

HERBAL TRANSITIONS



A botanical newsletter for health care practitioners

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URINARY TRACT HEALTH

Editorial Comment:

In an earlier newsletter, we examined kidney health: the etiology, prevention and treatment of acute and chronic kidney failure. After receiving the Kidney Newsletter, many practitioners contacted me to discuss their patients. I am inviting all health care providers to send me the histories of their kidney patients with treatment protocols, and outcomes. This information will be published in the next newsletter to further our knowledge of kidney disease and its management. Please contact Dr. Tilgner by writing to: PO Box 523, Pleasant Hill, OR 97455, by e-mail: class@herbaltransitions.com.

*Thank you,
Sharol Tilgner N.D.*

Urinary Tract Infections

A urinary tract infection (UTI) occurs when predisposing factors create an environment for an infecting organism to set up house in the urinary tract. This elicits an inflammatory response from the body.

Types of UTIs:

1. Cystitis: bladder infection (most common infection)
2. Urethritis: urethra infection
3. Pyelonephritis (PN): kidney infection
4. Prostatitis: prostate infection - discussed in our newsletter called Prostate Health

Predisposing Factors to UTIs:

- Obstructions - stones, tumors, strictures
- New or multiple sexual partners
- Diabetes mellitus
- Chemical sensitivities
- Bowel toxemia
- Vigorous sexual intercourse
- Diaphragm use or misuse
- Lack of local defense system - this is considered the cause of recurrent UTIs in many women. A lack of local defense may allow colonization of bacteria on the vaginal vestibule. These women usually have decreased cervicovaginal antibodies to enterobacteria. These factors lead to an increased number of abnormal organisms in the vagina that are capable of ascending the urinary tract through the urethra.
- Stress
- Food allergies
- Candida overgrowth
- High sugar intake
- Decreased immunity
- Vesicovaginal fistula

Type of Patient:

As natural health care practitioners, there are numerous questions we must ask ourselves about our individual patients with a UTI.

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For example:

1. Is this health condition due to excess (such as a raging hot infection) or deficiency (such as a chronic immune deficient situation with flaccid, unresponsive tissues)?
2. Is the UTI due to an external pathogenic factor or to internal disharmony?
3. A thorough case history is important. Get specifics about the situation and the patient.

Bladder Infections (Cystitis)

Prevalence:

Bacterial bladder infections are 10 times more frequent in females than in males, except in neonates where it is almost equal in males and females. 6% of women have annual UTIs. 80% of bladder infections are associated with *E.coli*, a common gastrointestinal tract bacteria which responds well to arbutin, a constituent in *Arctostaphylos uva-ursi* and *Chimaphila umbellata*.

Categories of Bladder Infections:

1. **Acute cystitis** (also known as first infection) is a solitary event. It has no relation to any other infection or infecting organisms. Usually it is caused by autoinfection from the patient's fecal stream by an *E. coli* organism. The organism is usually sensitive to almost any antimicrobial used for UTI.
2. **Recurrent infection** (also known as reinfection) is a series of infections that are separated by at least 3 or 4 weeks. The infectious episodes are generally associated with a different organism or different serotype each time. It is the most common type of repeat infection, especially in women.
3. **Relapsing infection** (also known as bacterial persistence) results when the infecting organism persists after treatment with an effective antimicrobial.

Most common causes of these:

- Infected calculi/stones (usually in upper tract)
- Foreign body
- Chronic bacterial prostatitis
- Chronic pyelonephritis (usually unilateral and atrophic)
- Pericalyceal cysts or old communicating abscess cavities
- Congenital anomalies

- Urethral diverticula
- Vesicoenteric fistulae

It is futile to treat these infections unless the underlying cause is eliminated.

4. **Unresolved bacteriuria** results when the antimicrobial used was inadequate or never sterilized the urine. Occasionally more than one affecting organism is involved. The sensitive organism is eradicated by the antimicrobial and the nonsensitive species comes forth.

Etiology and Pathogenesis (Cause):

Mainly coliform bacteria, usually *E coli* strains

Gram-positive aerobic bacteria, usually *Staphylococcus saprophyticus* and enterococci.

Usually ascends from urethra.

Much greater in girls and women - consider reflux, constipation, sexual activity, diaphragm use, cystocele.

Males after age 50 - consider obstruction of the prostate.

Viral cystitis is rarely found in adults.

Adenovirus infection may lead to hemorrhagic cystitis in children.

Symptoms:

Irritative voiding (a keynote of cystitis)

- Frequency
- Burning on urination
- Urge incontinence
- Fever – uncommon
- Nocturia
- Dysuria
- Urgency
- Low back and suprapubic pain.
- Hematuria (in 30% of patients)
- Urinates in small amounts
- Complains of foul-smelling urine
- May be asymptomatic in elders

Signs:

No specific physical signs are characteristic. Possible associated contributing factors:

- Vaginal, introital or urethral abnormalities
- Vaginal discharge
- Urethral discharge in males
- Swollen, tender prostate or epididymis in males

Abnormal Laboratory Findings:

UA:

- Pyuria
- Bacteriuria
- Gross or microscopic hematuria may be seen

Instrumental Examination:

Cystoscopy when hematuria is prominent, but delay procedure until acute phase is over and infection has been adequately treated.

Differential Diagnosis (DDX):

1. Females: Vulvovaginitis - rule out with pelvic examination and examination of vaginal discharge for pathogens.
2. Children: Vulval and urethral irritation - caused by bubble bath or pinworms.
3. Males: Infections of urethra, prostate and kidney-appropriate PE and lab tests.
4. Noninfectious types of cystitis: Resulting from anticancer therapy (e.g. irradiation, cyclophosphamide), interstitial cystitis, eosinophilic cystitis, bladder carcinoma

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(especially carcinoma in situ), and psychosomatic disorder.

5. Acute urethral syndrome - urine cultures show low counts or no growth of bacteria.

6. Acute pyelonephritis - loin pain and significant fever.

Complications:

Ascends to Kidney (KI): Children with vesicoureteral reflux and pregnant women are especially prone.

In persistent cystitis - development of infected calculi in upper urinary tract and bladder or secondary infection of prostate or epididymis.

Kidney Infection (Pyelonephritis PN)

Etiology:

Involves both parenchyma and pelvis of the kidney. It may affect one or both kidneys. *E. coli* is the predominant pathogen, but also consider *Proteus* species, *Klebsiella* species and occasionally *S. epidermidis*, *S. saprophyticus*, *S. aureus* and streptococci group D.

Pathogenesis:

Usually ascends from the urethra and lower genitourinary tract. Males are less susceptible due to the longer urethra and antibacterial factors secreted by prostate.

Symptoms of PN:

- Abrupt onset of shaking chills
- Moderate to high fever
- Nausea
- Significant malaise and prostration
- Flank pain
- Vomiting

- 1/3 of patients have a concomitant lower UTI

Signs:

- Quite ill
- Tachycardia
- Abdominal distention
- 101-104° F temperature
- Rebound tenderness
- Auscultation usually reveals a quiet intestine
- Percussion of CVA (costovertebral angle) causes pain

Lab Findings:

- Significant leukocytosis
 - Increased SED rate
- UA:

- Cloudy urine
- Heavy pyuria
- Bacteriuria

Mild proteinuria

- Microscopic or gross hematuria
- Leukocyte casts and glitter cells
- >100,000 colonies/mL
- Perform serial blood cultures

Differential Diagnosis (DDX):

- Pancreatitis
- Acute appendicitis
- Diverticulitis
- Acute prostatitis
- Renal abscess
- Basal pneumonia
- Cholecystitis
- PID in women
- Acute epididymo-orchitis
- Perinephric abscess

Complications:

Complications are uncommon in adults, treated appropriately and without renal disease or urologic abnormalities. In children or infants whose renal development is not complete, PN often produces permanent renal damage and scarring. They must be thoroughly evaluated and vigorously treated. The most serious complication is septicemia complicated by shock. It is unusual, but often fatal.

Conventional Treatment:

In severe or complicating factors hospitalization is required. Urine and blood cultures will identify the pathogen.

Aminoglycoside (amikacin, gentamicin or tobramycin) plus ampicillin-IV x 1 week then replace with appropriate oral drug x 2 wks.

Complete bed rest with fluids - IV and orally.

Poor response after 48-72 hrs of therapy, reevaluation for possible complicating factors (e.g., obstructive uropathy) or inappropriate drugs. Repeat cultures up to 6 months.

Prevention of Urinary Tract Infections**Avoid:**

- Nylon underwear • Sitting on cold floors & hot radiators
- Baths, use showers • Pantyhose • Tight pants
- Swimming in chlorinated pools • Fried Foods
- Sexual partner with dirty fingers • Sugar
- Sitting around in wet bathing suits • Caffeine
- Soaps that contain perfumes, colorations • Dairy
- Vaginal intercourse after anal intercourse • Refined Foods
- Vaginal douches and sprays with Perfumes, colorations or other chemicals • Alcohol
- Clothing that increases heat and perspiration in the perineal area

Reduce Risk Factors:

- Wipe from front to back when voiding.
- Drink plenty of water. • Drink nettle tea.
- Urinate after sexual intercourse. • Keep the genital area clean. • Urinate whenever you feel the urge.
- Wash clothing with non-scented detergents.
- Drink unsweetened cranberry juice. Combine a cup of water and a handful of berries in the blender.

If UTI is Suspected:

- Drink plenty of water to flush out the bacteria and prevent spread of the infection to the kidneys.
- Drink unsweetened cranberry juice.

Studies have shown that it's the mannose in cranberry juice that does the job. If the UTI is caused by E. coli then the germs take in the mannose and discover that they can no longer adhere to the walls of the urinary tract. If your UTI is caused by another organism then cranberry juice, mannose cannot help."

- Avoid caffeine, nicotine, sugar and alcohol.
- Use hot and cold alternating sitz baths: 3 minutes warm and 1 minute cold to improve pelvic circulation.
- Drink rose hip tea for vitamin C content or take Vitamin C to bowel tolerance.
- Drink carrot juice for carotenoids including betacarotene.
- Eat berries or flowers high in flavonoids.
- Eat pumpkin seeds, sunflower seeds, wheat germ and other foods high in zinc or take zinc 30 mg/day.
- Vitamin A 25,000 IU/day.
- Use flax oil or seeds if there is chronic inflammation and especially if allergies are suspected.

Botanical Considerations for Urinary Tract Infections

(Note: A person with a UTI should respond in 48-72 hours of treatment.)

Demulcent Herbs:

Althea officinalis (Marshmallow)

Symphytum officinalis (Comfrey)

Ulmus fulva, (Slippery elm), *Ulmus rubra* (Red elm)

Zea mays (Cornsilk) - fresh only

Glycyrrhiza glabra (Licorice)

Elytrigia repens (Couch grass)

Calendula officinalis (Calendula)

Anti-inflammatory Herbs:

Glycyrrhiza glabra (Licorice)

Matricaria recutita (Chamomile)

Dioscorea villosa (Wild yam)

Zea mays (Cornsilk)

Plantago spp. (Plantain)

Achillea millefolium (Yarrow)

Antimicrobial Herbs:

Usnea spp. (Old man's beard)

Arctostaphylos uva-ursi (Uva-ursi)

Echinacea spp. (Echinacea)

Chimaphila umbellata (Pipsissewa)

Elytrigia repens (Couch grass)

Barosma betulina (Buchu)

Achillea millefolium (Yarrow)

Calendula officinalis (Calendula)

Immunomodulating Herbs:

Echinacea spp. (Echinacea)

Zea mays (Cornsilk)

Galium aparine (Cleavers)

Calendula officinalis (Calendula)

Glycyrrhiza glabra (Licorice)

Lymphagogue Herbs:

Galium aparine (Cleavers)

Ceanothus spp. (Red root)

Fouquieria splendens (Ocotillo)

Arctium lappa (Burdock)

Calendula officinalis (Calendula)

Supportive Herbs:

Centella asiatica (Gotu kola)

Urtica dioica (Nettles)

Plantago spp. (Plantain)

Rubus idaeus (Raspberry)

Diuretic Herbs:

Urtica dioica (Nettles)

Equisetum arvense (Horsetail)

Plantago spp. (Plantain)

Taraxacum officinalis (Dandelion)

Galium aparine (Cleavers)

Zea mays (Cornsilk)

Arctostaphylos uva-ursi (Uva-ursi)

Elytrigia repens (Couch grass)

Petroselinum sativa (Parsley root/seed)

Astringents/styptic Herbs:

Equisetum arvense (Horsetail)

Achillea millefolium (Yarrow)

Calendula officinalis (Calendula)

Arctostaphylos uva-ursi (Uva-ursi)

acute infections.

(Note: One physician, who has a kidney transplant, stated his uremic symptoms became worse when taking uva ursi when he had renal failure.)

Barosma betulina (Buchu)

Uric acid deposits, continual desire to urinate, little relief from effort, mucopurulent urine. - *Best in chronic conditions.* - *It is antimicrobial, stimulating to the kidneys and digestive organs, large doses can irritate both the GI and GU tracts. Small doses tonify. Especially for long standing catarrhal conditions in the elderly.*

***Berberis* spp./*Mahonia* spp.** (Oregon grape)

Thick mucus, bright-red mealy sediment. Stitching pains. *Antimicrobial herb with astringent properties. Good for subacute or chronic conditions with lack of pelvic tone. Stimulates liver, GU and GI tracts.*

Equisetum arvense (Horsetail)

Dull pain, with sense of full bladder, not relieved by urination. Severe pain at close of urination. Urine flows drop by drop. Sharp, burning cutting pain in urethra. Mucus in urine. Incontinence. Worse, right side, movement, pressure, touch, sitting down; better in afternoon from lying down. - *Useful for lack of tone due to connective tissue laxity where there is also bleeding. It is a diuretic and astringent.*

Chimaphila umbellata (Pipsissewa)

Urine offensive, ropy or bloody mucus, copious sediment. Scalding urine during micturation. Feeling of ball in perineum, sugar in urine. Worse damp weather, from sitting on cold surfaces, worse on left side. - *Use in atonic, debilitated states. Use to decrease uric acid, as a lymphagogue, in subacute or chronic conditions with lax tissues. It alkalizes the urine.*

Thuja plicata (Western red cedar)

Swollen urethra, split urinary stream and small. Desire sudden, urgent and uncontrollable. Sensation of trickling after urination. Paralysis of bladder sphincter. Warts on perineum. Worse at night, from heat of bed; at 3 AM and 3 PM, from cold, damp air; after breakfast; fat, coffee; vaccination. Better left side; while drawing up a limb. - *Use in persons who tend to be warty or have virus-related health conditions, atonic, lax tissues with urinary incontinence due to weak bladder. Small doses are stimulating to urinary tract, large doses are irritating. It is an antiseptic, slightly astringent herb.*

Urtica dioica (Nettles)

Symptoms return at the same time each year. Uric acid diathesis, profuse discharge, enuresis. - *Supportive, nourishing herb for urinary tract. Use for chronic cases of cystitis for maintenance of normal urinary tract function.*

Specific Herbal Indications for Cystitis

Arctostaphylos uva-ursi (Uva-ursi)

Frequent, severe spasms of bladder, burning and tearing pain. Blood and pus in urine, tenacious mucus with clots in large masses. Involuntary urine, green urine. Feel weight or dragging in loins and perineum. - *Antimicrobial herb which has a cooling effect. Astringent and diuretic action, decreases uric acid levels in the blood and alkalizes the urine. Useful in*

Herbal Formulas for the Urinary Tract

Urinary Tract Infection Formula (Liquid extract)

<i>Echinacea spp.</i> (Echinacea)	20-35%
<i>Arctostaphylos uva-ursi</i> (Uva-ursi)	20-35%
<i>Barosma betulina</i> (Buchu)	20-35%
<i>Usnea spp.</i> (Old man's beard)	10-20%
<i>Zea mays</i> (Cornsilk)	10-20%

Actions: This formula is antimicrobial and disinfects the entire urinary tract. It also soothes the urinary tract's mucus membranes, decreases irritation and helps to maintain tissue integrity. It has diuretic qualities and enhances the immune system's natural resistance to bacterial and fungal organisms.

Indications: A diuretic and antiseptic used for the inflamed and infected bladder and kidneys.

Herb Profiles:

Echinacea spp. (Echinacea) is immunomodulating, antimicrobial and anti-inflammatory.

Arctostaphylos uva ursi (uva ursi) is a urinary tract antiseptic and diuretic that is specific for urinary tract infections. Research claims it works best in an alkaline pH. The leaves contain arbutin, an antiseptic constituent, which is metabolized into an even more antiseptic constituent called hydroquinone. In alkaline urine, hydroquinone is an effective antimicrobial agent. Uva ursi itself tends to alkalinize the urine and may give it a green tinge.

Barosma betulina (Buchu) is also antimicrobial and astringent. *Usnea spp.* (Old man's beard) is thought of as nature's "herbal antibiotic" by some herbalists. It does kill many bacterial organisms.

Zea mays (Cornsilk) is a soothing diuretic, mild antimicrobial, vulnerary and demulcent. Glycoproteins in cornsilk increase production of interferon, inhibit IgE formation and enhance IgG and IgM formation. Corn silk has antiviral and antitumor activities.

Liquid extract dosage: 40-60 drops (up to one teaspoon in hard to treat cases), 3-4 times per day. Can be taken every 2 hours if necessary. Do not use at this dosage for more than 72 hours. Reduce dosage to 4 times per day, and finally 3 times per day over a 10 day period.

Adjunct: Mucilaginous teas

Contraindications, Cautions and Words of Wisdom:

Urinary tract infections, especially kidney infections, can have serious consequences. If symptoms persist for more than 48 hours, and if there is a fever or pain indicating a kidney infection more aggressive treatment may be necessary.

Urinary Tract Infection Formula (Tea)

<i>Arctostaphylos uva-ursi</i> (Uva-ursi)	10-20%
<i>Althea officinalis</i> (Marshmallow)	10-30%
<i>Elytrigia repens</i> (Couch grass)	10-20%
<i>Urtica dioica</i> (Nettles)	10-20%
<i>Plantago spp.</i> (Plantain)	10-20%
<i>Taraxacum officinalis leaf</i> (Dandelion)	10-20%

Actions: This formula is antimicrobial and disinfects the entire urinary tract. It also soothes the urinary tract's mucus membranes, decreases irritation and helps to maintain tissue integrity. It has diuretic qualities and enhances the immune system's natural resistance to bacterial and fungal organisms.

Indications: A diuretic and antiseptic used for the inflamed and infected bladder and kidneys.

Herb Profiles:

Arctostaphylos uva-ursi (Uva-ursi) (See *Arctostaphylos uva-ursi* profile above).

Althea officinalis (Marshmallow) is anti-inflammatory, mucilaginous and soothing.

Agropyren repens (Couch grass) is antimicrobial and a diuretic.

Urtica dioica (Nettles) is a nutritious herb with a beneficial effect on the whole urinary tract as well as the nervous system.

Plantago spp. (Plantain) is soothing and healing to the urinary tract. It assists in restoration and maintenance of normal epithelial tissue lining of the bladder.

Taraxacum officinalis leaf (Dandelion) is used for its diuretic qualities, although its liver support and general stimulation of digestion is useful to almost everyone.

Tea dosage:

Dosage - acute: 2 heaping teaspoons per cup water, 3-4 times per

day. Can be taken every 2 hours if necessary, up to a 72 hour period. Reduce dosage to 4 times per day, and finally 3 times per day over a 10 day period.

Adjunct: Mucilaginous teas: Drink as much as possible.

Contraindications, Cautions and Words of Wisdom:

Urinary tract infections, especially kidney infections, can have serious consequences. If symptoms persist for more than 48 hours, and if there is a fever or pain indicating a kidney infection more aggressive treatment may be necessary.

Interstitial Cystitis (Hunner's Ulcer, Submucous Fibrosis)

Pathogenesis Possibilities: Note: urine is normal - therefore no infection.

- Obstruction of vesical lymphatics secondary to pelvic surgery or infection
- Secondary to thrombophlebitis complicating acute infections of bladder or pelvic organs
- Prolonged intrinsic arteriolar spasm secondary to vasculitis or psychogenic impulses
- Autoimmune collagen disease - recent study
- GAG (glycosaminoglycans) and mast cells - recent study
- Neuropathic origin
- Allergies - recent study
- Estradiol receptors - recent study
- Endocrinologic factors
- Sensory nerves - recent study

Bladder Changes:

- Fibrosis in deeper layers of bladder
- Decreased capacity
- Thinned mucosa, especially where bladder fills and empties
- Often small ulcers or cracks in mucous membrane
- Severe case - vesicoureteral reflux due to destroyed ureterovesical junctions, leading to ureteronephrosis and pyelonephritis.
- Signs of inflammation
- Engorged lymphatics
- Lymphocytic infiltration
- Fibrotic tissue replaces muscle
- Increased mast cells
- Increased nerve fibers

Symptoms:

Think interstitial cystitis with middle-aged woman, clear urine, severe frequency, nocturia and suprapubic pain on vesical distention.

There is usually a long history of slowly progressive frequency and nocturia with no suggestion of infection (no burning on urination, no cloudy urine). There is suprapubic pain that becomes marked when the bladder is full. Pain may also be experienced in the urethra or perineum. The pain is relieved on voiding. There is gross hematuria - usually when urination has been postponed. The person usually has a history of allergies.

Signs:

- PE – normal
- Tenderness in suprapubic area
- Tenderness in region of bladder when palpated through vagina

Laboratory Findings:

- Urine is normal - **NO** infection

- Microscopic hematuria
- Renal function tests - normal (except if patient has vesicoureteral reflux or obstruction)

Differential Diagnosis (DDX):

- Tuberculosis - involved in ureteral orifice that drains tuberculous KI, tubercles, pyuria, tubercle bacilli, urograms show typical lesions of renal tuberculosis.
- Vesical ulcers due to schistosomiasis - patient lives in area where schistosomiasis is endemic, typical ova found in urine, pathognomonic appearance of bladder.
- Nonspecific vesical infection - seldom causes ulceration, pus and bacteria in urine, antimicrobial treatment is effective.
- 20% of male patients diagnosed with interstitial cystitis actually had carcinoma.

Complications:

- Gradual ureteral stenosis or reflux and its sequelae.

Botanical Considerations for Interstitial Cystitis

In acute states antispasmodic herbs and anti-inflammatory herbs help symptomatically. They can also be helpful in long term formulas. Multiple body systems need to be addressed including the urinary tract, liver, adrenals, and immune system. Herbs to support these body systems should be matched to the patient's profile.

Demulcent Herbs: See demulcent herb list on p. 4 under "Botanical Considerations for Urinary Tract Infections."

Immunomodulating Herbs: See immunomodulating herb list on p. 4 under "Botanical Considerations for Urinary Tract Infections."

Antispasmodic Herbs:

Piper methysticum (kava kava)

Ammi visnaga (khella)

Dioscorea villosa (wild yam)

Anti-inflammatory Herbs: See anti-inflammatory herb list on p. 4 under "Botanical Considerations for Urinary Tract Infections."

Lymphagogue Herbs: See lymphagogue herb list on p. 4 under "Botanical Considerations for Urinary Tract Infections."

Supportive Herbs: See supportive herb list on p. 4 under "Botanical Considerations for Urinary Tract Infections."

Hepatic Herbs:

Taraxacum officinalis root (dandelion)

Arctium lappa (burdock)

Interstitial Cystitis Formula (liquid extract)

Zea mays (cornsilk) 15-20%

Glycyrrhiza glabra (licorice) 10-20%

Piper methysticum (kava kava) 10-25%

Plantago spp. (plantain) 15-20%

Arctium lappa (burdock) 10-20%

Urtica spp. (nettles) 10-20%

Liquid Extract dosage: 60 drops, 3-4 times per day

Other Treatment Considerations for Interstitial Cystitis

Diet:

- D'Adamo diet or other allergy testing
- Avoid caffeine, aspartame and tobacco
- Avoid sugar and alcohol
- Increase soy intake

Supplements:

- Autoimmune protocol
- Bioflavonoids
- Vitamin A: 25,000-50,000 I.U.
- Vitamin C: 5-10 gms. (to bowel tolerance)
- Vitamin E: 800 I.U. times 2 weeks, then 600 I.U.
- Glycosaminoglycans
- Zinc: 40 mgs

Other considerations:

Diathermy: apply one head only to area, time - 10 min, intensity/freq - 12.

Urinary Incontinence

Classifications:

Anatomic or Genuine Urinary Stress Incontinence:

Activity related

Result of hypermobility of vesicourethral segment due to pelvic floor weakness.

Basic features:

1. Intact sphincteric mechanism
2. Weak pelvic floor support
3. Anatomic abnormality

Radiologically demonstrable

Restoration of anatomy restores function

Urge/Neuropathic Incontinence:

Strong desire to urinate

Either sensory or motor dysfunction

Sensory - Person "lets go" of urine due to intense desire to urinate.

Motor - Detrusor contraction that cannot be voluntary suppressed.

Congenital Incontinence:

Ectopic ureters, duplicate or single system, with epispadias, exstrophy or cloacal malformation.

False (overflow) Incontinence:

Bladder is at maximum capacity and intravesical pressure exceeds the pressure maintained by the outlet.

Result of obstructive or neuropathic lesion

Not true incontinence

Post-traumatic or Iatrogenic Incontinence:

Associated with:

1. Fractured pelvis
2. Surgical damage to sphincter during bladder neck resection
3. Extensive internal urethrotomy
4. Failure of urethral diverticulectomy or repair of erosion of artificial sphincter.

Fistulous Incontinence:

Ureteral, vesical or urethral fistula

Most of time, cause is iatrogenic from either pelvic or vaginal surgery.

Functional Incontinence:

Secondary to extrinsic factors:

- Arthritis
- Stroke
- MS
- Poor wheelchair access
- Medications such as diuretics

Stress Incontinence (in women-seen rarely in men)

Anatomy:

Intrinsic structure of sphincter is intact and normal.

However it loses efficiency due to excessive mobility and loss of support (lowering of position of vesicourethral segment).

Diagnosis:

Detailed history:

1. Degree of leakage
2. Relationship to activity, position and state of bladder fullness
3. Timing of onset
4. Course of progression
5. Dietary inducers:
 - Allergies
 - Coffee and tea (even decaffeinated)
 - Carbonated beverages
 - Citrus fruits
 - Tomatoes
6. Past surgical and obstetric history
7. Medications (diuretics, a-blockade (prazosin, terazosin, phenoxybenzamine), sedative-hypnotics and antidepressants)
8. Systemic diseases (e.g. diabetes mellitus, congestive heart failure, venous insufficiency)
9. Hormonal status
10. Previous gynecologic surgery
 - Hysterectomy history
 - Vaginal
 - Benign disease
 - Ovaries removed
 - Antiincontinence surgery performed at the same time
 - Onset within days of hysterectomy - vesicovaginal or ureterovaginal fistula
11. Woman sexually active:
 - Pain
 - Discomfort
 - Loss of urine with intercourse or climax:
 - Intercourse - secondary to anatomic relaxation
 - Climax - either secondary to a triggered detrusor contraction or outlet relaxation

PE:

- Abdominal exam
- Pelvic exam in lithotomy and standing positions
- Screening neurological exam
- Rectal exam

Herbal Formulas for Stress Incontinence

Urinary Incontinence Formula (liquid extract)

<i>Alchemilla spp.</i> (lady's mantle)	10-25%
<i>Mitchella repens</i> (partridge berry)	10-25%
<i>Centella asiatica</i> (gotu kola)	10-25%
<i>Hypericum perforatum</i> (St. John's wort)	10-25%

<i>Hamamelis virginiana</i> (witch hazel)	10-25%
<i>Zea mays</i> (cornsilk)	10-25%

Actions: This formula is supportive to the pelvic area. It provides pelvic tone and decreases pelvic inflammation or irritation.

Indications: Used for pelvic laxity inducing stress incontinence common in mature women.

Herb Profiles:

Alchemilla spp. (Lady's mantle) is a reproductive tract tonic. It is indicated in uterine atony and prolapse, vaginal laxity, menorrhagia and hemorrhage related to atony. It is indicated for atonic pelvic organs, including the bladder.

Mitchella repens, (Partridge berry) is a uterine tonic, diuretic and astringent. It is indicated for female reproductive tract weakness. Partridge berry improves neuromuscular and vascular tone of uterus and urinary tract.

Centella asiatica, (Gotu kola) is useful for incontinence due to the ability to stimulate glycosaminoglycan synthesis without promoting excessive collagen synthesis. This allows natural growth of supportive bladder tissue. It also has a calming and supportive effect on the nervous system.

Hypericum perforatum, (St. John's wort) is a nervine and neural trophorestorative. It is used in this formula for its ability to support the nervous system, thereby affecting the urinary tract.

Hamamelis virginiana (Witch hazel) is used in this formula for its astringent, anti-inflammatory and toning qualities.

Zea mays (Corn silk) is a soothing diuretic, mild antimicrobial, vulnerary and demulcent. It is healing to the urinary tract and helps restore normal tissue tone and function.

Liquid extract dosage:

Dosage - Acute: 30-60 drops, 3-4 times per day

Adjunct: Listed below

Other Treatment Considerations for Stress Incontinence

Conventional Treatments:

1. Suspension surgery:
 - Recommended - retropubic approach.
2. Sling (for excessive sphincteric damage and intrinsic weakness):
 - Vaginal wall sling
3. Significant intrinsic sphincteric damage:
 - Local injection of bulking material (polytetra fluoroethylene (= teflon) or collagen)

Natural Treatments:

- Estrogen
- Cones
- Allergy test
- Pelvic floor exercises
- Raspberry leaf tea
- Eat blueberries/huckleberries/bilberries
- Avoid coffee, tea, carbonated beverages, citrus fruits, tomatoes
- Phytosterols/soy
- Biofeedback and bladder training
- Regularly timed toileting
- Hot and cold sitz baths
- Eat dark green leafy vegetables

Supplements:

- Vitamin C
- Vitamin E
- Vitamin B6
- Proline
- Lysine
- Cystine
- Glycine
- Taurine
- Glutamine
- Glucosamine sulfate
- Copper
- Zinc
- Manganese
- Proanthocyanidin

Urinary Stone Disease

Formation of stones in the urinary tract requires supersaturated urine, which depends on ionic strength, urinary pH and solute concentration. The cause of most stones is supersaturation of the urine with stone-forming salts, preformed nuclei (e.g., uric acid crystallites and other stones) or abnormal crystal growth inhibitors.

Renal and Ureteral Stones

Stone Varieties:

Calcium calculi:

80-85% of all stones are calcareous. 75% of these are either calcium oxalate or calcium phosphate stones. There are approximately 8 types of calcium stones.

Causes of calcium calculi:

- Hypercalciuria - supersaturates urine
- Hyperoxaluria - supersaturates urine
- Hyperuricosuria - forms monosodium urate crystals which induce nucleation of calcium oxalate
- Hypocitraturia - decrease of inhibitory role of citrate
- Hypomagnesiuria - decrease of inhibitory role of magnesium

Noncalcium calculi:

Struvite stone (aka magnesium ammonium phosphate stone):

- Most common in women
- Frequently present as renal staghorn calculi
- Infection stones associated with urea splitting organisms
- Stone removal is therapeutic

Uric acid stone:

Most common in men

High incidence of uric acid stones seen in:

- Gout
- Dehydration
- Consistently low urinary pH (<5.75)
- Malignant conditions treated with cytotoxic drugs
- Myeloproliferative diseases
- Excessive purine intake

Cystine stone: secondary to inborn error of metabolism

Zanthine stone: secondary to a congenital deficiency of xanthine oxidase.

Struvite stone:

Magnesium ammonium phosphate stones (aka struvite stones) are synonymous with infection and there may be a fever. They are associated with *Proteus*, *Pseudomonas*, *Providencia*, *Klebsiella* and *Staphylococcus*. They are rarely associated with *E. coli*. They are a relative medical emergency.

Look for signs of clinical sepsis:

- Fever.
- Hypotension.
- Can have CVA tenderness.
- Nausea and vomiting: Frequent, IV fluids are required.
- Tachycardia.
- Cutaneous vasodilation.
- May have palpable mass.

Special Situations for Stones:

- Renal transplantation - Stones are rare.
- Pregnancy - Calculi are relatively rare.
- Obesity - a risk factor for developing calculi.
- Associated tumors: Squamous cell carcinoma of upper urinary tract has been associated with calculi in more than 50% of cases.
- Pediatric patients: Stones are rare. If a stone is present, do a full and thorough metabolic evaluation. Premies given furosemide in neonatal intensive care are at increased risk.

Differential Diagnosis (DDX) for Urinary Stones:

- Acute appendicitis
- Ectopic and unrecognized pregnancies
- Ovarian pathology including twisted ovarian cysts
- Biliary stones with and without obstruction
- Diverticular disease
- Peptic ulcer disease
- Abdominal aortic aneurysm
- Epididymitis
- History of similar pain
- Bowel obstruction
- Acute renal artery embolism
- Incarcerated inguinal hernia
- Orchitis

Evaluation:

Nature of pain:

- Onset
- Character
- Potential radiation
- Activities that exacerbate or ease the pain
- Associated nausea, vomiting or gross hematuria

24 hour urine to test for:

- Calcium
- Oxalate
- Sodium
- pH
- Uric acid
- Citrate
- Volume

Stone formers, especially patients who have calcium oxalate stones, excrete more and larger calcium oxalate crystals. Take a fresh urine sample-centrifuge and examine immediately. Cystine and struvite crystals are always abnormal and require further investigations. Other crystals are frequently found in normal UAs.

Serum analysis:

- BUN
- Calcium
- Uric acid
- Creatinine
- Phosphorous

Risk Factors:

- Low urinary volume
- High urine sodium
- High urine phosphate
- High urinary calcium
- High uric acid
- Abnormally high or low pH
- Low urinary magnesium
- High urine sulfate
- Crystalluria
- High urinary oxalate
- Low urinary citrate

- Socioeconomic factors: Stones are more common in affluent, industrialized countries.
- Physicians and white-collar workers have an increased risk.
- Manual laborers have a decreased risk.
- Individuals exposed to high temperatures have an increased

risk.

- Hot climates increase the risk.
- African Americans have a decreased risk.
- Family history: Increases the risk by 2x.
- Spouses of patients with calcium oxalate stones have an increased

risk.

Patients with certain pathologies have an increased risk:

- Chronic diarrheal states
- Pathologic fractures
- UTIs
- Chronic malabsorptive states
- Osteoporosis
- Gout
- Nephrocalcinosis

Diet risk & protection:

- Vegetarians have a decreased risk for urinary stones.
- High sodium intake increases urinary sodium, calcium and pH and decreases excretion of citrate.

PE:

- Thorough abdominal exam
- Rectal exam
- Palpate bladder

Signs & symptoms:

- Renal colic
- Nausea
- Fever
- Cutaneous vasodilation
- Tachycardia
- CVA tenderness
- Hypotension
- Sweating
- Abdominal mass

Radiologic Investigations:

IVU (intravenous urogram) - gold standard for nephrolithiasis and upper tract anatomy

KUB and US - may be as effective as IVU

MRI - not recommended

Bladder Stones

Bladder stones indicate an underlying pathology including voiding dysfunction like BPH, urethral stricture or bladder neck contracture or implantation of a foreign body like a forgotten double J urethral catheter or Foley catheter. Bladder stones are predominately in men.

Types of Bladder Stones:

1. Ammonium urate
2. Uric acid:large percentage
3. Calcium oxalate

Signs and Symptoms:

- Irritative voiding symptoms
- UTIs
- Pelvic pain
- Ultra Sound of bladder will identify stone.
- Intermittent urinary stream
- Hematuria
- PE - unremarkable

General Stone Treatment:

- Increase liquids 2 hours before mealtime and during meals.

- Increase water intake in general if not in acute condition.
- Mucilaginous teas if not in acute condition.
- Use diuretics when not in acute condition.
- Increase calcium/magnesium rich mineral water.
- Vegan diet
- Increase dietary fiber, complex carbs and green leafy vegetables.
- Decrease meat consumption.
- Decrease high phosphate foods (soft drinks).
- Maintain weight control.
- Limit dairy products.
- Reduce sodium intake.
- Vitamin B6: 10-50 mg/d
- Magnesium: 300-500 mg/d
- Vitamin A: 15,000 I.U./d
- Hot baths/showers/hot fomentations as an antispasmodic

Herbal Formulas for Kidney Stones

Kidney Stones – Acute Formula

<i>Ammi visnaga</i> (khella)	20-35%
<i>Dioscorea villosa</i> (wild yam)	20-35%
<i>Piper methysticum</i> (kava kava)	20-35%
<i>Valerian officinalis</i> (valerian)	20-35%
<i>Aesculus hippocastanum</i> (horse chestnut)	3-7%
<i>Lobelia inflata</i> (lobelia)	3-7%

Actions: Antispasmodic allowing passage of kidney stones through the ureter.

Indications: For treatment of acute urinary tract calculi or kidney stones.

Herb Profiles:

Ammi visnaga (khella) is a strong antispasmodic acting on the ureters to allow passage of kidney stones.

Dioscorea villosa (wild yam) is an antispasmodic. It is an autonomic nerve relaxant useful in painful conditions due to irritation and spasm, neuralgic conditions and restlessness. It relieves the cramping pain of smooth muscles while supporting the liver and the nervous system.

Piper methysticum (kava kava) is an antispasmodic, sedative as well as an anodyne. It is soothing to the entire nervous system and is used to relieve anxiety and stress.

Valerian officinalis (valerian) is a relaxing nervine, antispasmodic, used for restlessness, emotional stress, pain, insomnia and anxiety. Research has shown constituents of valerian, such as valeric acid and valepotriates, appear to bind to the same brain receptors as Valium and other benzodiazepine drugs.

Aesculus hippocastanum (horsechestnut) is anti-exudative, anti-edematous and anti-inflammatory. *Aesculus* increases the inner diameter of the ureter by decreasing inflammation therefore allowing the stone a larger space to pass. Specific for pain in left kidney and ureter.

Lobelia inflata (lobelia) is a strong antispasmodic and relaxes ureter spasms.

Liquid extract dosage:

Acute: 40-60 drops, 3-4 times per day. Can be taken every 2 hours if necessary, up to a 48 - 96 hour period. Do not use at the higher dosage for more than 4 days.

Kidney Stones – Preventative Formula

<i>Eupatorium purpureum</i> (gravel root)	20-35%
<i>Hydrangea arborescens</i> (hydrangea)	20-35%
<i>Zea mays</i> (cornsilk)	15-25%
<i>Urtica dioica</i> (nettles)	15-25%
<i>Solidago canadensis</i> (goldenrod)	15-25%

Actions: Diuretic and kidney stone preventative.

Indications: Used in persons with a tendency to form kidney stones.

Herb Profiles:

Eupatorium purpureum (gravel root) is a diuretic which increases excretion of solids and prevents precipitation of urates. Indicated for atonic conditions with painful urination. It is used for chronic kidney and bladder conditions with blood in the urine, inability to urinate, chronic infections, general pelvic weakness, especially for kidney stones and for gout.

Hydrangea arborescens (hydrangea) is a diuretic with the ability to remove kidney stones and prevent their recurrence. It is specific for deposits of white amorphous salts in the urine.

Zea mays (cornsilk) is a soothing diuretic and antiseptic. It supports normal kidney anatomy and physiology and is suitable for children. Used for inflammatory states of the kidneys and bladder, enuresis and BPH. It is healing to the urinary tract and helps restore normal tissue tone and function. Glycoproteins in corn silk produce interferon, inhibit IgE formation and enhance IgG and IgM formation. They also have antiviral and antitumor activities.

Urtica dioica (nettles) is an alterative, an alkalizing diuretic, urinary tract tonic and is rich in minerals such as potassium, calcium and silicic acid. It is a wonderful herb to support normal urinary tract function. (Use only correctly harvested *Urtica*.)

Solidago canadensis (goldenrod) is an astringent, a diuretic, antiseptic, anti-inflammatory and analgesic. It is used for acute and chronic nephritis with albuminuria and hematuria as well as for subacute and chronic cases of kidney stones.

Liquid extract dosage:

Chronic: 30-60 drops, 3-4 times per day.

Contraindications, Cautions and Words of Wisdom: If there is fever or pain indicating a kidney infection, or if you can not urinate, seek advice from a qualified health care practitioner.

Other Treatment Considerations for Urinary Stones

Calcium Stones:

- Tea: A simple tea of dandelion leaf can be used as a diuretic with a lot of water to increase pressure to move the stone. 3-4

heaping tablespoons of dandelion leaf to 1.5-2 quarts of water. Drink in a 15-minute period. Repeat daily until the stone is passed. Collect the urine in container when urinating so you will not miss the stone. Do not use diuretics when in an acute colic phase. Flush the system with diuretics periodically to keep the system free from stones.

Hyperoxaluria Stones:

Low oxalic acid diet by decreasing ingestion of oxalate foods, e.g. rhubarb, spinach, cocoa, nuts, pepper, etc.

Flush the system with diuretics periodically to keep the system free from stones.

Hyperuricosuria Stones:

1300 mg. sodium bicarbonate TID or sodium or potassium citrate.

Botanical Considerations: *Eupatorium purpureum*, *Zea mays*, *Urtica dioica*.

Juice from 6-7 fresh lemons per day will reduce the size of urate calculi and may dissolve them completely.

Lithium carbonate: 300 mg BID (supplement with sunflower oil or flaxseed oil and vitamin E to reduce the risk of lithium toxicity).

Conventional Treatments:

Lithotripsy: high-pressure shock waves pass through the body. When the waves contact a stone, it is stressed, fractured and eventually disintegrates. This is less stressful to the surrounding tissue than surgery but produces massive bruising in the area being treated. Once the stones are reduced they are eliminated through the urine.

Medications:

- Triamterene
- Carbonic anhydrase inhibitors
- Antacids containing silica