Primary Care Cures

Episode # 11: Crystal Icenhour

Ron: You know, most problems in healthcare are fixed already. Primary care is already cured on the fringes. Reversing burnout, physician shortages, bad business models, forced buyouts, factory medicine, high deductible insurance that squeezes the docs and is totally inaccessible to most of the employees. The big squeeze is always on for docs; it's the acceleration of cost and the deceleration of reimbursements.

Ron: I want you to meet those on this show that are making a difference with host Ron Barshop of Beacon Clinics: that's me.

Ron: Was King Arthur actually real? Well, we don't know. He could be; probably not. I see myths that become almost facts in healthcare every day. They're a deeply rooted part of our narrative. And on every main platform, there's someone who has these tired themes. Some books try to hit it out of the park diving deep into these themes, and really spelling it all out. Here's my favorite myths, and let's blow some of these away with a giant shotgun.

Ron: Number one, let's just bump up reimbursement rates; that should solve everything. Number two, we need to organize. Let's make this change or that change. Let's march, let's go. And number three, we need a government solution to this hot mess. "We need to" solutions, "We gottas" are everywhere, and they pop up like whack-a-moles. It's always coming from the smartest guys in the room who've really thought deeply about this issue.

Ron: So let's just take a look and bury these three with very simple facts that put the stake in the heart. The reimbursement rates are heading south because we can't afford the cost at a trillion a year in deficits. It's just that simple. [inaudible 00:02:01]. There's a committee called the RVU. They haven't been considered even though they meet since 2009 by the CMS, because they're so overwhelmed. It's irrelevance is astounding. People keep talking about it as if they have power. They haven't literally been listened to for close to a decade. This year marks the 10 years.

Ron: So reimbursement rates ain't gonna happen. Let's organize something, fill in the blank. The reasons why are endless. Lobby for this, pressure that. The sentence that starts with, "We need to", or, "We gottas", or, "Somebody should", just watch out. I usually just turn myself off. I'll quit reading, I'll quit listening. They're almost all revolutions with no bullets. They're movements with no movement. They're dream dust, they're cotton candy with no vitamins.

Ron: First, there's too much to do. Every one of these are way too complicated, they're way too long, and you're fighting a lobby that has more spending power than the next four lobbies behind it combined. So throw in Wall Street, Silicon Valley, Defense, Big Oil: none of their lobbies come close to big healthcare alone. So just forget about it. You're fighting

City Hall ain't gonna happen. It's really amazing that Trump last week announced a transparency initiative with the hospitals that echoes what's going on in California, because one guy can push that hard against a giant lobby out of nowhere they had no idea was coming, but there's not much more he can do around that issue and around these big issues than what he is doing. So you may not like our President, but you got to love that he's taking initiatives.

Ron: So again, these movements ... They're the spawn of zombie mom and a vampire dad, and let's just have a burial ceremony and put 'em away right now. They're no different from, "Let's go break something. Let's burn something down". "We need to" myths are everywhere you look, and they're exhausting mostly. And they're pretty tired. There's lots of words written; they're just, as I said, too complex, like this monologue is getting.

Ron: So Texans have a phrase for that. "They're all hat and no cattle". My way is to highlight the innovators who are already fixing problems and have fixed problems. Let's celebrate them. Let's replace the broken with the actual fixes. The market organizes very effectively and more efficiently than most earnest policy [inaudible 00:04:33]. [inaudible 00:04:33] can't hold a candle next to the doers, the risk takers, the troublemakers. They're out there, we're finding them on this show, and they're on the fringes. And today we have a great one.

Ron: The third one is, Government's going to have to fix this. Okay, we've tried that. We got 160 new healthcare committees. We have more regulatory paperwork in three years [inaudible 00:04:57] and they had eight decades to build that monster.

Ron: Two quick facts, the Government includes 15,000 registered lobbyists. How many total are in the Healthcare 2733. What did they spend last year $556 million dollars. Government got us into this, their lobby got us into this, no one's going to compete with Big Healthcare to get us out. Not names Gates or Bezos or Buffett.

Ron: Let's go get 'em and fix it, let's just give up on all these ideas because none of those are working either and this real cool initiative by Berkshire, JP Morgan and Amazon which has granted dozens of companies behind this, well they are taking care of their own. 1.2 million people first. America can watch. And that should trickle out but it's going to take a while. Sop Government's not working out for us.

Ron: I don't want [inaudible 00:05:52] the same crazy man who kicked me in the groin to also be [inaudible 00:05:55] technician. Our answers are here.

Ron: Alright, so today's guest. Meet Crystal Icenhour, she is the founder and CEO of Aperiomics. Imagine one test for all pathogens. Pathogens are bacteria, viruses, parasites. There's literally Tens of thousands that she can test for. It's all here.

Ron: Meet the real deal Crystal. Welcome to the show.

Crystal: Good morning, I'm happy to be here.

Ron: Nobody can help but to compare what you're suggesting you have to what they're now suggesting they have but yours actually works and it's real isn't it.

Crystal: There really is no comparison with what others have done.

Ron: Set-up the problem you are solving and why Aperiomics got started.

Crystal: So Aperiomics got started with this idea that we could help people find the answers that have never been able to be found before. The reality is our existing diagnostic tests look for one thing at a time or five things at a time or if you are at a sophisticated medical center sometimes they have these very large panels of the things you can look for, 20, 50 or 100 things at a time. The reality is that there are tens of thousands of micro-organisms and theoretically any of them can cause disease in the human body under the right circumstances. So what our approach to this was to take a sample, we work with any sample, blood, tissue, urine, fecal, we work outside of the clinical realm we do work with research universities, pharmaceutical companies, veterinary, agriculture, any type of a sample where you want to know what micro-organisms in the sample or what micro-organisms are not in the sample. Our system works.

Crystal: We take those samples, and we remove all the genetic information, all the DNA from the sample and we use a process called DNA Sequencing to create a genetic blueprint of everything in the sample. That can be a very large file of data, but to a terabyte of data for one sample. That very large data file obviously has a lot of complex information, it can be tens of millions of fragments of DNA. And so were our technology comes in is that we've developed the software, the data analytics around to support analyzing this data and so our data analytics sort though this information and make meaning out of it. We then compare the information to a database we've constructed and this database contains the whole genetic structure for every known and sequenced parasite and fungus. And we then generate a report that goes to a healthcare provider giving a list of all the things we've found in the sample, whether to not they're known to cause disease in humans and how much of each of the micro-organisms we've found.

Crystal: And so instead of looking for one thing at a time we're casting abroad net and not assuming we know what's making someone sick but rather looking for the true cause of what's making someone sick.

Ron: I can't imagine [inaudible 00:09:44] disrupt the entire lab industry, I mean you are talking about simplifying a treasure hunt and expanding a treasure hunt beyond what they even thought they were hinting for. I didn't even know you had fungals in your panel. When you start saying we are going tn try and figure out what's wrong this person you're not using your test, I think in the future this could be considered, in the future, malpractice as this widens and becomes really more scaled out, don't you think?

Crystal: I do agree that this ism poised to be very disruptive to the lab system, and to healthcare as a whole.

Crystal: One of the beauties of this technology is that we don't have to know what we are looking for. Right now you go to your Doctor, you have a sore throat, they say oh, let's test you for strep throat so they swap your throat and put it into a little cartridge in the office and it's negative. Well now what? What's causing your sore throat? There are thousands of things that can cause a sore throat so how does the healthcare provider know what to look for next. What typically happens and what tends to be the state of repair is the healthcare

provider prescribes a broad spectrum antibiotic and says if you are not better in a couple of days, give me a call.

Crystal: We need to do better than that for most people the broad spectrum antibiotic is good enough and for most of us we have all had broad spectrum antibiotics and we've cleared the infection, we've healed and we've moved on. What's happened for a lot of people though is that, that seems to be a trigger point for a spiraling effect where they then become chronically ill and they are sick for sometimes decades with this seemingly never-ending infection that no one can quite pinpoint.

Ron: Your answer brought up two questions. No. 1, let me ask them both before I forget them. No. 1 seems to me that you can now, when you cast a broader net, catch things your weren't expecting to catch in the net and No. 2 I'm a big fan of the old Star Trek, James Kirk Star Trek and Spock Star Trek, in that Star Trek, Bones always had the right shot for exactly what was ailing. And it seems to me in the future rather than broad brushing a sore throat with an antibiotic because we are not 100% sure what it is, is it a virus, is it a fungus we are really treating too much in the human body, and we're creating a resistance to exactly what cures us.

Ron: I would imagine that this precision medicine movement is going to be answering precisely what you're determining with your net, what you are catching because we are going to know precisely what needs to be treated instead of thinking we know what needs to be treated.

Crystal: Exactly, and that's really the big point. So with regards to your question about finding things that are unexpected that happens every week. We've had numerous surprises, identifying things we never expected to fine, probably one of the most unexpected was a case of leprosy in Virginia. You don't expect to see that. (Laughter).

Crystal: With regards to the precision medicine, that's exactly why we are taking this approach. If we know what is causing the issue, we can more effectively, as a healthcare system we can more effectively treat what is causing that illness and potentially prevent some of these chronic conditions from consuming someone's life.

Crystal: One of the other things that we are starting to unravel, in that we are working with a lot of researchers on are these connections between infection and things, conditions in the human body that have long been thought to be quote, unquote autoimmune. And what we are seeing is that many of these things that have been called autoimmune are actually undiagnosed infection and this is being seen by a lot of researchers that there are a lot of studies looking at the connection between micro-organisms and Alzheimer's, the connection in multiple sclerosis, the connection in Irritable Bowel Syndrome, the connection in you know all of these complex idiopathic conditions. We've directly worked with a condition called Interstitial cystitis which is currently known to be an autoimmune condition of the bladder. And what we've identified in over 100 patients evidence of infection in over 90% of these patients and in cases where we've identified a root cause and where their Doctor chose to treat, based on our findings we have patients that have completely resolved this previously thought to be autoimmune condition and are able to regain their life. And it's really a debilitating condition that affects millions of people in the US and it's to the point where they're taking high levels of pain management

strategies like Percocet and Oxycontin to control pain for what we believe is possibly a chronic urinary tract infection and not an autoimmune condition.

Ron: OK, you just blew about 99% of the peoples minds by saying that so -

Crystal: (laughing) yeah!

Ron: We need to get you in every podcast in America telling your story. This really is incredible, I could spend right now between two grand and five grand and get a VIP level executive wellness check, head to toe. The problem is they are not going to have your panel, they're going to do 99% of, you know check the boxes, they'll even do a full DNA test but what they won't do is, they're noti going to look at these four outsiders trying to get inside and figure out which of them ius causing me problems.

Ron: So your broad-net catches tens of thousands of these pathogens. How do you know, with your software, which one's causing me the problem? How do you match the diagnosis with the fungus, let's say, or the virus?

Crystal: So we're building artificial intelligence around our report to be able to help our healthcare providers figure that out on their own. Right now we provide consultation services with every test so that the healthcare provider that we are reporting to has, so that we are able to help them understand the report to the best of our ability.

Crystal: What we do is there is a logic that goes through. So the first thing we do, because we are identifying everything including the good actors, the good microbes that are in our body. Our bodies are six pounds of microorganisms and we need that, they protect us, they synthesize vitamins, they help us digest our food, they're doing a lot of really great things for us. It's when things get out of balance, or when something gets introduced into our bodies that doesn't belong in the human body that we have issues.

Crystal: We help the healthcare providers walk though that logic. So the first things is to work though the list and see is there something in this list that does not belong in the human body. If there is, are the symptoms the patient is experiencing consistent with what we know about that microbe that does not belong in the human body. And those are very straight forward cases buy-in-large, where the healthcare provider then has some actionable information where they can determine a treatment plan and help that patient get better.

Crystal: The next layer is, is there something in the samples that, while it might be a normal part of the human body, does it belong in this kind of a sample? So example - E. coli, it's a normal part of our intestines and we want to see it in our intestines but if we have a blood sample and we see E. coli in a blood sample that is not normal and that would be a clue that something might be clinically actionable there.

Crystal: And then the third layer is, if everything's normal that were seeing in this list but is there too much. So while E. coli might be normal in the intestine, the normal range that we see in our testing is between 0 and 5% so if we see a sample that has 20% E. coli and there are symptoms consistent with E. coli infection that gives the healthcare provider information that action can be taken on.

Ron: So the biggest problem that I see for you is not credibility, you're working with some of the premier hospitals, some of the most premier thought-leaders already, you're past that stage. The problem I see is you gotta get scale. And to get scale that's going to bring the cost down and when we bring the cost down it really implies that you're in the network. So I think that's the next battle, is that the next battle you're fighting is to get insurers to recognize you with your own discrete code?

Crystal: Yes. So right now we do insurance billing on a limited basis. There are four existing CPT codes that we can stack to bill insurance and we have seen some private payers provide out of network coverage. So we are seeing some positive movements there. The next big step is to get Medicare on board with what we're doing and you know, what we're doing, this is one of those rare cases where this can be a win for everyone. The patient who's been sick for sometimes decades can finally get an answer and win. The healthcare provider can finally help this patient get better and help them stay out of the waiting room, and they win. The insurance providers stand to save tremendous amounts of money by having a directed approach instead of the current system where you're looking for one thing at a time and so the health insurance companies stand to save tremendous amounts of money so they win.

Crystal: And the beauty is we didn't have to deny coverage, we didn't have to provide sub-standard care, we provided the best possible healthcare that we could so that's really where our focus is next. Our goal over the next year is to get in front of as many groups and help educate them on this future, this medicine that's coming.

Crystal: We're pm the front edge of this wave and it's going to seep though the healthcare system and so long as we can sweep past the regulatory hurdles and the inertia that tends to exist in the healthcare system this stands to disrupt and to really have a positive impact on the human condition.

Ron: I think you cannot do your tests on Site, in other words this still has to be sent out, right?

Crystal: Yes, yes and no. Most of our healthcare providers are private practices, and we send collection kits that they can inventory and collect samples from patients as needed and send back to us. In some cases, and we work with a few groups that have the ability to do their own DNA sequencing and in those cases we can provide them with protocols to do the sequencing work that we need done and then send us the raw data file. And we do the analysis and then provide a report back. So samples don't have to come to us but right now most healthcare providers don't have access to DNA sequencing.

Ron: DNA sequencing costs are going way, way down now, its something that can be done on site cheaper and cheaper every day, it's ah -

Crystal: Yes.

Ron: It's almost like a toaster in an office, eventually you're not even gonna see the cost being a hurdle here.

Crystal: Yes, right now the biggest driver of our cost is the wet lab sequencing piece that's the majority of what it costs us to run one sample. But you're right the processes are going to get cheaper. A lot of large healthcare centers already have these sequencers in-house,

they're being used to do cancer screening and metabolic work or genetic screening so we're providing a new way to use this already sunk cost in these large medical centers.

Ron: I wanna get back to this autoimmune concept. I had good friend, and his wife suddenly couldn't get out of the bath-tub, and she was an outdoor sportsman, a former cheer-leader, a gymnast and her life changed overnight. The autoimmune disease was misdiagnosed by a homeopath who said "your liver is actually not functioning right, you got an infection, and we're just going to fix the liver to fight it better". [inaudible 00:24:18]. And she lives pretty much a normal life now, I mean she can't get around, [inaudible 00:24:22] so that would be fresh paint or new carpets, but she literally bounced back from what she thought was Multiple Sclerosis. To think that it's not Multiple Sclerosis, it's not some other autoimmune disease that just scares the holy bejesus out of most people, but it's a simple infection that can be treated with a shot, you know of oxacillin. That is pretty much a mind-blower for anybody who has a friend who has these supposed autoimmune diseases. That's pretty exciting stuff. I mean, you're talking life changing stuff now.

Crystal: Yes. And we're just on the front edge. And by We I mean medical research. The medical research is starting to connect the dots between these conditions and so we want to be part of that solution because we have a tool that no one else has. There's no other company in the world that's providing the service that we provide. I remember having an argument with my immunology professor in college about autoimmunity, it just made no sense to me why would a perfectly healthy human body just turn on itself. It makes no sense. Something has to be triggering it. And so there's tremendous room here, it's completely unchartered territory where we have the potential to identify something that's triggering this autoimmune condition and then by definition it's not autoimmune it's an infection because you have something in your body that's triggering an immune response where you don't want an immune response.

Ron: That's interesting stuff. Okay so what is your biggest challenge you got ahead of you Crystal?

Crystal: Our biggest challenge is the status quo. Our biggest challenge is presenting this idea and this technology to all of the stake holders in the healthcare system. The private payers, the Government payers, the medical centers, patient advocacy groups, and we have done a good job of educating a large number of patients on what we do, and they've been instrumental in taking us to their Doctors. But now we need to get buy-in from the larger system.

Ron: I'm gonna suggest a new tag-line for your company, and I won't charge a dime. But just remember the people who made you a billionaire one day with these things.

Ron: I think "One test 90,000, pathogens" would be a really nice tag-line for you guys.

Ron: How many tens of thousands of pathogens can I expect you to find in your large net?

Crystal: So right now we screen every sample for 37,000 micro-organisms. And that number increases several times a year as we update our databases to include discoveries from the scientific world.

Ron: Well it's cheap to change a logo and it's cheap to change a tagline. So what is your message to everybody in a sentence Crystal if you had a airplane flying overhead at the largest gathering in history. In fact Woodstock 50 is happening this year. I haven't seen the line up but I probably don't know most of those bands.

Ron: What would you fly over Woodstock this year in a sentence to tell the world so that they're awake?

Crystal: I think the most directed thing is "are you sick and don't know why? We may be able to find an answer for you".

Ron: No dammit, we're gonna find an answer for you, Crystal's got it in her back pocket.

Crystal: Laughing.

Ron: Alright [inaudible 00:28:18] Well first of all this questions, how to we enhance our reading, our brains by reading more about the wave that's coming. What authors do you like, what books do you like that really can get us directed in our future that is here and coming fast.

Crystal: I'd love to tell you that I'm an avid reader, but I run an early stage testing company and there are no hours in my day to read things but for my job. Most of the things that I read is the basic science literature, so I have RSS feeds that feed me anything new regarding infection and new genomes coming out. So a great first start and we have a great technology page that distills down what we are doing in a somewhat easy to follow narrative including some references to other groups that inspire us with ideas. It's APERIOMICS.COM.

Ron: Alright, is there another way that they can reach out to you if they want other than the website?

Crystal: The website is great, we're on social media and you can always give is a call, 703 229 0406.

Ron: Deeply appreciate it, looking forward to this catching fire as it will most certainly. We will get you on again in 6 or 12 months and see how you are coming along, OK?

Crystal: I'd love to come back, thank you so much for the time today.

Ron: Thank you for listening.

Ron: You wanna shake things up? There's two things you can do for us.

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