

## BLADDER INFECTIONS

Urinary tract infection (UTI) is one of the most common and costly secondary health complications for people with spinal cord injuries. Neurogenic bladders, resulting from spinal damage, require the necessary practice of catheterization, which can introduce unwanted bacteria into the bladder. These unwanted microbes can cause recurrent bladder infections and these may lead to many debilitating and life threatening conditions such as fatigue, fever, autonomic dysreflexia, sepsis and kidney failure. The most efficient and natural treatment for UTI is prevention

90% of bladder infections are caused by E. coli.

There is growing concern that antibiotic therapy actually promotes recurrent bladder infection by giving rise to antibiotic resistant strains of E. coli. One of the body's most important defenses against bacterial colonization of the bladder is the protective shield of bacteria that line and protect the external portion of the urethra. When antibiotics are used, this normal protective shield is stripped away or replaced by less effective organisms.

## WEAKENED IMMUNE SYSTEM

As with any type of infection, UTI's occur when the body's defense system - the immune system - is low. The function of the immune system is to identify foreign material in the body and neutralize or destroy them. The immune system is a complex interaction of many different organs and systems, among them white blood cells, bone marrow and lymphatic vessels and organs. White blood cells are considered the body's first line of defense.

Nutrient deficiency is the most common cause of low immune function, therefore the first essential step to protect your body against infection is to build and maintain a strong immune system by eating a healthy diet.

It's important to also note other elements of our environment/diet/lifestyle that compromise our immune system defensive abilities:

- household cleaners
- pesticides
- pollutants
- stress - suppresses the normal activity of white blood cells and places undue demands on the endocrine system, as well as depleting the body of needed nutrients
- sugar -- lowers white blood cell activity

**Common signs of impaired immune function include:**

- repeated infections
- fatigue
- candida

**RECOMMENDATIONS****1. Enhance Immune System**

- Vitamin A – 5000 -10 000 IU/day, Vitamin C – 2-3000 mg/day
- Vitamin C has been shown through continued research stimulate the immune system therefore can help in the prevention and treatment of infections. This vitamin helps activate neutrophils, the most prevailing white blood cells, which work on the frontline defense in fighting bacteria. It also seems to increase production of lymphocytes, the white cells important in antibody production and in coordinating immune system functions. Therefore vitamin C can be helpful against bacterial, viral and fungal diseases.
- Vitamin A –stimulates several immune system activities. It is known to enhance the function of white blood cells, increase the response of antibodies to antigens, and to have anti-viral activity.
- increase garlic, as well as natural antimicrobial herbs such as Astragalus, Goldenseal and Echanachia.

**2. Eat/Drink Cranberries/Blueberries**

- cranberries cause a chemical, called hippuric acid, to be formed which makes the urine more acidic. This creates an unfavorable growth environment for bacteria to flourish
- cranberries also contain large amounts of specific compounds called tannins which prevent E. coli from attaching to the cell wall of the urinary tract. It does this by inhibiting the growth of the receptors on the end of the arm like appendages, called pili that allow bacteria to bind to the cell wall. This causes them to become slippery, which makes it easy to flush the bacteria out of the system and avoid infection
- blueberries, which are a cousin of the cranberry, also contain tannins

**3. Take Probiotics**

- 1-2/day
- these friendly bacteria help boost the immune system as well as alter the pH balance of the body making it inhospitable for unfriendly bacteria to live in.

**4. Increase Urine Flow**

- drink at least 6-8 cups of fluid/day
- increasing your daily flow of urine by drinking water, unsweetened cranberry juice and/or herbal teas made from bearberry & yarrow will flush bacteria from your system, and help prevent micro - organisms from attaching to the lining of the bladder.

**5. Uva Ursi**

- drink as a tea 3x/day
- many herbs have been used through the centuries to treat UTI's. The most useful herb documented is uva ursi, also known as bear –berry
- this herb has a strong antiseptic component and is reported to be especially active against E. coli.
- regular use of this herb in supplement form or as a tea may also help prevent bladder infections.

**6. D-Mannose**

- 1 teaspoon of powdered D-mannose in water every few hours for 3 days
- it is a naturally occurring sugar, similar in structure to glucose
- D-Mannose is absorbed eight times slower than glucose, and when ingested, is not converted to glycogen or stored in the liver, but rather goes directly to the blood stream from the upper GI tract. Hence, D-Mannose is mostly filtered through the kidneys and routed to the bladder. The bladder lining is comprised of polysaccharide molecules. Finger-like projections on the cell surface of E. coli adhere to

these molecules, initiating an infection. In the presence of D-Mannose, E. coli preferentially attach to D-Mannose molecules forming a complex which is expelled with the next voiding

- studies suggest it's even more effective than cranberries and dislodging E. coli bacteria from bladder wall

### 7. Alkalinize the Body

- 125 to 250 mg, 3 to 4 times/day
- use potassium citrate, sodium citrate or calcium citrate tablets. After we digest these they are excreted into our urine and raise the pH balance thus helping to alkalinize the bladder making it a less friendly environment for bacteria to them.
- eat lots of green leafy vegetables

### 8. Avoid Sugar, Refined/Processed Foods

- decreases white blood cell production

## RECOMMENDED FOODS

### Vitamin A

- sweet potato
- carrots
- red peppers
- spinach
- kale

### Vitamin C

- citrus fruits
- blueberries/cranberries
- red/green peppers
- papaya
- strawberries
- cantaloupe
- broccoli
- brussel sprouts

### Others

- garlic
- ginger

## REFERENCES

1. Elson M. Haas **Staying Healthy with Nutrition** Celestial Arts: Toronto 2006
2. Phyllis Balch **Prescription for Nutritional Healing** Avery: New York 2006
3. **Michael Murray** Encyclopedia of Natural Medicine **Three Rivers Press: New York 1998**
4. EA Opperman **Cranberry Is Not Effective for Prevention or Treatment of UTI in Individuals with SCI** Spinal Cord 48, 451-456 2010
5. Lawrence Johnston **Alternative Medicine and SCI** Demos Medical Publishing, New York 2006