Primary Care Cures
Episode 81: Nora Belcher

Ron Barshop:
This episode is brought to you by the MediSearch Institute. What happens when patients cases become too complex to solve in a typical 30-minute visit? Well, we've all had those super thick, super deep patient history nobody's looked at in a long time and gone back through. Well, I'll tell you what happened is those patients bounce around from doc to doc without getting any answers or making any progress. These patients are trapped and lost in a maze.

Ron Barshop:
Well, MediSearch is here for those doctors and for those patients. Their motto is we solve the unsolvable. Their process is rather simple. Dr. Trent Talbot, the founder, assigns a team of medical detectives, typically three MDs and one PhD to each case. They research the latest breakthroughs and clinical trials and they elicit the opinions of 10 to 15 world-leading experts per case. They purposely seek out experts who will come at each case from a different perspective, the Bayesian method. Altogether, they will put in over 250 MD hours for every case. That means 500 times the amount of brain power that typical doctor can afford to offer.

Ron Barshop:

Survivability for every age range infected by C19 for under 75 year olds is 96%. But wait, those confirmed infected, we know there are eight to 10 unconfirmed infected that we don't know about. So 80% of us show no symptoms. So thousands of us in every city might be unaware super carriers. So back to the 96% survivability, it's closer to 99% survivability under 75 years old that will survive. And the odds are lower if you're unhealthy or if you're a male or if you're Black or Hispanic, it turns out. Under 60 is 98% of confirmed. So again, unconfirmed is over 99% if infected. It's a lot of numbers, but bottom line, when we hear about these giant infection rates, only 1% are dying or less than 1%.

Ron Barshop:

C19 adds 44 deaths per 100,000 to the normal 864 in America. So about a 5% bump. It's not nothing, but today, it's 5%, a typical influenza season. What is the real price that we're paying for a 5% bump in mortality in America? Well, 40 million are on the unemployment rolls and that's about seven times the normal range over any 10-year period in the last recent history. We have 12 million renters that.... And I'm talking the last week of July now, so 12 million renters are losing a moratorium on their eviction. So notices are appearing on doors this week all over Texas, and in fact 12 million homes around the country. And in a month, they're going to find their stuff out on the sidewalk with garbage bags, which is a heartbreaking site on large scale.

Ron Barshop:

40% of all businesses today may not reopen, and Yelp is confirming that 60% of all restaurants are permanently closed now. These are the small drivers of engine of an employment, small business in America, not the bigs. And bankruptcy is up. Penney's, Neiman Marcus are famous,

Brooks Brothers, you may have heard of, Ann Taylor, Pier 1, GNC, J. Crew, 24 Hour Fitness, and Gold's Gym, dozens more of national brands are now bankrupt. And Chapter 11 is up 48% versus May this same time last year.

Ron Barshop:

From our perspective on this show, independent primary care is morphing into value-based care which is a lovely wrapped present for a takeover by bigs. Why is value-based care a takeover opportunity? Because these are the guys that set the right to pay, it's called capitation, but they aren't your friends, my fellow doctors. I'm not a doctor, but they're not your friends. They want your referrals, period. They don't care about you or your patient, it's undeniable. It's kind of like gravity. So value-based care, as much as we all love it and tout it, say it's the next big shiny object, doesn't move the dime an inch on cost. It's equal to fee for service, but it's sexy.

Ron Barshop:

Meanwhile, death rates are plummeting like a rock in a pond on this virus, and it's going to weaken into nothing serious. And that's what our expert today is going to hopefully tell us a little bit more about, is virology 101. And our economy is getting crushed. Healthcare is getting corporatized way faster than we've ever seen before in history.

Ron Barshop:

Let me tell you about Dr. Amy Altman, our guest today. She has a PhD and a master's in microbiology, and she joined Reliant Immune Diagnostics as its Chief Operating Officer. Before that, she spent a decade at Luminex developing and commercializing FDA cleared diagnostic and detection assays for Biodefense. And before that was with Booz Allen as a science and technology consultant with DOD. And for those of you that don't live in the big city, that's the Department of Defense, well, if you just woke up from a coma. So we're going to learn today about sensitivity and accuracy and capacity of producing, and all these interesting things. Amy, welcome to the show.

Dr. Amy Altman:

Hey, thanks for having me. I appreciate it.

Ron Barshop:

Okay, so let's set this up properly. Testing is a very confusing subject because there are so many tests out there. There's the nose swab, and there's the blood, and there's all kinds of new things coming up. But there's three basic kind of test. Can you kind of give us the architecture for what does testing look like in America today?

Dr. Amy Altman:

Sure, absolutely. There's three main type of tests. Two of them actually test for the virus. So most people have heard of the nasal swab, PCR test. This is a test where a nasal swab sample is taken and they actually do a PCR test, which is polymerase chain reaction. Essentially, all it's doing is looking for genetic pieces from the virus. So you're actually looking whether there are pieces of the virus in your nasal secretions to show that you actively are infected with COVID.

Dr. Amy Altman:

The antigen test is also a diagnostic test that can tell if you're actively infected, but instead of looking for the DNA pieces or the RNA pieces of the virus, it is looking for protein pieces of the virus. These are usually coded around the outside of the virus or coding that DNA or RNA material.

Dr. Amy Altman:

The third type of test is the serology test, and that's the antibody test, where it's not looking actually for the virus but it's looking for your body's response to the virus. So it's looking for the development of the antibodies against the virus.

Ron Barshop:

Okay. So let's do a little bit of a deep dive on the PCR, starting. This is the nose swab. Looking for RNA or molecular, and that's going to take, what, 10 days to get a result?

Dr. Amy Altman:

Well, the 10 day time is based on how much backlog is at the lab. The actual test to run to look for RNA is a couple hour test. It can be anywhere from two hours to four hours, depending on the technology you're using.

Ron Barshop:

So backlog at the lab looks like that maybe they can handle 50,000 assays and maybe they're backlogged already 350,000 today, so that's why you're saying seven to 10 days.

Dr. Amy Altman:

Correct.

Ron Barshop:

Okay.

Dr. Amy Altman:

Correct. Typically when a lab gets a sample, they like to be able to turn it around in 24 hours and get the result out. But when new samples are coming into the lab, they're getting stacked on the, like you say, 10 to 20,000 samples they may already have to process, and there's a limit to how many samples each lab can process a day.

Ron Barshop:

Okay. And this is the type of test that's being done at the White House with the Abbott system, right?

Dr. Amy Altman:

The Abbott system is actually an isothermal molecular test. So it is looking for the RNA, but it's doing it in a 15-minute point of care test, so they're able to do it on the spot with the nasal swab

and get the answer within about 15 minutes. It's still looking for the molecular material or the RNA, it's just doing it in a little bit of a different way.

Ron Barshop:

Okay. And the danger of this test, if you want to call it a danger, is that to the caregiver who's doing the swab because people are coughing and gagging and sneezing and spitting up. And so the air is just getting completely aerosoled with... what's the saliva and the mucus. And so for the worker, it's quite a bit of more dangerous test, right?

Dr. Amy Altman:

It is because they're having to get obviously up close and personal with the person that is symptomatic and potentially could have COVID. And so in order to get that sample, they're going have to do a, not a horribly invasive but still an invasive stand hold. They're sticking a swab into your nose to collect mucus that will have the virus in it.

Ron Barshop:

Into your skull, into your brain for God's sakes. Yeah. Okay. I'm wondering if they're pulling out brain matter or mucus sometimes. So let's talk about... Tell us what sensitivity means, and then accuracy and all of that. How is this test for sensitivity versus the other two tests?

Dr. Amy Altman:

So obviously the molecular test is going to be the most sensitive, meaning that it is going to detect a positive close to a hundred percent of the time. And so when you see sensitivity numbers, you can think of it as, if I gave you a hundred samples that were all positive and your test called 99% of them positive, that will be a 99% sensitivity. It means you got it right on the positive side 99% of the time.

Dr. Amy Altman:

There's also the flip side which is the specificity. You also don't want to call a positive if it's not a positive. So if I gave you a hundred negative samples, you need to call those negative a hundred percent of the time. And so if your specificity is 97, 98% to a hundred, that means that's the number of negative samples that you correctly call negative.

Ron Barshop:

Okay. So that test is really, sort of, the test assure if we had ability to scale it. We don't have ability cause we're 330 million Americans, and we're getting a lot of criticism because we got this much larger volume than even in Germany or Japan would have. But we're getting criticized because we don't have industrial capacity to handle all those serology, all those PCR tests.

Dr. Amy Altman:

Correct.

Ron Barshop:

Yeah. Okay. So let's talk about the availability. Are those tests widely available or are they still in short supply?

Dr. Amy Altman:

They're much more available now than they were at the beginning of the pandemic. So at the beginning of the pandemic, the test that was approved essentially was a test from the CDC. And you had to get your PCR tests from the CDC in order to run it. Therefore, there was lot of restrictions on who could actually get a test. You had to fall within one of the categories of either a known exposure or having traveled from a place that was currently a hot spot. So back in January, February that would have been traveling from Wuhan or certain places in China.

Dr. Amy Altman:

As the pandemic evolved, more and more independent labs were developing molecular tests that were being authorized by the FDA for use in the emergency use authorization. And then more companies, larger companies, started manufacturing and getting authorization for their molecular tests. So I don't think it's a problem necessarily of supply. The problem typically comes in on the ability to process the number of samples that would come back.

Ron Barshop:

Okay. So common sense tells everybody listening that a 10-day wait is of almost no value... Not no value but it's pretty close to no value because what do you do with that information for nine days waiting? I mean, do you let the person come back to work? Do you hold them back from work? I mean, it's really a problem, isn't it?

Dr. Amy Altman:

It is a problem. So current protocols mandate that you stay at home and isolate and quarantine until you get your test results back. The other problem with waiting for 10 days is you pretty much can't contact trace at that point anymore, because for 10, days you've lost your contacts from before. And so contact tracing becomes less valuable the longer it takes to get your test result.

Ron Barshop:

Yeah. Contact tracing, meaning that I know where you were and with whom you were so we can know who you interacted with.

Dr. Amy Altman:

Right. Who you may have, right, passed the virus to.

Ron Barshop:

Okay. I learned a new word, canoodling. Who are you canoodling with?

Dr. Amy Altman:

Who you're canoodling with? Canoodling, I thought that's when you caught catfish with your hand. [crosstalk 00:10:37]-

Ron Barshop:

That's in a happier time when we used to be able to go out in public. We can't do that anymore.

Dr. Amy Altman:

Right.

Ron Barshop:

Okay. The second kind of test, the serology test. This is an older test and it's testing, as you said, the antibodies. Let's talk about the... Well, first of all, is that a saliva test?

Dr. Amy Altman:

No, it's typically a blood test, a whole blood test or from serum or plasma.

Ron Barshop:

And that test, is that taking also 10 day plus timeframes?

Dr. Amy Altman:

No, that test is a 15-minute test and can be done on site, wherever you're administering the test.

Ron Barshop:

Okay. And how is that in terms of specificity and the other measurements?

Dr. Amy Altman:

It's not going to be quite as sensitive as a molecular test. And the other issue with antibody test is, it's not going to detect or diagnose full on fulminant disease. You start to develop antibodies starting maybe five to 10 days post onset of symptoms. And so if you tried to use a serology test within the first few days of symptom onset, it's going to be negative, because your body will have not had a chance to make enough antibodies to be at a level that could be detected by these tests. So typically, we're seeing these tests are effective in the 14-day, 10 to 14 day time period after clinical onset of symptoms.

Ron Barshop:

Again, almost of no clinical value or employment value. Almost none. I mean...

Dr. Amy Altman:

It's not valuable in terms of diagnosis of disease. What it is valuable is... in a couple areas. One, it will tell you, "Have I been exposed?" I may have been one of those people who contracted COVID but was completely asymptomatic and have no idea that I actually was infected with COVID. But a serology test could show me that I had developed antibodies to it, which, by default, means that I had been infected with COVID.

Ron Barshop:

Well, big whoop. Who cares? I mean...

Dr. Amy Altman:

Well, so it could potentially... So it tells me I have antibodies that I've developed to it. What we don't know yet is whether or not antibodies are going to confer any kind of immunity. So you're right, big whoop, right? What does it do for me?

Dr. Amy Altman:

What it also does, is that it allows us to estimate the true spread of the virus in the population, right? So we can detect based on numbers... If I sample a large group of people with a serology test and I have a certain prevalence number there, but a lot of those people never experienced disease, I can get a better sense of what the true prevalence of COVID infection in the community is. And I can start to make some assumptions that if I've been infected before, I'm not going to change the way I behave, I'm still going to wear a mask, I'm still going to keep my distance. But we can start to get a sense of who has been infected, who hasn't. And hopefully, as we learn more about whether these antibodies are protective in the future, we will be able to use this more to determine... Kind of like your health passport, right, that you had it, you're immune, you can go back to work.

Ron Barshop:

So there's two questions... or there's 10 questions, but two questions that come immediately to mind is, let's say we have this population of people who have been infected and, let's say, we assume the plasma is something of health benefit. Does that mean that we can go harvest, for those that are willing, their plasma and help the folks that have not been infected yet? Is that a possibility?

Dr. Amy Altman:

Yes, absolutely. People are using... It's called convalescent plasma, from people who have had disease recovered and their body has circulating antibodies and those antibodies can be therapeutic for those that are severely ill.

Ron Barshop:

Okay, blood types tell me that I can be a universal donor or acceptor, I can have a specific blood type I can only accept. Is plasma universally accepted by all from all?

Dr. Amy Altman:

You know, that's a really good question. I'm a PhD, not a MD, so I'm not a hundred percent sure whether that's true or not.

Ron Barshop:

So the vaccine may actually be in our plasma as a potential, but it also may have be of zero value. We don't know.

Dr. Amy Altman:

Well, the antibodies, will be in the-

Ron Barshop:

Antibodies, okay.

Dr. Amy Altman:

Mm-hmm (affirmative).

Ron Barshop:

And then the second test, the false negatives, is that also sensitive of the false negatives and specific about calling those accurately?

Dr. Amy Altman:

Yeah. So the sensitivity on the serology tests, which is that ability to detect a positive can be anywhere in the 85 to 95% range. Some claim 98 to 99. I just saw a study from the UK that had some antibody tests that were up in the 99% sensitivity. The specificity or that number of false negatives, let's say you would have, or that you're calling it negative and it's really a positive, is comparable with a molecular assay. Typically, seen in the 98 to a hundred percent for serology [crosstalk 00:15:38]-

Ron Barshop:

Okay. So let's take a review. Call me when I'm saying something wrong. But the first test, the PCR, which is the take a brain matter out and put it on a swab, that is a 10-day test. So it's of limited value because we don't know what to do with 10 days waiting while we're trying to get a yes or a no.

Dr. Amy Altman:

Right. And I should say that there are labs that are able to process them a lot faster. And so a lot of it depends on where the PCR is being sent to get processed as to the time to results.

Ron Barshop:

Yeah. If I'm on a sabbatical for 10 days, it's a perfect test or even five days. But who gets that benefit?

Dr. Amy Altman:

Yeah, but there are some labs... I mean, we work with some labs where the turnaround time is 24 to 48 hours after they receive the samples.

Ron Barshop:

Okay. And now, the second test you mentioned was the serology. The benefit of that is it's 15-minute test, but it doesn't tell you whether you currently have it, have gotten it five to seven to eight, 10 days before... You might've gotten it a minute before, you might've got it 10 days before and it could turn out negative quite accurately because it doesn't measure until the virus takes hold. Is that a good summary?

Dr. Amy Altman:

Right, it doesn't measure until your body produces antibodies against the virus, which can be five to 14 days.

Ron Barshop:

Okay. So almost of no value there too, I hate to say. But it's comforting to know some 15 minutes something, at least.

Dr. Amy Altman:

I think what's important is if you get a serology test back that's positive, then you may say, "Okay, now let's go back and confirm with a PCR test to see if you're actually infected."

Ron Barshop:

Okay. All right, so let's talk about the third test. Is this something that's more helpful than the last two you just mentioned?

Dr. Amy Altman:

The antigen test?

Ron Barshop:

Mm-hmm (affirmative).

Dr. Amy Altman:

So the antigen test is beneficial in the fact that it is a 15-minute test. It is rapid. It is not quite as sensitive as the PCR molecular test, but you are directly detecting for the virus, looking for proteins on the virus' surface. Therefore, it can tell you whether you are currently infected and it can do it fairly quickly. The problem with that is there's currently, I think, only one test which has received EUA authorization on the antigen test. So there's not a broad availability of that.

Ron Barshop:

So if you were queen for a day and you can make the ideal test, you would have an onsite real-time 99.9% sensitive, 99.9% accurate on the false negatives, is very highly specific, but there's nothing on the horizon that looks quite like that, is there?

Dr. Amy Altman:

That has been the holy grail of diagnostics for a long time, regardless of whether it's COVID or whether it was flu or whether it was Zika or whether it was Ebola. Everyone wants the tricorder, right? The immediate answer, with zero-risk of getting it wrong. Unfortunately, biology's a bit more complicated than that, in that we don't have that technology yet. We're moving closer towards tests, which are near real-time that can be done. But those technologies are not so widespread.

Ron Barshop:

Thank you for the Star Trek reference with the tricorder. I'm really... You win a prize for the first person in 77 episodes to mention something Star Trek, so we're going to have something we'll send you in the mail. I don't know.

Dr. Amy Altman:

Fantastic.

Ron Barshop:

Yeah. It may be really cheap, but it's... you'll be happy. So the virus is active in our bodies for, I've read, four days, 10 days, 14 days and 20 days. What the heck is the story here with the activity level of this stinking virus?

Dr. Amy Altman:

So biology is complicated, right? Nothing's simple. It's the same as if you look, how can some people be completely asymptomatic and some people that are infected with the same virus end up on a ventilator and eventually die? There is a huge spectrum of clinical outcome between those two endpoints. And along with that is a huge clinical variability in how long the virus is active. It comes down to an individual person's ability to mount an immune defense against the virus and how quickly your body can clear that virus. Comorbidities or diseases that you may have in addition... If you're not completely healthy, if you have diabetes or some of these other comorbidities you've heard of, can greatly impact your ability to clear this virus effectively, and because of that, you may end up with a more severe disease, which may last a lot longer.

Ron Barshop:

I don't want to get political here, but I want to understand herd immunity. I've read 60... Well, I've been told by very smart people, 60 to 70% is the magic formula for us all to get exposed to have the herd immunity even a factor. But I've also read that in some cities in Europe, that they've got six to seven to 10% herd immunity and we know that that works, too. Do we have any data on herd immunity that is real or is it all just sort of in the grand theoretical realm?

Dr. Amy Altman:

So I think... And I'm not a expert in herd immunity. But you have to remember that different viruses have a different ability to transmit person-to-person. And so your herd immunity number, that magic number that you need, is going to be somewhat dependent on the virus as well. So the issue I think that we've seen with the coronavirus is people that are asymptomatic are able to spread the virus. So they're able to go out and infect other people and they don't know. Whereas if you're... Let's take Ebola as the other extreme. You get Ebola, you know you have Ebola. You are sick, you are in your bed, you're not able to move. So you're not out running around infecting other people. And so the ability to transmit a virus is going to have an impact on what that herd immunity is.

Dr. Amy Altman:

You would think after a certain percentage of the population is immune, there's less people to pass it to. You can think of herd immunity, it's kind of like the match stick reference, right? In a pack of matches, the old kind, if you pull out some matches between two that are next to each

other, that flame can't propagate down that line of matches. And so essentially, herd immunity is creating a bubble in which that those people that aren't immune are surrounded by enough people that are immune, that the virus or the bacteria or whatever the infectious agent may be doesn't get to that person.

Ron Barshop:

You talked a little bit about temperance of virus. Tell us what that means. You talked about DNA viruses versus RNA viruses. Explain why that's an important thing that we should all know about.

Dr. Amy Altman:

Right. DNA viruses, their genetic material is DNA, just like the DNA in our cells. And when they infect a human or an animal or whatever the cell is, it can create copies of itself. And that process of creating a DNA copy of DNA is it's pretty foolproof. It works pretty well. So you don't get a whole lot of change. The difference in an RNA virus is... such as coronavirus and the flu influenza viruses are RNA viruses as well. When the RNA goes into a cell and needs to make a copy of itself, it first has to make a DNA copy of itself, like a template, that then is used to make more RNA copies. That is a very error-prone process.

Dr. Amy Altman:

It's a reverse transcriptase process and it results in a lot of genetic changes being made as it makes copies of itself. So as the RNA virus propagates itself through a population, these little single changes can be made and additive and lead to viruses that may have different infect-ability, different susceptibility to therapeutics... Lots of things can happen, that's why we have to get the flu vaccine every year too, because there are changes in which flu strain we believe is going to hit.

Ron Barshop:

Okay. So flu strains, as long as you bring that up, I've read that this corona now has six different distinct symptoms. So it's six different... It's the same virus but it's six different iterations of that virus because of this RNA factor that we're talking about. And we don't know if it's getting milder or if it's getting stronger, but it's... Don't viruses tend to extinguish themselves by getting mild or to the point of, at the moment the vaccine is created in three to seven years that it's too late, everybody's pretty much over it.

Dr. Amy Altman:

It depends. Again, that's the favorite answer of a biologist, is it depends. There's lots of factors that go in. There is obviously scientific evidence that passaging of virus through, like, cell culture continually passing leads to attenuation or a decrease in the infectivity of that virus. The problem as it passes through humans are, different factors are playing on that. As viruses jump from animals to humans, you see differences in their infectivity. It is not a complete rule that things will become less infective over time. But as people build up immunity, even if I don't have full immunity to a virus... Say I'm infected with virus X and I develop antibodies, the next time I'm infected with virus X, I might get a little sick but not very sick, because I'm not completely immune but my body did a better job of fighting it off the second time.

Ron Barshop:

And this viruses is a specially clever girl, because she is one that knows how to infect the vascular system from the lungs. So apparently the alveoli are bursting into the blood system and this is now getting into the vascular and it's leaving all kinds of damage to the cardiovascular system. Is that what makes this one unique?

Dr. Amy Altman:

You know, again, I'm a biologist not an MD, so I don't want to make claims about the clinical...

Ron Barshop:

All right. You sound like my rabbi, on this hand and on the other hand [inaudible 00:25:08]. Yeah, he never gives me a straight answer, that guy. All right. So should we be... the big three, you know, stay in place, number one, wear a mask, number two, and number three, keep your social distance. That's not what they're doing in the Asian countries. They're just... It's a whole different set of three parameters. Are these the best three parameters that we know to be safe? Because it doesn't seem to be working.

Dr. Amy Altman:

Well. I think the problem is we're trying to pour a sprinkler can on a forest fire right now, right? I think had we instituted a lot of these three components early on in the pandemic, we would have seen a very different outcome. I think in Asia... Although I'm not a hundred percent sure what all of their protective measures are, but Asia has always been a fan of wearing masks. They even wear them because of a smog and the air pollution. And so I think masks had a huge impact on how Asia dealt with the pandemic and the ability for them to control it. Our problem is, by the time everyone was putting on masks, it had kind of already gotten out of control.

Ron Barshop:

Do you fear for... I don't know if your mother's older and your father's older, but do you feel for the older people in your family when you go visit them that you may be an unintentional carrier? Do you have any special precautions you use for your own situation?

Dr. Amy Altman:

You know, early on I did. My mother is in her seventies and I would buy her grocery... and not let her out. She has her own house, but I would go grocery shopping for her. I would drop them in her garage, stay 10 feet apart. We've lessened that a little bit. We're very careful to make sure we're washing our hands and we're using hand sanitizer. But my job has been mainly working remotely, I've done some in the office. So our interactions with other people are fairly minimal at this point. So I don't really worry about interacting with my elderly mother.

Ron Barshop:

So not to cross into medicine, but do you spend more time in the sun getting vitamin D, because apparently there's numbers that 4% that we're doing autopsies of have deficiency... I'm sorry, have no deficiency in vitamin D but 96% do have a deficiency in vitamin D. Do you worry about what you eat to strengthen your immune system?

Dr. Amy Altman:

I don't. I spend a lot of time outdoors, even if it's yard work or trail running. And I think in Texas, we probably get more vitamin D from the sun than most people. I think there are always multi-factoral things at play that keep you either... If you're one of those people that always gets sick or if you're one of those people that hardly ever get sick, and I think a lot of it has to do just with making sure you're maintaining a healthy lifestyle, staying hydrated, all those things that everyone tells you, of course are going to be somewhat beneficial.

Ron Barshop:

No discussion with Amy Altman is finished until you have a discussion about vaccines. Again, we have a vaccine for swine flu. We don't have one for mad cow. We don't have one for avian flu. We don't have one for most, in fact, viruses. I've run out of animals, by the way. Do we have any hope that a vaccine can get here in time to save us?

Dr. Amy Altman:

I think there will be a vaccine. The question will be similar to flu, is how much the virus can change to evade the protection of the vaccine, right? Is this going to be something that every year, you're going to have to get a coronavirus vaccine booster to make sure that you are immune against the most current strain? Given that it is an RNA virus, it can mutate and change and it can evade the antibodies that you have created to protect you.

Dr. Amy Altman:

I think there will be a vaccine. I think we're going to see potentially the need to have multiple versions of that vaccine as we go through the next few years if it continues to be a problem.

Ron Barshop:

And I don't want to disappoint our conspiracy theorists that listen to the show. But you've consulted with DOD, is this human-made or is this something that's slipped out of a lab accidentally that was under study for some other works?

Dr. Amy Altman:

No. You know, viruses are so unbelievably, incredibly effective at killing and destroying people and animals. These small pieces of genetic material, similar to Ebola, and nature is really good at making them. And as we disturb habitats or as we cohabitate with animals closer and closer, this is bound to happen. I do not believe it is a man-made virus. I've seen enough craziness from nature to know that nature does not need help.

Ron Barshop:

I got it. Okay. So Amy, I mentioned the company you work for, but you also work as COO of a companion company called Empty Box.

Dr. Amy Altman:

Yeah, Empty Box is just the product's name for Reliant ID. So they're the same, one and the same.

Ron Barshop:

But you have how many products? I saw a description of what you're working on by Hank, your CEO and founder, and you guys got a lot of different interesting diagnostic tools that PCPs can use once you get them all approved. You've got right now a couple of interesting ones for saliva that are real time onsite tests that are super cool. Can you talk a little about what you have available and what you have in the works.

Dr. Amy Altman:

Sure. For the saliva test, we talked a lot about the nasal collection for the PCR or the molecular test for coronavirus. And there's been a couple companies that have come out and gotten EUA clearance for a saliva-based test. This allows testing to no longer have to occur necessarily at the popup testing events or at these large things where you're going to be with a lot of people. You can spit in a tube at home and send it in and get your testing. So we're working a lot in the areas of alternate samples for testing. Less invasive, more consumer friendly samples for testing. We also have...

Dr. Amy Altman:

Our main platform is the telemedicine platform along with the EMR. So our whole intent as a company was to democratize healthcare. Healthcare in this country, as everyone knows, is a broken system. And we believe that we could provide a better telemedicine experience and allow us to reach people who may not have insurance or may not have access to appropriate medical care, because they're in areas of the country where they're just not close to those kinds of providers.

Dr. Amy Altman:

And so we built it also to de-mystify telemedicine. A lot of people didn't know... or when to use telemedicine. And so by having very symptom-specific telemedicine encounters, like for pinkeye or cold and flu, we can make sure people are getting the treatment they need in a way that is efficient and economical.

Ron Barshop:

Listen, if you're looking for a side hustle, contact the folks at Reliant Immune Diagnostics. I saw their EHR, it's elegant and it's beautiful. I've looked at a ton of EHR, like many of you have, and this one is actually user-friendly. So how can people find you, Amy, if they want to reach you or the company?

Dr. Amy Altman:

Right. So probably the best way is through our website, which is mdbox.com. And from there, we have links to all of our COVID resources as well as our telemedicine resources.

Ron Barshop:

Okay. And if you could fly a banner over America with a simple message for all Americans, what would that banner say?

Dr. Amy Altman:

Oh, that's a really good question. I think it would be to stay tough, right? Americans are tough and we're going to get through this. We've had a lot of missteps, I think, as a country in learning how to deal with this pandemic, but we will get through it and come out on the other side.

Ron Barshop:

Okay. We will send you a full-sized body sticker of either Bones, Spock or Kirk. We're not sure which one but we'll [crosstalk 00:32:55]-

Dr. Amy Altman:

Fantastic.

Ron Barshop:

Again, thank you for the... Anything Star Trek just warms my bones. Thank you, Amy, and we'll have you back again. I feel smart for about half an hour of my life this week and it's thanks to you.

Dr. Amy Altman:

Perfect. Thank you so much.

Ron Barshop:

At the end of every show, we're going to have some fun with a segment called just a hospital minute. It's less than 60 seconds. It's a bite size of the games that hospitals play. For example, did you know that when they check you out, if they check you out beyond their checkout time, which might be noon, at 12:01 they get to charge an extra day. These are games that hospitals play. This is just another hospital minute. Thanks for listening.

Ron Barshop:

Thanks again to our sponsor, the MediSearch Institute. I want to read you a note a CEO friend of mine sent me who used them for a rare childhood disease her daughter had. Dr. Talbot's research was thorough. He provided clear paths of treatment and he gave me access to the best physicians. I'm so grateful for his work. That's the MediSearch Institute.

Ron Barshop:

Thank you for listening. You want to shake things up? There's two things you can do for us. One, go to primarycarecures.com for show notes and links to our guests. And number two, help us spotlight what's working in primary care by listening on iTunes or wherever you get your podcast and subscribing and leave us a review. It helps our megaphone more than you know. Until next episode.