

## But Why: A Podcast for Curious Kids

### Coronavirus For Kids, And The Science of Soap

March 13, 2020

[00:00:21] (JL) This is But Why: Podcast for Curious Kids from Vermont Public Radio. I'm Jane Lindholm.

[00:00:27] (JL) And no matter where you live in the world. You may have been hearing lately about something called Coronavirus, or maybe you've been hearing about Covid-19.

[00:00:38] (JL) Many of you have been affected more than just by hearing about this new illness in some regions and countries. Lots of things have changed. Big events like football or soccer matches, concerts and community events have been postponed. Mosque, church and synagogue services have been canceled. And schools and places where adults work have been closed. It can be confusing or worrying when normal life changes if you are feeling a little concerned. You should ask the adults in your life to help explain things. But you should also know that things are probably feeling confusing and maybe a little overwhelming to your adults, too. Most of us haven't been through something quite like this before, and it's going to take all of us. Being calm and following the best advice of health professionals and our local leaders to get through this together. Today, we're going to answer questions you've been sending us about coronavirus in an effort to make sure you are informed and prepared, not scared. We're putting this episode out on Friday, March 13th, 2020. The global situation is changing very quickly. But the information we're going to give you today should be pretty relevant, whether you're listening the day we put this out or maybe a week or two later or perhaps even later. And as things continue to change, you can continue to send us questions you think we should answer. Let's start with coronavirus, what it is and what Covid-19 means. We asked Dr. Krutika Kuppalli to help answer your questions about this virus. Dr. Krutika Kuppalli is an infectious disease doctor. Infectious diseases are illnesses that are caused by a micro-organism getting into your body. Micro means small, so something really small you can't see it. Some infectious diseases are passed from one human to another by insects like a mosquito. Others are passed from person to person in other ways, like by one person coughing or sneezing and another person breathing in those cough droplets in the air. Dr Krutika Kuppalli works on infectious diseases and she's actually one of the leaders of the Infectious Disease Society of America. So, she thinks about contagious illnesses a lot and she's been helping a lot of politicians, health officials and others think about this new illness that people are so worried about. So, she was really glad to get a chance to talk directly to you, to kids, about the questions you have.

[00:03:10] Hi, my name is Henry. I'm eight years old. I live in Oxford, Ohio. And my question is, why does a coronavirus happen?

[00:03:21] Hi, my name is Ila. I live in Spokane, Washington. I am eleven years old. And my question is, what do scientists know about the coronavirus?

[00:03:31] Hi, I'm Evelyn. I'm seven years old from Kirkland, Washington. And I'd like to ask, what is the coronavirus?

[00:03:42] (JL) What exactly is a corona virus? We keep hearing this word coronavirus. What is that?

[00:03:48] (KK) Coronavirus is part of a large family of germs called viruses.

[00:04:00] (KK) Coronaviruses infect animals, and some infect people.

[00:04:04] (KK) So the one thing that is causing the big outbreak right now is one that infects people. And sometimes when this happens, it can cause infections of our lungs and also cause fevers, coughing and shortness of breath.

[00:04:25] Hi, my name is Nathan. I'm five years old. I live in Washington and my question is why are there different types of coronavirus?

[00:04:37] (JL) Other coronaviruses that kids might be familiar with if we've gotten a cold. Is that a coronavirus?

[00:04:42] (KK) Yes. Coronaviruses most commonly cause what we think of as causing the common cold.

[00:04:48] (JL) So people have had probably a coronavirus already in their lives if they've had the sniffles and a cough and it's not allergies. If they've had a cold, a viral illness, they may already have had a coronavirus. So why are we concerned about Covid-19, which is the disease that's caused by this new coronavirus?

[00:05:10] Hello, my name is Grayson, I'm four-and-a-half years old. I live in Ashton Pennsylvania. My question is why is coronavirus bad?

[00:05:20] Hi, my name is Atticus, I live in Chicago. I am 5 years old. My name is Sylvie, I'm 2 and I live in Chicago. How did the Corona virus become so powerful?

[00:05:34] (KK) So Covid-19 is what we call a novel coronavirus. And what the word novel means is that it's new and that people have not seen it before. And that's why it called Covid-19. The **co** stands for Corona. The **vid** is virus disease and the **19** is because it first appeared in people in 2019, and because it's new and people haven't seen it before, it's making people very sick.

[00:06:09] (JL) Is that because, because people haven't seen it before? None of us have developed any immunity to it. So, we're more likely to get it if we come in contact with it because our body has no built-up way to try to prevent us from getting it, because our bodies never seen it before?

[00:06:24] (KK) Yes, that's one reason. So, because our bodies have never seen it before, we don't have any way for our body to recognize it and develop an immune response to it, so then we can get very sick.

[00:06:41] (KK) And that is one of the reasons we are so concerned about it, because we have seen that some people who can get this disease get very sick.

[00:06:51] (JL) You said that that lack of any immune response is one reason. Are there other reasons why humans are likely to get this one or why, or why there's concern about humans getting it?

[00:07:01] (KK) Well, one of the reasons we get concerned about humans getting it is that we've seen that people who are older when they get, it tend to get more sick. And that is one of the reasons we are so worried about it.

[00:07:17] My name is Tor and I'm turning eleven and I live in New York City. And my question is, how do viruses mutate?

[00:07:28] Hi, my name is Millie and I live in New Jersey, and I am six years old. And my question is, how did the coronavirus start?

[00:07:41] (JL) Where did this disease come from?

[00:07:45] (KK) We aren't exactly sure where this disease has come from but is one thing we are still working to understand.

[00:07:52] (JL) But we do know that there are lots of viruses in the world and based on our best guess right now where other coronaviruses come from.

[00:08:05] (KK) We right now think. But it may have come from bats. And there may have been some sort of intermediate host. And from there it came to humans. However, that has not been confirmed yet. And they're still working to identify where it came from.

[00:08:27] (JL) Ah, so it may have come from an animal. Animals could have had this before humans ever got it, and it somehow transferred from animals into the first humans who got it.

(KK) Yes, that is absolutely correct.

(JL) How does this virus spread in people?

[00:08:43] (KK) Virus spreads mainly from people either sneezing or coughing by their droplets. So that is why it is important if you sneeze or cough to cover your mouth.

[00:09:02] So you can't spread it to other people.

(JL) If you cover your mouth with your hand while you cough. And then you put your hand down on your desk or your table or hold hands with your friend. Can you transmit the virus that way?

[00:09:17] (KK) Well, sort of. So, if your hand has a virus on it and then you touch your friend's hand and then your friend's hand to gets virus on it and your friend then touches their mouth or their nose or their eyes, then they can give themselves the virus if they don't wash or clean their hands before they touch their mouth, their nose or their eyes. So, it's very important to wash your hands before touching your face.

[00:09:55] (JL) And Krutika, you mentioned a minute ago that people who have had a cold have had a coronavirus. What are the symptoms of this particular Coronavirus? Covid-19.

[00:10:06] So the most common symptoms of this coronavirus are going to be things that make you not feel very good. So, a fever.

[00:10:18] A cough. and feeling tired and maybe having some muscle aches.

[00:10:25] Those are the most common initial symptoms you're going to have when you have this disease, but you mention that some people get very sick.

[00:10:35] Can we talk about what happens when people get sick? And then we'll talk about how common that is.

[00:10:42] So when people get very sick, sometimes they can have difficulty breathing.

[00:10:49] And they can have very bad shortness of breath and they can require being admitted to the hospital and needing a tube down their throat to help them breathe.

[00:11:04] What about how common it is to get very sick?

[00:11:08] So the older you are. And if you have conditions like diabetes or high blood pressure or problems with your heart or problems with your lungs like emphysema or asthma, the more common it is that you will have problems related to Covid-19.

[00:11:39] That is why we are concerned about people who are older getting the disease.

[00:11:48] Scientists and doctors are still in the process of learning about this illness because remember, it's new. It hasn't been studied in people before. And there are a lot of people working on how to make sure they can learn about all of this as quickly as possible to help treat people who get a little sick or a lot sick. What is known so far is that young people, children and younger adults don't seem to get this coronavirus Covid-19 as much as adults do, or at least if they do, it tends to be very mild. That's good news. For those of you who have asthma or maybe other health issues. You should take the same precautions you always do in cold and flu season, especially washing your hands. We're going to talk more about why that is so good later. But that's also something all of us can do to help keep our friends who have health concerns or who are older, as safe as possible from this illness, because even if you don't get too sick, it's possible to pass the disease on to others. So, we all want to take steps to contain this virus. Speaking of how to try to slow the spread of the virus, maybe you've been told to stay home from school. Maybe your family isn't visiting your grandparents or great grandparents or older friends right now. Maybe you live with people who are older or who have specific health concerns that make them more vulnerable to getting sick and you're taking even more extra steps to keep them healthy. Dr. Kuppalli says each of us can take steps to keep our whole community safer. And there are bigger steps companies and schools and cities and countries can try to take to protect the whole population. That's why you're seeing things like big sports leagues, baseball, basketball, football, or what the U.S. calls soccer, cricket, formula1, etc. all canceling or postponing their seasons. Schools are closing. Businesses are asking some of the people who work there to work from home.

[00:13:54] One of the things that has been shown to help in preventing the spread of diseases like this, especially ones that can be contagious when people cough on each other, is that we should implement measures called social distancing. And social distancing means that we all try to keep our space away from each other at least 6 feet. That's why things like school have been canceled and basketball games and baseball games and concerts. And in some cases, in some communities, maybe church has been canceled. And it's because when you are out those types of events, you're going to be close to each other. And when you're close to each other, that can facilitate spread of the infection.

[00:14:45] (JL) Facilitate just means makes it easier. So being close to one another makes it easier to spread not just that infection, but flu, colds, things like that. So, it's important to try to do what people are calling social distancing, right now. That means staying a little bit further apart from one another than we used to try to stay six feet away from others. Now, obviously, that's not always possible, but think about it this way. If you're out in public, you can try to stand so that if you and your friend both put your arms out, your fingertips wouldn't touch each other. There are other ways of preventing the spread of illnesses, too. As a kid, you've probably had many vaccines over the years to keep you from getting all kinds of illnesses. Researchers are working on a vaccine for this new coronavirus, Covid-19 right now. But remember, this disease is really new, and it takes a long time to develop and test a safe vaccine. So that's more than a year away before we could have any vaccine for this illness. Let's talk about something else that's on your mind related to this.

[00:15:54] Hello, my name is Cohen and I'm 11 years old. I live in Lagrange Park, Illinois. And my question is, should I be worried?

[00:16:04] (JL) We're getting questions from kids who are saying, should I be worried or I'm worried about this? How can we help kids and families feel prepared, not panicked?

[00:16:18] (KK) It's understandable that kids are going to be worried. This is something that's different. It's something that's scary. And especially with all the things that are happening and the changes going on in the community. First and foremost, I would encourage them to talk to their parents about their fears. The next thing I would recommend is depending on how they're getting their information, I would recommend that they don't spend all their time glued to the television or the Internet getting their information. I would say maybe limit yourself to once or twice a day to getting information, and maybe that could be something that you do with your parents and so you can talk about it with them. The third thing that you could do is also, because things are being changed all the time, is develop some sort of contingency plan. So, let's say if your school is closed down, you have a plan with your parents. If you maybe have a trip plan, talk to them about what that plan will be if the trip gets changed. And then maybe the fourth thing is to be a little bit proactive. That can always make you feel a little bit better.

[00:17:46] (KK) And I know a lot of people have developed preparedness kit, so maybe make a small kit of things that would make you feel comfortable for being at home.

[00:17:59] (KK) And maybe when you guys go to the market, pick up a few things at a time. I think these are things that you can do that will make you feel better and make you feel like you're being proactive during this time.

[00:18:13] (JL) So we in my family haven't made a preparedness kit, but we've started thinking about things that if we all have to be together in the house for two weeks, what are things that we're going to want to eat, but also what are things we're going to want to do? So, we got a new card game yesterday, for example, so that we can have something fun and exciting. If we are all cooped up together or sick, the kind of thing that you would put in your home preparedness kit, not necessarily medicine, but more like ways to just actually live at home for a couple of weeks.

[00:18:42] (KK) Yes, absolutely. That's what I meant by preparedness kit.

[00:18:45] (KK) You know, things to do while you're at home. So like games, movies, foods that you'd want to eat, your favorite blanket or stuffed animal, things like that.

[00:18:58] (KK) Books that you would like to read. I think those are all really great things to do.

[00:19:04] (JL) One time in my family with my kids, we also had to take a trip that we knew was going to be really stressful and hard. And we made a pact to say we're not going to fight even when we get annoyed and we get stressed out. And I think maybe that's something that families can do, to say this is going to be at a difficult time and people are going to be confused and anxious.

[00:19:24] (JL) Let's make a pact to try not to fight with each other because we're all going to be a little more tense than usual.

[00:19:31] (KK) Sure. I think that's really great. And I think the other thing that could be helpful, depending on your age, would be maybe also starting a journal or some sort of diary where you can just maybe write out a little bit about, you know, your thoughts or how you're feeling. Right. Because it is a stressful time for some people. And that could be something you do. The other thing that I think can also be helpful is coloring.

[00:20:00] (KK) And so putting that in your at home kit or preparedness kit or whatever the word is you want to use, but things that are going to make you feel comforted for this situation.

[00:20:15] (JL) Dr. Krupalli also recommends that families not watch the news constantly or get information from social media or friends at school or work. It's important to make sure you're getting good, accurate information from sources you can trust, either directly from the government and health officials in your communities or around the world or from journalists and media organizations that fact check and report thoroughly. We'll put a link to some good sources of information @ [butwhykids.org](https://www.butwhykids.org). This Coronavirus outbreak means most of us are experiencing some change in our daily routines. It's okay to feel disappointed about that, but it's important to know why we're doing these things. Even if you're unlikely to get very sick, you are doing your part to help stop the spread of this illness to others. Coming up, we talk about why the simplest step, washing your hands really works.

(JL) This is But Why: A Podcast for Curious Kids. I'm Jane Lindholm. As the world deals with the Covid-19 coronavirus outbreak, we're sharing what families need to know to help slow the spread of the disease. The most important thing you can do is actually really, really simple. Wash your hands, seriously. But why? How does a little soap and water and a little scrubbing kill so many of the germs that can make us sick?

[00:21:43] My name is Zoe, I live in Brooklyn. I'm six years old. And my question is, when I wash my hands, where do the germs go?

[00:21:50] I'm Cyrus and I live in Chicago, I'm four years old. And I want to know how does soap kill germs.

[00:22:03] My name is Andrea, I'm seven years old, I live in New Castle Australia. My question is how does it kill germs when you wash your hands?

[00:22:13] (JL) We called in an expert to answer your questions.

[00:22:16] (PT) Hello, I'm Palli Thordarson. Although my real name is Pop Thordarson, that is an Icelandic name. And Palli is the name that I am known best for both in Icelandic and English. That is spelled Palli. And my surname, Thordarson, in Icelandic that means son of Thordar.

[00:22:37] (JL) Palli is the head of the School of Chemistry at the University of New South Wales in Australia. He recently put out some information about soap on a social media Web site called Twitter, and hundreds of thousands of people have been reading and commenting on what he wrote. So, we asked him to help explain to us why soap is so good in the battle against germs. Let's first talk about what soap is.

[00:23:04] (PT) OK, so the main ingredients in all the soaps we can buy are molecules we call amphiphile, on one end there's a molecule that likes water. The other one doesn't.

[00:23:17] (PT) Soap is really a collection of chemicals, but the most important are the ones that, they almost look like a pin and one end loves being in water. That's when you make your soapy water. The other one hates being in water and it seeks out being in greasy, fatty things. So that's why soap is so good at cleaning grease and dirt and those sort of things off your hands. Because the fatty bit of the molecule goes into the fat. But the water loving bit pulls the fat into the water and you can flush it off.

[00:23:58] (JL) Let me just go through that again. The main ingredient in soap is called an amphiphile, a kind of molecule that has one end that is attracted to water and one end that is attracted to fatty substances. So, if you have grease on your hand and you wet your hands with water, have you ever tried this? The grease doesn't really come off very easily, does it? The water sort of beads up and runs off your hands. But if you add soap, the soap gets the grease off. That's because the molecules in the soap attached to the grease. But they also want to attach to the water. So, you scrub and scrub and the grease attaches to the soap which attaches to the water. And when you rinse your hands and flush that water down the sink, the grease goes with it. Now, here's the cool thing. Viruses are actually kind of greasy.

[00:24:51] (PT) Well, there are many ways you can try to describe a virus, but one of them is that it's almost like a greasy nanoparticle. Now, think about, have you seen when your mom or dad are trying to make spaghetti or meatballs for you and they take the little bunch out, the bunch is both meat and fat. So, it's almost if you rolled it into a little ball and made it a million times smaller. So, it's like only 100 nanometers. It's almost like the virus has a little fat coating on it. That means the virus can stick on your hands. And if you just put your hand under the water, there was a sort of greasy little things, sitting somewhere on your hand, that it doesn't come off. But if you put the soap on, the soap will go and attack the fat on the virus. And that will, the virus will basically fall apart and flush away. And it's gone. And that's OK.

[00:25:49] (JL) That is really cool. Not only is the soap attaching to the virus and getting it off your hand, but the soap actually kind of pulls the virus apart. Breaks it up. So, it's no longer able to affect anyone. It's a little weird to think of a virus as a teeny, tiny, greasy meatball, though. So, the soap is important, but scrubbing when you wash your hands is also really important.

[00:26:15] (PT) That's right. That's right. Yes. So, you need to rub the soap water onto your hands for a little bit, maybe 20 seconds. And all the dirt on your hands is now soaking in soap. It's the soak in the soap and then flushes off very easily when you stick your hands back under the water.

[00:26:33] (JL) So we've been hearing that washing your hands is really important. But there are certain ways that you need to do it in order to be most effective. Is it true that we should be scrubbing our hands for 20 seconds?

[00:26:49] (PT) I think that's the best thing to do. Just needs a bit of a time as mainly to make sure that you don't forget to put the soap somewhat on your hands. It takes a bit of time to rub both hands together and make sure every single finger and the inside of your hand, or the outside of your hand has been covered. Probably takes you only 20 seconds. If you go too quickly, you might have forgotten one of the fingers or not gone between two of the fingers and you might miss some areas.

[00:27:17] (JL) Does it matter what kind of soap you're using? There are all kinds of soaps out there. Some are liquid, some are foam. Some are bar soaps. Some are used to do dishes. Does it matter what you're using?

[00:27:29] (PT) Probably not. I see that it's much more important that you just give it 20 seconds on whether you buy this soap, that soap, whether it's a liquid soap to use or a bar of soap. Probably only one I would avoid slightly use the dishwasher one because not because it wouldn't kill the virus. It's just not very good necessarily on your hands. The people who designed it wouldn't expect people to use that sort of soap more than once or twice a day.

[00:27:59] (JL) And how often should you be washing your hands right now? A lot. Think about how often you touch things and where you might be picking up germs. So, if you cough or rub your nose because it's itchy or runny. Wash your hands. If you go to the bathroom or if you're about to eat a meal, wash your hands. If you've been at the grocery store helping your adult push the cart, either wash your hands or use a hand sanitizer. Palli says hand sanitizer is great to use when you're not near soap and water.

[00:28:30] (PT) Hand sanitizers are fine. They do a good job. Sometimes it's a little bit harder to make sure you cover the entire hand with them well enough.

(JL) If you have a hand sanitizer, and these are, you know, the alcohol-based liquids, they kind of dry on your hands. And so, if you have a hand sanitizer, should you kind of pretend that you're washing your hands with it in the same way you would with soap? So, scrub your hands, get in between the fingers, even though it's the hand sanitizer.

[00:28:59] (PT) Absolutely. Then they will do exactly the same. Just have to cover the whole hand.

[00:29:05] (JL) Let's make sure we get one thing clear about the virus. Just because it's on your hand doesn't mean you're going to get sick. Remember, we talked about this with Dr. Krutika Kuppalli, as well.

[00:29:18] (PT) The virus does not move. It isn't really living even. It doesn't crawl along your hand. It's just stuck there.

[00:29:26] (JL) Yeah. It's not it's not an animal. So, it's not going move around on your hand. It just sticks there because it's kind of sticky and fatty, as you said.

[00:29:32] (PT) It sticks there. And you just have to try to kill it before you accidentally put it, say, in your mouth or your eyes.

[00:29:41] (JL) That was Palli Thordarson from the University of New South Wales in Sydney, Australia. Thanks to Palli for helping us explain soap and thanks to Dr Krutika Kuppalli for helping us understand a little bit more about the Coronavirus called Covid-19 that everybody's talking about and how we can help protect ourselves and others. That's it for this episode. I just want to say again, even the kids who get sick from this novel coronavirus, very few have very severe symptoms. But we all share the responsibility of slowing the spread of this virus to help keep it away from people who could get very sick.

[00:30:20] (JL) If you have a question about this or anything else, have an adult record it, they can send the file to questions @ But Why kids.org. We love to hear what's on your mind. And if you're cooped up at home for a few weeks with no school, we have more than 100 episodes you can listen to. All of them are educational and some of them are really just kind of pure fun. But Why is produced by Melody Bodette and me, Jane Lindholm, at Vermont Public Radio. And now, more than ever, we are so grateful for our help from our colleagues here at our theme music is by Luke Reynolds. We'll be back in two weeks with an all new episode.

[00:30:59] (JL) Until then, wash your hands.