

**TRADITIONAL AND NON-TRADITIONAL MANAGEMENT OF URINARY  
TRACT INFECTIONS**

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## ABSTRACT

**Background and Objectives:** The development of resistant strains of bacteria over the past 10 years has created fear in the eyes of doctors and patients. Many are looking for an alternative to traditional treatment. Simple infections, such as the common UTI, can benefit from alternative care. The objectives of the review are to assimilate and review information on various treatment practices by allopathic and alternative practitioners. The benefits and risks of such practices are reviewed.

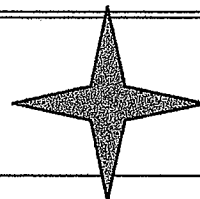
**Data Sources:** A literature search was conducted at Logan College of Chiropractic from the week of 11-16-98 through 11-20-98. The Internet was accessed in the computer lab, and Medline was accessed in the library. The databases used included Medline, EBSCOhost, *ChiroACCESS*, the MANTIS search, and the on-line card catalog in the library.

**Data Synthesis:** The search was narrowed down by specific criteria such as articles pertaining to diagnosis UTI

etiology and treatment. Hundreds of references were found, and a selection strategy had to be formulated. The first criterion was that the journal articles were preferred over popular press magazines. Secondly, case reports were desirable. Third, articles that clearly described a specific treatment and its outcome were chosen. To accumulate references, articles on antibiotic treatment, treatment protocols, homeopathy, nutrition, acupuncture, outcome assessments, chiropractic care of pelvic or back pain, and substantiation of somatic therapy were chosen.

**Conclusions:** Information was supportive of positive treatment outcomes with both forms of care. The information serves as an educational tool for both doctors and patients to explore alternative health care. In summation, both management protocols have their strengths and weaknesses, and a combination of therapies is the most viable solution.

**Key indexing terms:** chiropractic and therapy, urinary tract infections, cranberry and treatment, urinary and chiropractic, urinary tract infections, antibiotics, vaccination, and prophylaxis.



## INTRODUCTION

Over the past ten years, reports of the development of resistive strains of bacteria have been emerging. These mutated “superbugs” have exceeded the ability of many of our modern antibiotics. Overconsumption of antibiotics, especially for prophylaxis, is a contributing factor in the emergence of this health care crisis. Common infections, such as those of the urinary tract, are often victims of this management. Urinary tract infections can be caused by a variety of microorganisms. Bacteria and yeast are common infective culprits. Over time, bacteria can mutate by picking up new genes from their fellow species or other invaders like viruses. These mutations are evident in the form of proteins that either inactivate antibiotics, or stop them from attaching to and entering the bacteria (4). Despite the availability of antimicrobial agents, the incidence of urinary tract infections remains high. “Urinary tract infections has been reported to account for 1-3% of general practice consultation and nearly 50% of all women will have symptoms of urinary tract infections at some stage of their lives” (12). Patients with recurrent urinary tract infections managed by antibiotics face an even greater risk of developing resistance. Conservative treatment options such as nutritional therapy and chiropractic care are now offering patients more treatment options. This review will be a synopsis and comparison of the treatment options available from both traditional and non-traditional practitioners.

Trends related to the management of urinary tract infections include prophylaxis, vaccination, antibiotic therapy, and preventative measures such as improvement of personal hygiene and consumption of cranberry juice. The use of cranberry has created

interest in both the realm of scientific research and in product promotion to meet consumer demand. General health trends are moving more and more toward preventative care and natural remedies. Historically, cranberry has been used in treatment of urinary tract infections because it was thought to acidify the urine, and therefore kill bacteria. Subsequent studies have been performed to determine the effects of cranberry with some promising results. Homeopathic and herbal remedies are being utilized in alternative treatments. The use of acupuncture is also gaining some popularity in treating a myriad of internal disorders. Unfortunately, there is a social stigma attached to recurrent urinary tract infections, especially in women. This is due to the fact that infection is related to sexual activity in many cases. Women faced with these recurrent urinary tract infections related to intercourse can therefore suffer social consequences such as depression and the inability to create and maintain intimate relationships.

The problem is the controversy over methods used by allopathic and alternative practitioners. Allopathic practitioners are fearful of abandoning antibiotics secondary to the potential risk of a simple infection becoming a more complicated infection like pyelonephritis. On the other hand, alternative medicine is fearful of antibiotic therapy secondary to the possibility of harmful side effects, and the development of resistant bacterial strains. Despite the efforts of both practitioners, urinary tract infections remain very common, and are often recurrent. This suggests that treatment protocols have not effectively reduced the incidence or prevalence of the infections. The basic difficulty then, is determining the most effective and safe treatment and prevention protocols for the management of urinary tract infections. The need for this study is to compare and contrast the traditional and non-traditional treatments, to determine their positive and

negative consequences. The results of this study provide both practitioners and patients with enough information to expose them to the various treatments available, and allow them to make more informed health care choices. This information is also useful among the disciplines to provide more information about alternative treatments. The goal of this study is to obtain adequate information about the traditional and non-traditional treatment of urinary tract infections. Outcomes of this study include evaluation of traditional treatments, such as antimicrobials, and non-traditional treatments, such as nutritional therapy and chiropractic adjustments. The framework of this study is a review of literature. The scope of the study includes etiology and diagnosis of urinary tract infections, medical, chiropractic, and nutritional therapies available, and the somato-visceral disease components as related to the significance of chiropractic adjusting. The study is limited by the availability of information that has been generated on these topics. The objectives of this study are as follows: 1. Summarize traditional management therapies and their outcomes. 2. Summarize research on nutritional and homeopathic remedies and their effect on urinary tract infections. 3. Explore use and effectiveness of chiropractic adjustments for urinary tract infections. An explanation of traditional treatments and non-traditional treatment procedures provides a greater understanding of the treatment and prevention of urinary tract infections.

## DISCUSSION

### **Traditional and Allopathic treatments**

Traditional treatment focuses on pharmaceutical intervention. Antibiotic drugs are primarily used. These drugs are administered either as prophylaxis or at the onset of the infection. The use of vaginal vaccines and counseling on prevention through improved

hygiene are also used. Urinary tract infections are generally diagnosed by means of a urinalysis with microscopic examination. There are many causes of UTI which require specialized diagnostic interventions. For the parameters of this paper, simple UTI will be explored. Urinary tract infections are the most common bacterial infections seen by primary care physicians. The most common pathogen is E coli, accounting for 80-95% of UTI cases. Pediatric UTI is also prevalent. These infections occur at a lesser frequency, but much greater morbidity in children. UTI's can lead to renal scarring, renal insufficiency, and hypertension in the pediatric population. While complicated cases can lead to serious systemic infections requiring hospitalization, a simple UTI is generally treated with a 3-7 day trial of antibiotics (1). There are many drugs available for treatment, some of the most common are nitrofurantoin, ampicillin, amoxicillin, cephalexin, fosfomycin, and trimethoprim-sulfamethoxazole (TMP SMX). The concern now is that many of the common pathogens have developed resistance to these drugs. The sensitivity of E. coli to various antibiotics has been studied. Research indicates that 40-60% of E. coli strains showed resistance to ampicillin, 5-15% to TMP SMX, and 15-20% to nitrofurantoin (2,30). Additional figures tabulated from Gupta et al report resistance of E. coli at 25% to ampicillin, 24% to tetracycline, and 11% to TMP SMX (15). Fosfomycin tromethamine is a broad spectrum antibiotic approved to treat simple UTI in one dose. Fosfomycin is active against E coli and most other strains of enterococci. Resistance to this drug occurs rapidly when utilized in multiple-dose regimens. The success of fosfomycin is similar to norfloxacin and nitrofurantoin, and superior to cephalexin. Therefore, although it is effective, it may not be a good option for patients suffering from recurrent UTI (3).

Unfortunately, recurrent UTI is a very common problem for the female population. This is related to a variety of physiological and anatomical differences between males and females. A clinical study by Melekos examines the increased risks of sexually active women for developing UTI. Sexually active women using diaphragms, spermicides, and intrauterine devices have an increased risk. This study compared use of postcoital ciprofloxacin to daily prophylaxis of the drug. The prophylaxis was maintained for 12 months. Prior to the study, group 1 had an incidence of 3.67 infections/Pt. And group 2 had an incidence of 3.74 infections/Pt. Group one received the postcoital treatment, and group two the prophylaxis. Group 1 incidence fell to 0.043 infections/Pt., and group 2 fell to 0.031 infections/Pt. In conclusion, the treatments were found to be equally effective (22). An additional study points out that recurrent is defined as having at least 2 infections per year. This study also indicates that prophylaxis is superior to intermittent dosage (10). Recurrent UTI is also linked to the fact that the bladder lacks in availability of opsonizing antibodies that protect against invaders. These invaders, especially E. coli attack with the power of the ability to adhere to the bladder wall. The bladder mucosa has little ability to stop this process, therefore leading to infection. In light of this knowledge, the idea to provide vaccination arose. Vaginal vaccination has shown to be helpful for prevention, but the response was short lived. The protection only lasted about 8-10 weeks, and booster immunizations were required. Effectiveness of prevention is about 90-62%, decreasing with time (11). An additional study by Hopkins points out that the efficacy of the vaccine depends upon the patient's human leukocyte antigen phenotype. The HLA-DR phenotype was especially sensitive, with incorrect matching demonstrating the same reinfection rates as the placebo group (17). While

vaccinations are still under study, prophylactic therapy has been effective. Long term antibiotic therapy however, comes with side effects. Brumfitt et al followed the cases of 219 female patients receiving long term nitrofurantoin for recurrent UTI for 18 years. He reported three different treatment regimens, which were successful in 86% of patients. Breakthrough infections were related to nitrofurantoin resistant strains of E. coli, accounting for 43 infections. Adverse events (side effects) accounted for a drop out rate of approximately 30% of participants. The adverse events were not specified, other than being described as non- life threatening (9). Other references provided information on some of these side effects. Nitrofurantoin toxicity of the lung and liver can occur and is life threatening. A case study of a woman taking this drug for prophylaxis for 3 years demonstrated interstitial lung disease, and severe chronic active hepatitis. An additional increase in positive antinuclear antibodies, and anti-smooth-muscle antibodies was contributed to nitrofurantoin toxicity (24). Long term antibiotic use is related to diseases that are autoimmune in nature. A study by Selroos makes this point in the report of 3 cases of Lupus like syndrome associated with pulmonary reaction to nitrofurantoin prophylaxis. The women were taking the medication for 12, 27, and 36 months respectively. One of the women also demonstrated active hepatitis and interstitial lung disease as well. The Lupus like symptoms completely disappeared with cessation of nitrofurantoin therapy, establishing a direct causal relationship (26). With the threat of developing super bugs which are resistant to drugs, and taking on the risk of such side effects, where are patients to turn? The medical profession wants to take a turn as well. This can be evidenced by the increase in research on natural medicines. An article in JAMA discusses the use of biotherapeutic agents for a variety of problems including UTI.



The agent tested was the bacteria *Lactobacillus* in the form of vaginal suppositories. Its effect was to re-establish the normal bacterial flora of the urinary tract, therefore warding off infection. The control group suffered a recurrence rate of 8 per 17 episodes, as compared with 3 per 14 episodes in the *Lactobacillus* group (13). Another interesting study utilized the glucose mannose binding lectins extracted from *D. violacea* and *D. guianensis* seeds to study their effects on the prevention of hemorrhagic cystitis. The extracts appeared to exert their effect by reducing the migration of neutrophils, providing anti-inflammatory effects, and prevention (5).

### **Non-Traditional/Alternative Therapies:**

The umbrella of “non-traditional therapy” encompasses a variety of treatments. Chiropractic care, nutritional therapy, homeopathy, and acupuncture will be explored in this section. Practitioners of alternative medicine are also faced with patients suffering from UTI. The methods of diagnosis are the same as those employed by the allopathic profession. The goals of treatment are the same, but the agents of therapy are different. The agents may be for example, spinal adjustments, nutritional supplements, dietary changes, and the manipulation of Qi. All of these treatments have their successes and failures, and are reasonable treatment options for patients and doctors to explore.

### **Chiropractic Care**

Chiropractic care is generally thought of as a means of treating musculoskeletal complaints. How can chiropractic adjustments effect visceral conditions at all? A diligent review of literature by Nansel and Szlazak explored the topic of somato-visceral diseases. They found that the key to this relationship is the autonomic nervous system. Afferent nociceptive signals from somatic tissues lead to referred pain patterns as well as

production of autonomic reflex responses that can mimic, but not cause visceral diseases. There is then a distinct connection linking symptoms, but not linking the causes of visceral disease. Therefore, getting a chiropractic adjustment can help relieve the symptoms of a urinary tract infection, but is not necessarily going to remove the cause of the disease. The research for this study also stated that the lack of scientific knowledge published on this topic was not surprising, but the amount of clinical evidence linking chiropractic adjustments to the remedy of visceral syndromes was. (23). For example, a relationship has been found between bowel and bladder dysfunction and lumbar dysfunctional syndrome. Patients with low back pain may experience sluggish micturition, urinary retention, incontinence, dysuria, and constipation. With disk herniation, there is a chance for compression of the cauda equina, leading to these problems. All of these conditions may predispose a patient to development of a UTI. The incidence of urinary incontinence and UTI in the presence of constipation was studied in children. Out of 234 children with chronic constipation, 29% complained of daytime incontinence, and 34% of nighttime incontinence. UTI was present in 11% of the children. Resolution of the constipation yielded relief from both incontinence, and UTI in this population (21). Falk presents three case studies describing examination and treatment in his article. Case 1: a patient with bladder/testicular pain and lumbar subluxations, case 2: patient with dysuria and lumbar syndrome, case 3: patient with constipation and lumbar syndrome. Each of these cases resulted in resolution of the visceral complaint following chiropractic therapy and spinal adjustments (14). Another case study by Vallone involved chiropractic treatment of a 7-year-old girl with recurrent UTI. The child in this report began suffering from the infections after falling and injuring

her thoracolumbar area. The patient felt a "snap" in her back with resultant back pain. The chiropractic exam revealed a scoliosis of the thoracolumbar area with subluxations of the lower thoracic spine, upper lumbar spine, and the sacrum. The patient in this case received 8 spinal adjustments over a period of 2 months resulting in complete resolution of the complaint (29). An additional case report by Stude et al found a similar pattern in a 12-year-old child with incontinence. The patient had lumbar and sacroiliac joint subluxations. This patient too improved with adjustments. In this case the connection is seen throughout the nervous system again. Urinary continence is governed by the nerves coming from these areas of the spine such as the pudendal, and splanchnic in the sacral region, and the hypogastric nerve complex arising from the thoracolumbar region (28). Chronic pelvic pain as a result of recurrent bladder infections is another problem that can be relieved through chiropractic. A study done on 19 women with chronic pelvic pain of various origins was performed with positive results. All of the subjects reported decreased pain as a result of treatment based on the pain disability index (16).

### **Nutritional Therapy and Homeopathic Remedies**

A wide variety of substances can be included in this section, but the most popular of which is cranberry. The mechanism by which cranberry exerts its effect was explored by Sabota in 1984. Previously, the acidity of the juice and the bacteriostatic effects were thought to be protective. Sabota however, found that the cranberry actually prevented bacteria from adhering to the lining of the urethra and bladder, therefore preventing infection. The cranberry then, makes the mucosa slippery (27). Avorn tested the ability of cranberry juice to resolve UTI in a randomized double blind, placebo controlled trial. The study utilized elderly women, which are a group at increased risk for UTI. The

participants consumed 300ml/day of either commercial prepared juice or the placebo. Urine was tested for bacteruria and pyuria levels. Subjects that received cranberry juice had odds of bacteruria/pyuria that were only 42% of the odds faced by the placebo group. In conclusion, cranberry juice was effective in reducing bacteruria and pyuria in a population at risk of UTI. This demonstrates that the juice could play a significant role in prevention (6,20). Homeopathic and herbal remedies are also gaining popularity. Many of the herbs are derived from ayurvedic and traditional Chinese systems. Berbine, is a plant alkaloid that has been used to combat infections and reduce inflammation for at least 30,000 years. It is especially effective against *E. coli*, and would be useful in treatment of UTI (8). Most homeopathic remedies target symptom control, rather than cure or prevention of the problem. The most common agents for the burning pain associated with UTI are *cantharis*, and *sarsaparilla*. *Pulsatilla*, *apis*, and *belladonna* are also effective analgesics for pain extending into the thighs or abdomen. With the use of these remedies, it is advised that if there is no improvement within 24 hours, then additional help should be sought (31). *Goldenseal* is good for infections with bleeding, and has antimicrobial effects. *Colloidal silver* is another natural antibiotic that destroys bacteria, virus, and fungus. Drinking a tea containing *birch leaves*, or *dandelion root* will promote diuresis that can promote cleansing and healing of the bladder. A small amount of *uva ursi* can be added to this solution, as it is particularly effective against *E. coli*. Using natural herbs that destroy bacteria may reduce the symptoms by actually killing the cause, or invader (7).

### **Acupuncture Therapy**

Acupuncture is the oldest form of health treatment, and has been used to treat virtually everything that ails man. Traditional Chinese Medicine, or TCM, has a different system of organizing and diagnosing body conditions. In TCM, the kidneys are thought to control all of the water in the body, and house the essence or “jing” of the body. This jing is similar to modern day DNA. The kidney can be invaded by any of the pathogens in the TCM system such as wind, cold, heat, or dampness. Seventeen patients with chronic prostatitis were treated with electroacupuncture. There was moderate improvement in 70%, and excellent improvement in the other 30%. Sixty-seven women with chronic UTI were treated with acupuncture, and followed for 6 months. Over that time period the treatment group reported 1/3 of the infection rate as the control group. Acupuncture is a viable alternative in the treatment and prevention then of UTI (25).

### **Conclusion**

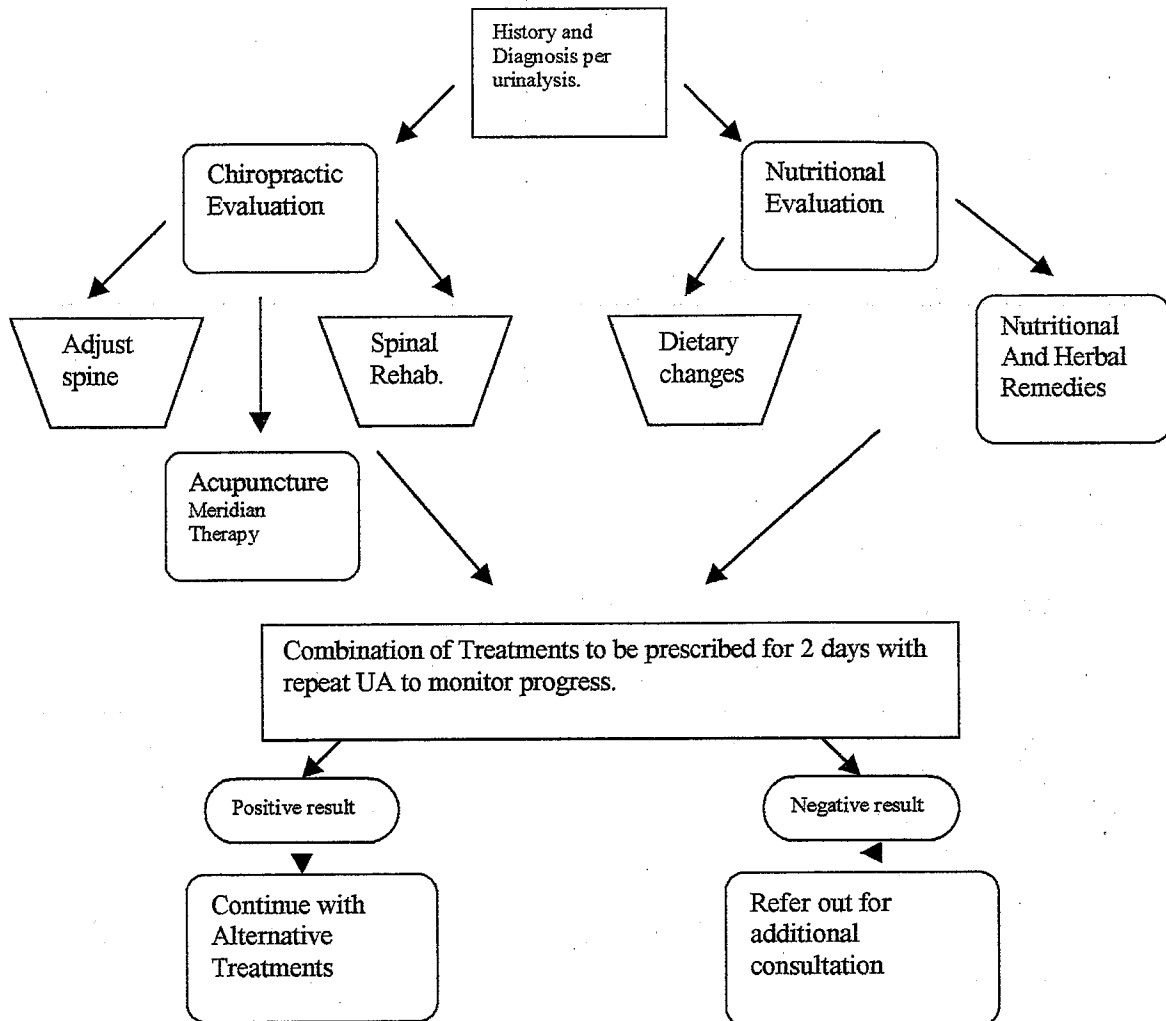
The summation of UTI management protocols for traditional and non- traditional practitioners provides a good educational reference for doctors and patients alike. In summary, a wealth of information can be found concerning UTI management. Therapies ranging from antibiotics, to nutrition, to spinal adjustments have all been shown to be effective. The debate then does not concern which treatment works, but rather which treatments are most effective for the patient. The ideal treatment would be effective, safe, economical, and timely. A treatment protocol then, can be developed for uncomplicated UTI utilizing both traditional and non-traditional resources (Figure 1). This treatment protocol allows for a complete history and physical exam with traditional diagnostic procedures. An appropriate timeline for conservative care has also been established providing for referral as needed. It is important for alternative practitioners to

realize that many of these non-traditional treatments may just be relieving symptoms, while allowing the cause of infection to remain in the body. Many patients with normal immune function will respond favorably to these treatments, but there will be cases that progress and require allopathic intervention. Additionally, allopathic practitioners would benefit from these alternative practices by referring out healthy patients with uncomplicated cases to reduce the necessity of antibiotics. It is obvious then, that the two professions can benefit from each other to best meet the needs of the patient. In conclusion then, the need for this study is to assimilate knowledge from both schools of thought into a guide for therapy of UTI's than can be utilized by all primary care physicians.

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**Treatment Protocol for the alternative practitioner**  
**Figure 1.**



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