

The Urobiome: A Q&A with UC San Diego Health Expert

By Michelle Brubaker | December 10, 2018

Female urinary tract infection (UTI) is one of the most common bacterial infections in women. The annual economic cost of UTIs has been estimated at \$1.6 billion dollars with 11.3 million antibiotic prescriptions. Despite extensive research into UTI pathophysiology, clinical care and prevention, therapeutic strategies have been slow to advance.

In this Q&A, [Linda Brubaker, MD](#), urogynecologist at UC San Diego Health, talks about recent studies, progress in treatment and an upcoming international conference that will address the emerging science of the urobiome and its implications for human health, including UTI, urinary incontinence and bladder over-activity.



Linda Brubaker, MD, urogynecologist at UC San Diego Health

What do we know about the human urobiome?

Evidence of the human urobiome — microbial communities in the urinary tract — surfaced less than a decade ago. The urobiome is different in each woman, similar to the variations found in other microbiomes in the human body, such as the gut. It's related to certain clinical conditions, including UTI and some forms of urinary incontinence.

Recent studies have focused on characterizing the urobiome and its associations with human health and disease. For example, most people think that bacteria in the bladder is harmful. We have found that a healthy urinary bacterial community is important in preventing UTI. We've also found changes in the urobiome that may provide opportunities to predict which patients will respond to specific treatments for urgency ("gotta go") urinary incontinence.

What have been some of the findings of published studies?

Several studies about urobiome have been published. One of the most important findings is that the bladder is not a sterile place. There are "good" bacterial communities that help the bladder prevent infection and function well. When these good bacteria are lost, "bad" bacteria have an

easier time taking over and causing problems for the patients. This is an important area for further study. We may be able to use urobiome information like this to refine diagnosis and treatment approaches to improve patient care.

What are some of the main urinary conditions of interest and are there any new treatment options available?

The main areas of interest are UTI, various common forms of urinary incontinence, bladder pain conditions and kidney stones. Traditional treatment for UTI is antibiotic therapy. There is increasing awareness that, while antibiotics can be helpful, there are collateral effects on the body that may cause problems, especially with repeated antibiotic use. Urinary incontinence is treated with a wide variety of therapies. With better information about an individual's urobiome, we hope to be able to personalize treatment recommendations.

What further research needs to be done?

At the top of the list is trying to refine our ability to use a simple collection method for a urine sample so that we don't need to catheterize patients, which will reduce contamination from voiding. This will also allow more research volunteers to provide urine samples for future studies.

The UROBIOME 2019 Conference is being held in conjunction with the first annual Center for Microbiome Innovation (CMI) International Microbiome Meeting in San Diego in February 2019. What is the goal of the UROBIOME 2019 conference?

The conference will bring together experts who have led the initial research work in urobiome and will link those investigators with other investigators in microbiome research to foster learning, and hopefully, initiate collaborations.

In addition to sharing the clinical areas of research need, the UROBIOME 2019 Conference speakers will discuss the best ways to collect and store urine samples for research studies, how to analyze and interpret urobiome samples and challenges with urobiome research.

Learn more about the CMI International Microbiome Meeting at cmi.ucsd.edu 

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