Q&A With Ruth Kriz

Q. How long have you been researching chronic UTI and Interstitial Cystitis?

Ruth: I have spent 35 years of my life trying to figure out how to effectively treat people with these problems, evolving my approach as the science advances. When you personally experience the problem, like I did as a former sufferer of IC, you have a whole new motivation to figure it out. I developed IC and my first UTI in my early 30s. I went through standard culturing and antibiotics and was told I didn't have an infection despite my symptoms. I've been there, so I know what it's like, and I made it my goal to figure this out.

Q. How did you find answers to your Interstitial Cystitis?

Ruth: I was working as a nurse practitioner at the time so I knew infections were being missed by traditional culturing methodology. Just because something didn't grow out on a culture plate in 24 hours did not convince me that it didn't exist. I knew from experience that some bacteria are slower growing, and some require different culture media than those that were being utilized. I was able to work with a PhD microbiologist who was using a soy broth culture medium and allowing it to grow for a week. He was finding infections that were being missed on the culture plate.

Q. Do you still use broth culturing to identify chronic infection?

Ruth: That was the best technology I had up until about 4 years ago when the science caught up and DNA sequencing tests became commercially available. I discovered that even the broth cultures were missing a significant amount of infection, and many of the chronic urinary tract infection and Interstitial Cystitis patients actually had not only multiple bacterial strains, but also fungal infections, and in a few cases, viral infections contributing to their urinary symptoms.

Q. Was your own Interstitial Cystitis treatment a success?

Ruth: I personally had great success and have not had any urinary tract infection issues now for 25 years. Because of that success I have made it my life's work to help other people who weren't being helped by the traditional medical approaches. I had an advantage being in the medical field and having worked in a microbiology lab with contacts who used different culturing techniques. I was therefore able to start sorting out what infections really were there and start treating those.

Q. How should we differentiate IC from chronic UTI?

Ruth: The first definition of an IC patient was in the 1850s. I think there's a lot of misunderstanding about how one differentiates between chronic urinary tract infection and interstitial cystitis. The criteria has changed even in my 35 years of experience. It used to be that you had to have a bladder biopsy done. They'd take the tissue, look at it under a microscope, and if they saw inflammation, swelling, and a high number of mast cells in not only the bladder wall but the interstitial spaces (the compartments between the cells that are filled with lymphatic fluid) as well, you got the label, Interstitial Cystitis. Then they decided that doing bladder biopsies was too invasive and increased the risk of bladder perforation. Therefore, they started looking just at what the bladder wall looked like when you inflated it with water - also quite invasive. If they saw that it cracked and bled then you were given a diagnosis of Interstitial Cystitis.

Q. How is IC diagnosed now?

Ruth: It became a diagnosis of exclusion. This means they ruled out certain things like bladder cancer, a physical obstruction or a functional problem. If your urine culture was also negative, then you had this bizarre unknown condition called Interstitial Cystitis. So the line became very fuzzy between chronic urinary tract infection and winning this obscure label that kept being redefined.

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Q. Do you think that the label of IC should be abandoned given it is not a true diagnosis?

Ruth: Absolutely. Recently in America, we have started coding IC as cystitis with a negative culture. That means Interstitial Cystitis has become synonymous with urinary infection symptoms with a negative urine culture. This has now become so entrenched in

the medical mindset that if someone has that code or that label, many doctors don't even bother doing a culture anymore. In my mind, if you have somebody who has pain, urgency, frequency and burning, and yet they're told they don't have an infection because their culture was negative, who do you believe? Are you treating a lab result? Or are you treating a person? If it looks like a duck, walks like a duck, and quacks like a duck, it's gotta be a duck. But unfortunately, the logic has turned around backwards.

Q. Should people who have been diagnosed with Interstitial Cystitis reconsider their options?

Ruth: When I first started getting my urine tested after 10 years of symptoms and six years of chronic pain, I prayed they wouldn't find anything. And then I started praying they would, because I knew that if you find something, you can treat it, and that gives you hope. I will say that in the four years that I have been doing the DNA testing of urine, I have found infection in 100% of my patients that have been diagnosed with Interstitial Cystitis. With the sensitivity of DNA testing, I always find at least one infection, but sometimes what we're finding is only the tip of the iceberg. Once you treat the tip of the iceberg, there can be multiple other infections underneath. This is where biofilms come in.

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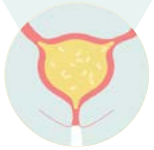
Q. How do biofilms contribute to chronic infection in the bladder?

Ruth: Let's differentiate between an infection that's actually in the urine versus one that has become chronic. Bacteria like to attach to the bladder wall itself, and when they do so, they can form communities with a protective coating [a biofilm] that makes it harder to find and treat. This is because the infection becomes walled off in these structures composed of fibrin, lipids, and heavy metals. Pathogens reproduce more slowly in these structures and only periodically shed off into the urine in lower numbers than would be found otherwise. This makes them less likely to grow into 100,000 colony forming units [CFUs] in 24 hours on a standard urine culture plate. It also explains why symptoms wax and wane. Recurrent UTIs are likely to be a chronic infection that resurfaces frequently and not necessarily a new infection each time, because of the way biofilms work.

The Seven Stages of Chronic Urinary Tract Infection

Stage One



THE SCIENCE:
• Infection and inflammation of urinary tract caused by invasion and multiplication of bacteria or other pathogen.

HOW IT FEELS:
• UTI symptoms including burning when urinating and urgency
Chronic Urinary Tract Infection - UTI Pathway Step 2

Stage Two

THE SCIENCE:
• Free-floating bacteria form a weak attachment to the bladder wall
Antibiotics can still be effective during this stage

HOW IT FEELS:
• Without effective treatment, UTI symptoms remain as body continues to defend against the threat

Stage Three

THE SCIENCE:
• Bacteria form a strong attachment to the bladder wall and begin to form a biofilm encased in protective slime

Stage Three continued

• Antibiotic resistance increases, treatment becomes more difficult

HOW IT FEELS:
• Without effective treatment, UTI symptoms remain as body defends against the threat

Stage Four

THE SCIENCE:
• Free-floating bacteria are flushed from bladder via treatment or natural body defenses
• Biofilm remains intact

HOW IT FEELS:
• UTI symptoms decrease or disappear

Stage Five

THE SCIENCE:
• Biofilm community formation continues
• Antibiotic resistance increases as the biofilm develops

HOW IT FEELS:
• No UTI symptoms, or low level chronic symptoms

Stage Six

THE SCIENCE:
• Biofilm detachment
• Bacteria escape biofilm and enter urine as free-floating bacteria

HOW IT FEELS:
• 'Recurrence' of UTI
• UTI symptoms including burning when urinating and urgency return

Stage Seven

THE SCIENCE:
• New biofilm attachments may begin to form
• Free-floating bacteria are flushed from bladder
• Without appropriate treatment, the process repeats

HOW IT FEELS:
• A cycle of 'recurrent' UTI as the biofilm fluxes over time

Q. Are there any symptoms that may indicate the presence of a biofilm?

Ruth: Since the biofilms tend to wall off infection, this may result in fewer bladder symptoms initially. The microbes will continue to multiply but not as rapidly. Other than discovering multiple pathogens with DNA testing, there isn't any way to determine their presence, although high fibrin production as measured by a blood test does seem to correlate with the biofilm production.

Q. Is it possible to treat infections involving biofilms?

Ruth: In short, yes. Dr. Bill Costerton, the father of biofilms, talks about the use of long term antibiotics, which will slowly chip away at biofilms, though I don't think this is necessarily the best way to treat. We know that certain people have more difficulty breaking down those biofilms because of their genetics. There are supplements that will help break down biofilms more efficiently to expose what infections have been buried. Consequently, when you repeat the testing, almost 100% of the time, we find more infection than we did on the initial test. This can be a prolonged process involving repeated testing and addressing the pathogens as they surface, because as the biofilms break down, we continue to find more layers of infection. The bladder can really only start to repair when you have addressed enough of the infection, and until then, symptoms may continue. Progress is rarely straightforward as you may become more symptomatic when walled off infections are released into the bladder from the biofilms.

Q. Are all biofilms caused by bacteria?

Ruth: I will say that in probably about 20% of my patients, at some point in the process, we do find a fungal infection there in addition to the bacterial infection. We're also finding viruses in a small number of patients. Viral infection cannot be picked up by urine culturing, and fungal infections are often ignored and then reported as a contaminated specimen. These organisms (bacteria, fungi, and viruses) will competitively inhibit each other. One of the things that I think we need to realize is that these organisms like to live in communities. Biofilms are like apartment buildings, and the longer that you've had this chronic infection going on, the more likely it is that you have more and more residents that have come to join the biofilm party. And they like to support one another; they live synergistically.

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Q. Are you finding urinary pathogens that were not previously possible to test for?

Ruth: So many! Biofilms are sort of like a ball of yarn. You have to start pulling somewhere if we're ever going to unravel this big, knotted up mess of pathogens. It's a process that will take

repeated testing; repeated going after the big guys, hoping that the immune system will take care of the little ones. At the same time you shouldn't be surprised if on a future test, some of the little ones that were coming back with a small percentage turn into bigger players. My joke is that I have discovered many organisms that I've never heard of, and still can't pronounce. There are a lot of bacteria out there that are not typically recovered on a culture plate, but we know they exist because we now have the DNA structure for them, and have matched them by utilizing DNA sequencing tests.

Q. Can you get rid of biofilms?

Ruth: I think that using a biofilm buster prior to testing helps in two ways. A product like Interfase Plus contains enzymes that break down not just the fibrin in the biofilm, but chelates out the heavy metals, effectively punching holes in the biofilm structure. Fibrin is a sort of spider web substance produced by the body that actually supports the biofilm structure. If we can break the biofilm down, the pathogens can shed into the urine, and be identified.

Q. How is your approach to chronic UTI and IC different to others?

Ruth: I recently read a book in which the author was talking about multifactorial causes of another medical problem. He used the analogy of there being 36 holes in your roof and that it wasn't enough just to patch one. You'll still get rain coming in. I feel that it's the same way with chronic urinary tract infections and Interstitial Cystitis. We have people who have infections that have become chronic and their own immune system can no longer do the work it's supposed to do. So we have an issue of not just bad organisms that need to be killed off, but we also have to make sure that the person can do the repair work, that their immune system can recover and that we can get the body functioning the way it should. So we look at genetic factors, co-infections, nutritional status, and ways to support their immune system for long term repair and health.

Q. What if sex seems to trigger chronic urinary symptoms?

Ruth: We need to look at where the infection is coming from as far as the infectious load. Some people have bladder symptoms that are worse after intercourse. They may be continually reinfected by a sexual partner. Sometimes checking the man's semen, not his urine, shows that he's reinfecting the woman each time they have sex. The key to look for there, is a flare in symptoms 24 to 48 hours after intercourse.

Q. Is vaginal health linked to chronic UTI?

Ruth: Certainly. It's possible for the vagina to be colonized with bad bacteria or yeast that keeps seeding into the urinary tract. Particularly in postmenopausal women, the environment becomes less healthy for the good bacteria that live in the vaginal tract, and it instead becomes colonized with pathogens that then find

their way into the urinary tract. So that can be a factor as well. I've had women colonized vaginally with Enterococcus, E. coli, Klebsiella or yeast. Many times when we do DNA testing of the vaginal tract, as well as the urine, we're coming up with identical pathogens in both places. So of course, they keep seeding it into the bladder. Just as bacteria can become resistant to antibiotics, fungi (yeast) can become resistant to antifungals. It may be necessary to use antibiotic or antifungal vaginal suppositories or gels that are compounded to treat the specific bacteria or fungi found. That may be the only way to break the cycle of constant reinfection of the urinary tract from the vaginal tract. Additionally, creating a healthier vaginal environment by repopulating the area with normal, healthy vaginal bacteria like Lactobacillus or using estradiol (not estrone) vaginal cream in postmenopausal women can prevent this area from becoming the source of ongoing urinary tract infections.

Q. Why can the immune system fail to fight chronic UTI?

Ruth: Many things can depress the immune system, such as other infections, particularly tick-borne infections like Lyme, Bartonella, Babecia, and protozoa. They tend to deplete vitamin D because that's the reserve unit of the immune system. And so you pull vitamin D out of storage to fight these other infections and then you don't have enough for bladder wall integrity and to help fight urinary tract infections. There are also heavy metals that people have been exposed to, particularly those with mercury amalgam fillings, that depress your immune function. Mold exposure can result in mycotoxins being excreted through the urinary tract, causing urinary symptoms. This also depresses immune function. In people with chronic pain, their adrenal glands are under stress and need to be supported. Then there's viruses and potential thyroid issues. So there's a lot of comprehensive thought that has to go into supporting the entire body, not just the bladder. And unfortunately, the way medical systems are set up, you go to a urologist for your bladder and an endocrinologist for your thyroid, and somewhere else for your gut issues. No one's thinking about how they all work together.

Q. What is your chronic UTI and Interstitial Cystitis treatment success rate?

Ruth: I would say I'm having about an 80% success rate. It's not 100%. Everybody is different. Their genetics are different - the pieces of their puzzle differ. One person may have mold exposure and mycotoxins and be genetically more impacted by that than another person. One person may have more robust adrenal glands that in spite of the pain or the sleep deprivation are still functioning pretty well. Some people may have a genetic predisposition toward thyroid issues, while others won't. So I think it depends upon which pieces of the puzzle have been impacted. Overall, I will say that I see a trend, in that the longer the problem has perpetuated in a person, the more pieces tend to need support.

"The people who decide to make this a priority and have the mindset that they're in a battle to reclaim their lives and normalcy do far better than the people who have decided that this is just the way their life is going to be... There is no magic bullet."

Q. Do you think treatment success depends on the commitment of the patient to changing their overall health?

Ruth: My goodness, yes. I think the people who decide to make this a priority and have the mindset that they're in a battle to reclaim their lives and normalcy do far better than the people who have decided that this is just the way their life is going to be, and therefore they have given up on trying to function normally. There is no magic bullet.

Q. How do you work with patients?

Ruth: I think the first goal for everyone has to be to get them out of pain. Instead of just managing the pain, I think I am a little bit different in that I like to discover what the root causes are and address those. Having the information from DNA sequencing tests tells me what the underlying problems are. I can then work with compounding pharmacies that are able to address the specific infections found and treat them.

Q. Do you use oral antibiotics or bladder instillations?

Ruth: The typical treatment is oral antibiotics and/or oral antifungals and that works very well for many people. Because these infections have gotten deeply entrenched and many people have had multiple courses of antibiotics and may have developed drug resistance, or their GI tracts have been compromised, they have chosen to use compounded bladder instillations. This means the correct antibiotics and antifungals are delivered directly via a catheter to the bladder, where the infection is.

Q. How do patients administer bladder instillations?

Ruth: People do instillations themselves with very small pediatric pre-lubricated catheters. Typical treatment is twice a day for two weeks. They put the medicine in their bladders through the catheter, remove the catheter, and they hold the medication in their bladder for as long as possible. Many people hold it overnight. And because we're able to combine this with medications that breakdown the biofilms, we are getting excellent results. This is probably the most exciting treatment tool that I've had in decades because it gets to where the infection is. It penetrates the deepest, and people who do those instillations tend to make the most progress in the shortest amount of time.

Q. Do biofilm dissolvers work?

Ruth: Although there are no specific studies about the use of biofilm dissolvers in the bladder, I see evidence of their impact when people take a biofilm buster orally, and then do the testing. We often find more pathogens if a biofilm buster is used for several days or a week prior to providing a sample than we do when a biofilm buster is not used. I know that it works better because I have years of not using the biofilm busters and trying to treat people, and now after three or four years of using the biofilm busters, I see a dramatic difference between the two groups. Yes, there needs to be more studies out there using these and comparing results. I think what might be confusing is the fact that when you use a biofilm buster, you oftentimes see more infection afterwards than you did before. This makes it hard to conclude whether the biofilm buster was helpful or not. It's likely the biofilm buster caused a release of pathogens into the urine, which would show as increased infection and possibly symptoms.

Q. Is it possible to treat an infection caused by antibiotic resistant bacteria?

Ruth: Absolutely. We need to be careful in defining antibiotic resistance. It doesn't mean resistance to everything out there. The pathogen has become resistant, not the person. You can't automatically conclude that if an antibiotic doesn't improve symptoms that it is because of antibiotic resistance. There is often more infection present and every antibiotic doesn't kill every pathogen. Also, some of the DNA testing available will check for the presence of resistance genes for most major classes of antibiotics. If antibiotic resistance has developed, bladder instillations can utilize different IV antibiotics that the bacteria have never seen before. So we have a whole arsenal of new tools to treat these infections that have become drug resistant to commonly prescribed oral antibiotics.

Q. What's the best way to collect a urine sample?

Ruth: Although first morning urine is often recommended due to increased concentration, this also means bacteria that find their way into the urethra overnight are likely to show up. But we don't want to look at those invaders when we're doing this testing. So, my recommendation is to do a prep urination about two hours ahead of the real collection in which you start, stop, start, stop, start, stop the urinary stream repeatedly. This flushes those colonizers out of the urethra. This will give a more accurate test of what's really in the bladder itself. Don't drink for the next one to two hours, and then, wash the area with soap and water, rinse well, and collect a midstream sample of urine. We still want it to be concentrated. If it's really diluted because you've had glasses of water to drink in the previous two hours it will be harder to find the bacteria. And this is true whether you're doing a culture or DNA testing. One final note is that I really don't like those towelettes that have chemicals on them used for cleaning the area before collecting urine, because if any of that antiseptic washes into the sterile cup you have effectively killed some of the bacteria we're trying to find.

Q. Are there other ways patients can prepare for an appointment?

Ruth: A good history is helpful, particularly family history. People who have had heart attacks, strokes, and/or high blood pressure are more likely to have some of those genetic factors that make the biofilm problem a more significant issue for them than people whose family histories do not include those conditions. In addition, a lot of varied personal symptoms can be connected to the fact that there are chronic bladder problems. People often say: I have gut issues, joint pain, headaches, cognitive issues or sleep issues, along with bladder symptoms. These can all be related, so don't leave anything out. It is important to look at the total picture, not just your bladder.

Q. Do you treat male as well as female patients?

Ruth: About 90% of my patients are female; I have about 10% who are male. A number of the male patients that I have are also partners of my IC patients. They are totally asymptomatic, but their semen is coming back with infection.

Q. Is your treatment approach different for males?

Ruth: It's more complicated because the prostate gland is encapsulated. This limits the number of antibiotics that can be used to successfully penetrate the prostate and additionally, you have to treat longer. Of my male patients, many of them are the sexual partners of my female patients, and the males are asymptomatic, even with the infections that we're finding in their prostate. And so the issue in my mind for these men is what is going to be the effect of the untreated chronic prostatitis in their lives, 10, 15, or 20 years from now in addition to the likely reinfection of women with either chronic UTIs or IC. All my male patients with IC have been diagnosed with prostatitis. So there is a connection there.

Q. Why do you think it's so hard to find chronic UTI and IC success stories?

Ruth: The psychology of this is very interesting. I know that when my bladder got better, I got my healing and I ran. I didn't want to talk about it. I didn't want to deal with it anymore. I didn't want to revisit that part of my life that had been so dreadful. I intentionally got my life back and had years that were completely normal. I was raising my children and I just didn't even want to go there or think about it. I think this tends to be what happens with most people. My goal is to have people totally healthy again and get their lives back. I've had a number of people who were on disability, were too sick to work, or were bedridden. Once we get their bladder better and maybe we've addressed some other related conditions such as fibromyalgia, chronic fatigue, or insomnia, they leave the IC groups and forums. Instead, they're out there living normal, healthy, productive lives - working again, having children. It's not surprising they want to put their IC behind them.