relative while your child with COVID-19 recovers. IF that is not possible, you should work to separate your child from as many of the other household members as possible. This could be accomplished by having the child with COVID-19 stay in one part of the home, while those with chronic conditions stay in another part. In addition, keeping your child with COVID-19 more than 6 feet away from the other people in your home combined with frequent handwashing and cleaning areas like door handles and hard surfaces with bleach containing products can be successful. You should also teach your child with COVID-19 to cover their cough with their elbow and to wash their hands frequently, especially if they are going to be in common areas used by others in the home. IF your child symptoms worsen, you should contact your PCP for guidance.

24. How long do I have to maintain the restrictions for my child with fever or respiratory symptoms who is not tested for COVID-19?

In general, you should maintain "social distancing" within your household for at least 7 days after onset of your child's symptoms and until it has been at least 3 days after resolution of their fever and their cough is improving.

25. Will someone contact us if our child is positive for COVID-19 and will we be notified if they have been exposed to someone who is positive at school?

The health department will work with you and your school to help to determine if others have been exposed when there is a positive case of COVID-19. They will reach out to you if your child is positive to find out if anyone else is sick at home and who your child may have exposed. Similarly, families will be contacted by the health department in the event that their child has been exposed to a positive COVID-19 case at school or in the community.

26. What should we do If our child is exposed to someone who is positive for SARS-CoV-2 in school or elsewhere?

The Health Department is working hard to notify individuals who have been EXPOSED to a person with COVID-19. If you are told that you or your child has been exposed, they should stay home until 14 days after last exposure and maintain social distance of at least six feet from others at all times, even in their homes if at all possible. Families should monitor for symptoms and check temperature frequently. Exposed persons should avoid contact with high-risk individuals. If symptoms develop, they should contact their doctor.

27. How can schools help the health department with contact tracing?

Attendance records and cohorting classrooms will help the schools know which people were around which other people in case a contact investigation is necessary.

28. Can kids participate in education while in quarantine?

If students are feeling well, but are home awaiting test results, ideally, there should be a virtual option for school participation. We want to encourage staying home in these instances to prevent virus spread.

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Extracurricular Activities

29. Can we have PE? What about choir, band, or orchestra?

All of these activities tend to produce an increased amount of respiratory droplets and thus may be more likely to spread COVID-19 between students. When people perform physical exercise, they expel more droplets. Similarly, singing and playing wind instruments also produces more respiratory droplets.

One choir practice near the beginning of the outbreak led to infection of the majority of the choir members from a single infected person during one rehearsal. The risk associated with production of an increased amount of respiratory droplets can be decreased by keeping individuals at least six feet apart, and preferably outside, during these activities. Gym activities should avoid use of shared objects.

30. Can we restart kids' sports?

While restarting kids' sports clearly offers many potential benefits, doing so safely is dependent on multiple factors. These include level of community transmission in your area and the amount of closeness/contact required for each individual sport. For example, cross country runners running independently and far apart from one another is less risky than an unmasked huddle of any kind. Another important consideration is whether your child has any special underlying conditions that would increase their risk of participating in a sport even if they can attend school safely.

31. How should we handle lunch?

Students and staff must be unmasked to eat, so it is important to have them spaced at least six feet apart. Consider serving lunch in smaller groups that are spaced out > 6 feet apart in the cafeteria or even in the classroom to maintain cohorts. If possible, eating outside may enhance student safety. Students should clean their hands before and after eating. Increase frequency of disinfection of surfaces if the lunchroom is serving students in shifts.

32. Can kids use water fountains? What about shared materials or equipment? Playgrounds?

Students should avoid contact with shared materials, equipment and surfaces. It would be safer to have children use their own water bottles as opposed to water fountains. Shared surfaces must be frequently disinfected.

33. How about recess?

Recess offers important benefits for child health, socialization, attention, and fitness. We recommend games that involve distance (such as kickball) and not those that involve playing close together. Masks should be worn and six-foot distance should be maintained to decrease risk of viral transmission. Shared objects should be reduced as much as possible and hand hygiene should be performed before and after recess.

School Visitation Policies and Entry Procedures

34. What about school visitors?

Visitation policies should be tighter this year than in general. No sick persons should be allowed to visit and all visitors must mask and maintain distancing guidelines. Some daycares and schools are not allowing visitors.

35. Should schools use temperature screening?

Temperature screening can be helpful, as febrile persons should not be at the school, however, NOT ALL INFECTED PERSONS HAVE FEVER, so we cannot assume that temperature screening excludes all infected persons. Some school districts may ask families to check their child's temperature each morning before sending them to school.

36. Should there be precautions after travel?

Recommendations and precautions associated with travel have changed frequently during the COVID-19 pandemic. Please see your state and health department guidelines to determine what rules apply to you at the time that you are considering you and your family travel. In general, traveling to a 'high risk' area carries a greater risk of exposure. Some experts also think that traveling by public transportation as compared to traveling by car is also associated with a greater risk of becoming infected with SAR-CoV-2. The safest practice would be to quarantine persons for two weeks after travel to a high-risk area, however, each school/district will have to create their own policies for this.

School Nurse Office

37. Should we separate nurse's offices into 'sick' and 'well' care?

It is recommended to separate those with fever and respiratory illnesses in a contained, frequently disinfected space, and care for others in a separate area. Nurses caring for febrile and respiratory patients should be wearing PPE, including a disposable gown, gloves, surgical mask, and eye protection (goggles or face shield). Those wearing PPE are not considered 'exposed' when in prolonged contact with an infected patient.

38. Is it safe to give nebulizer treatments?

Albuterol inhalers are preferred, as nebulizer treatments can generate aerosols. In the case of emergency, nebulizer treatment could be given in the separate 'respiratory' room of the nurse's office and PPE must be worn.

39. Any special care recommendations for students with tracheostomies?

Suctioning tracheostomies and providing nebulizer treatments are considered aerosol generating procedures. For these procedures, the student should be in a separate room from others, aside from the person performing the procedure. The person performing the care should be wearing PPE appropriate for aerosols, which includes, disposable gown, glove, N95 respirator, and eye protection (goggles or face shield).

40. What if any screening questions should we be asking kids if they come to the nurses' office?

Ask about symptoms, including fever, cough, runny nose, headache, sore throat, shortness of breath, and loss of smell or taste. Ask if anyone else in the family or others that they have been around are sick or has tested positive for COVID.

41. Is ibuprofen safe during COVID infection?

Yes. There is no evidence that suggests that ibuprofen worsens COVID.

42. Who should be sent home from school?

Anyone who starts having fever or other signs of illness including cough and shortness of breath while at school should be sent home from school and encouraged to contact their doctor to discuss a plan for care and testing.

43. What should we tell parents if we feel that their child should be sent home with concern for COVID?

Consider creating a printout of information stating the school policy on patients with illnesses and the guidelines for return to school. There are many resources here: https://www.cdc.gov/coronavirus/2019-ncov/communication/toolkits/schools.html

44. How should schools handle a confirmed COVID-19 case?

If there is a confirmed COVID-19 case during the school day, the individual should be sent to the nurse's office where they should be placed in a designated room (preferably with a door) for persons with respiratory symptoms (although, students awaiting COVID testing results should be at home). Siblings/housemates of the confirmed case should also be sent home. They should contact the health department for further instructions about potential quarantining of other individuals that may have been in contact with the case.

Early Childhood

45. What is the acceptable age to begin using hand sanitizer?

The American Academy of Pediatrics recently changed their recommendation against use of alcohol based hand sanitizer in children under 2 years of age. The previous concern was that younger children often put their hands in their mouths, potentially ingesting small amounts of alcohol, however these amounts are non-toxic. See https://nrckids.org/CFOC/Database/3.2.2.5. Washing with soap and water is always preferred, if available.

46. Is there any risk or health concerns to consider among the early childhood (birth to age 5) with frequent use of hand sanitizer?

There have been some cases where children have accidentally ingested hand sanitizer, which has a very high alcohol content and can be poisonous if a child drinks it. But using it in normal amounts, under supervision, is not a concern, even if done so frequently. The dispensers on the wall or any portable dispenser should be kept out of reach of children.

47. Should masks be worn at nap time? If not, any guidelines for naptime?

Masks should NOT be worn during naptimes. Cots should be placed six feet apart. If this is not possible due to space constraints they may be placed 3 feet apart with children alternating head to toe. That way, the children's heads are six feet apart.

48. When a child is crying and refusing to wear a mask - would it be acceptable for a child to not mask?

There may be times when children are crying or having a tantrum. If this results in inability to wear a mask temporarily, the caregiver should try to move the child to a quiet space that is six feet apart from other children. Over time, children become more accustomed to wearing masks, just like they do wearing clothes or shoes that they don't particularly like at first. OCDEI has language pertaining to this: https://www.dhs.pa.gov/coronavirus/Pages/OCDEL-Interim-Guidance-Certified-Child-Care-Facilities.aspx

High Risk Individuals

49. Who is at greatest risk of infection?

Many infected individuals will have mild or even asymptomatic SARS-CoV-2 infections. Those at risk for the most severe disease outcomes include those over the age of 60 (with increasing risk with each decade of life), and those with preexisting conditions, including, but not limited to, hypertension, obesity, diabetes, immunosuppression (cancer, bone marrow or organ transplant, on treatment for autoimmune diseases such as lupus or rheumatoid arthritis).

50. Should kids with underlying medical conditions return to school?

This decision should be made by each family in coordination with their child's doctor. This decision will likely be based on the child's underlying condition, the status of COVID-19 in their community and what strategies and options that school has put in place to protect their students and staff.

51. Should I send my child with a chronic medical condition to daycare?

We would recommend avoiding daycare if possible.

52. What about kids who have a high-risk adult at home?

Each family will have to make their own decision about the level of risk involved in sending a child to school. Children can transmit to family members if they become infected. Again, this will depend on the underlying condition, the status of COVID-19 in their community and what strategies and options that school has put in place to protect their students and staff.

53. Should I take my child with a chronic medical condition for routine appointments with his dentist, primary care provider, dermatology appointments, etc.?

We recommend considering rescheduling all elective appointments. If you have any questions about the need for keeping the appointment with your PCP, please call them and follow their advice.

54. Should I take my child with a chronic medical condition to a visit with my specialist?

The need to keep elective follow-up visits with your specialist can be decided by your doctor. You may be asked to get lab tests without an in-person visit with your doctor.

55. Who can come along for a visit for my child's specialist?

One parent/guardian can come along for the visit to your child's specialist. Please do not bring any other children.

56. Should I avoid getting routine lab tests for my child with a chronic medical condition?

This is a decision you should discuss with your child's specialist. They will decide if testing can be delayed or if it needs to be done immediately in order to best care for your child.

57. Should I let my child with a chronic medical condition continue to get treatments like physical or occupational therapy?

This is a decision you should discuss with your child's specialist. If possible, it would be best if you could get these treatments done in your home.

58. Should children with chronic conditions and their families restrict all non-essential travel?

Yes

59. Should children with chronic conditions and their families avoid large crowds?

Yes

60. Should I bring my child with a chronic medical condition to clinic or the hospital if they have respiratory symptoms or a fever?

Please call your child's specialist for further guidance. After talking with your specialist, you may be referred to your PCP - who you should call ahead of time.

61. Should kids with medical conditions be required to mask?

Masking is most effective if most people do it. For children older than 2 years of age, masking is encouraged if not required (for older children). There are very few medical conditions that prevent a school-aged child from masking. The decision as to whether your child's medical condition would prevent them from masking should be discussed with your child's physician. In fact, in many medical conditions, masking is even more encouraged due to the potential for adverse outcomes if infected with SARS-CoV-2.

62. Does masking for prolonged periods of time decrease a child's oxygen levels?

No

Individuals with Asthma

This section of the FAQs was developed by the UPMC Children's Hospital of Pittsburgh Asthma Education Committee.

63. Should children with asthma exacerbations be tested for COVID-19?

There is an overlap between clinical presentations of asthma that is flaring and COVID-19. With increase in community spread, consider testing in the setting of cough and/or shortness of breath.

64. Does asthma increase the risk of infection or morbidity/mortality from infection in children?

Unclear. Not much literature on pediatric risk factors. Case series from Wuhan do not list asthma as a risk factor in hospitalized pediatric COVID patients. Right now, no clear evidence of increased infection rate in children with asthma.

65. Do asthma medications pose risk in management of COVID-19 infections?

Unclear. Continue to strive for good asthma control. Don't stop medications. Consider not stepping down therapy.

66. Will wearing a mask worsen asthma?

There is no evidence that wearing a face mask makes asthma worse. However, it is possible that some people with asthma may feel it is more difficult to get an adequate breath while wearing a face mask.

67. What can children with asthma do to prevent infection?

Wear a mask if tolerated, remain on current asthma medications, practice physical distancing, regular handwashing, aeroallergen avoidance, use oral steroids if needed.

68. Should I continue to use nebulizers?

If possible, stop using nebulizers. Switch to MDI. Nebulization produces aerosolization and increases potential risk of transmission of the virus.

69. Can I use oral steroids to treat an asthma exacerbation?

Yes, asthma exacerbations should continue to be treated following guidelines.

70. Are virtual visits appropriate for asthma care?

Yes

71. What is a good resource to give families regarding asthma and COVID-19?

Caring for Children with Asthma During COVID-19: Parent FAQs.
https://www.healthychildren.org/English/health-issues/conditions/COVID-19/Pages/Caring-for-Childrenwith-
Asthma-During-COVID-19.aspx
American Thoracic Society and CHEST: https://formylunghealth.com

Information for the asthma FAQs was compiled from:
1. Szefler, S. et al. Managing Asthma during Coronavirus Diease-2019: An Example for Other Chronic Conditions in Children and Adolescents. The Journal of Pediatrics. Vol 222. July 2020.
2. Forno, E et al. Asthma and COVID-19 in Children-a systematic review and call for data. Pediatric Pulmonology. June 2020.
3. https://www.aaaai.org/conditions-and-treatments/library/asthma-library/covid-asthma
4.https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover-guidance.html
5. https://acaai.org/news/recommendations-use-face-masks-reduce-covid-19-transmission

Vaccines

72. How can we provide 'catch up' for routine vaccinations?

The state of PA has allowed a two-month grace period on being up to date on routine vaccinations due to the challenges of seeking routine medical care during the pandemic. It is recommended, however, that all children resume their immunization schedule as soon as possible.

73. How do I know if my child has influenza or COVID-19? Should they get a flu shot?

The symptoms for influenza and COVID-19 can be identical. The only way to tell them apart is by a test at the doctor's office. It is especially important this year to get the influenza vaccine when it is available, as any illness can have repercussions on the

testing and tracing system and it will be impossible to distinguish influenza versus COVID based on symptoms alone.

74. How much herd immunity is needed to protect the community?

The amount of herd immunity required to reduce spread of the pathogen varies by the pathogen, but is likely in the range of 60-80%, ideally facilitated by a vaccine. Despite the devastation of COVID in America, it is thought that less than 20% of persons in hot-spot areas have been infected.

About the Authors

Megan Freeman, MD, PhD

College/Medical School: University of Kentucky/Vanderbilt University

Residency: UPMC Children's Hospital of Pittsburgh

Career/Research Interests: I plan to run a lab and see patients on the Peds ID Consult service. I'm interested in cell biology of viral infections, in particular in enteroviruses and how they get from the primary site of replication in the gut to other locations where they cause disease, such as the CNS (AFM), skin (HFMD), and the heart (myocarditis).

Honors/Awards: Pediatric Infectious Diseases Society – St. Jude Children's Research Hospital Fellowship Program in Basic and Translational Research, 2019 1st year fellow of the year awarded by graduating residents

Publications

Current Scholarly Project: Investigating host cellular response of EV-D68 infection

Career Goals: Physician Scientist – plan to lead a research team and see patients on the ID consult service

Glenn Rapsinski, MD, PhD

College/Medical School: St. Vincent College/Template University School of Medicine, MD, PhD

Residency: UPMC Children's Hospital of Pittsburgh

Career/Research Interests: Pseudomanas colonization in CF patients, antimicrobial stewardship, lung transplant infectious diseases

Honors/Awards:

- Association of Medical School Pediatric Department Chairs (AMSPDC)
- Pediatric Scientist Development Program (PSDP) Grant
- University of Pittsburgh Clinical and Translational Science Institute (CTSI) COVID-19 Pilot Grant

Publications

Michael Green, MD, MPH

Michael Green, MD, MPH, is Professor, Pediatrics, Surgery, and Clinical and Translational Science, at the University of Pittsburgh School of Medicine. He received his medical degree from the University of Illinois in Chicago and his master's degree from the University of Pittsburgh in Pennsylvania. He completed a pediatric residency and a fellowship in pediatric infectious diseases at Children's Hospital of Pittsburgh.

Throughout his career, Dr. Green's clinical and research interests have focused on the prevention and treatment of infections in immunocompromised children with a particular interest in the care of children undergoing solid organ transplantation. Among his professional affiliations, Dr Green is a member of the Pediatric Infectious Disease Society, the American Pediatric Society, the Infectious Diseases Society of America, the International Pediatric Transplant Association, and the American Society of Transplantation (AST). Dr Green has published more than 160 peer-reviewed articles, has been invited to author over 45 publications, and has written more than 75 review articles or textbook chapters. He serves as an Associate Editor for both Pediatric Transplantation and the Journal of the Pediatric Infectious Disease Society. He was co-editor of the First Edition of the Guidelines for the

Prevention and Management of Infectious Complications of Solid Organ Transplantation published by the American Society of Transplantation and was the Editor-in-chief for the recently published 4th edition the guidelines which were published in 2019. He currently serves on the Pediatric Infectious Diseases Sub board of the American Board of Pediatrics and is a member of the FDA Antimicrobial Advisory Committee.

Publications