

## Urinary Microbiome and Cytokine Levels in Women With Interstitial Cystitis

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1. Describe the main objectives of this study and the study design. Discuss the choice of controls and whether or not they were appropriate controls to meet the stated objectives.
2. Discuss the symptoms associated with and the pathophysiology of painful bladder syndrome. What new information does this study shed on the pathophysiology of interstitial cystitis?
3. The authors investigated a number of cytokines. See Table 5 in the article, and describe whether or not the cytokines listed are inflammatory makers.
4. What were the main findings of this study? Were the cytokine findings associated with the microbiome findings? Discuss why or why not this might be true.
5. Discuss the sample size and its limitations. What sample size would be required to determine a difference in the microbiome between groups?
6. List the gynecologic conditions that the vaginal microbiome affects, including bacterial recurrent urinary tract infections, urgency urinary incontinence, and bacterial vaginosis.
7. Discuss how the findings from this study may influence future therapeutic interventions for painful bladder syndrome.
8. Review the histogram in Appendix 1 of the article (see <http://links.lww.com/AOG/A922>). Discuss how this represents the microbiome in cases and controls. How many bacterial species were represented in the histogram?