

Nursing Rehab Competency: Elimination

Presented by:

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Bloorview Kids Rehab

Learning Objectives

- Basic review of anatomy and physiology of the bladder and bowel.
- To recognize and assess bladder and bowel function considering
 - a) Pre-existing and current status (i.e. neurological impairment)
 - b) Physical indicators (i.e. mobility)
 - c) Psychological indicators

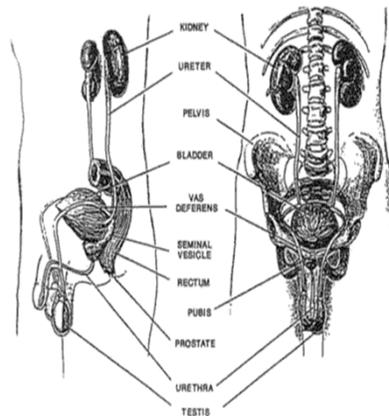
Learning Objectives

- Examine rehabilitation interventions to maintain and improve bladder and bowel function and promote continence.

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Basic Anatomy of the Urinary System

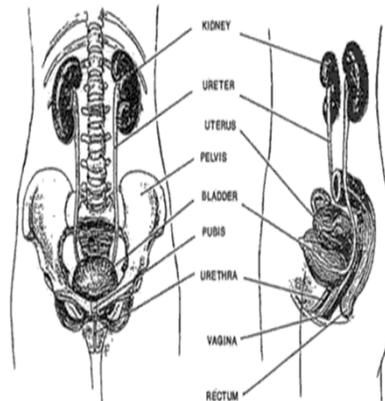
- Basic structures of the male urinary system.



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Basic Anatomy of the Urinary System

- Basic structure of the female urinary system.



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The Urinary Tract

- Can be divided into two sections.
- The upper tract consisting of the Kidneys, renal pelvis, and the ureter.
- The lower tract consists of the Bladder and the urethra, and internal and external sphincters.

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Common Anatomy Terms

- Kidneys~Filter water soluble waste, and excess water from the blood stream to produce urine.
- Ureters~ The tubes which transport urine to the bladder from the kidneys.
- Bladder~Muscular sack that stores urine.
- Urethra~Tube that closes to hold urine in bladder, and carries urine out of the body.

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Common Terms!

Reflexic is the same as Spastic.

Spastic can also be called Upper Motor Neuron (UMN)

Areflexic is the same as Flaccid

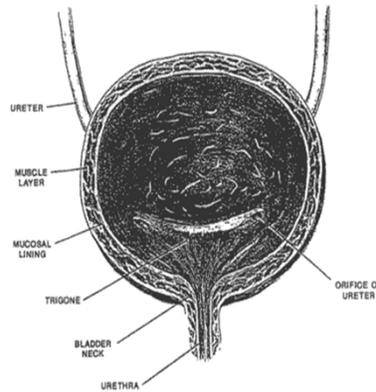
Flaccid can also be called Lower Motor Neuron (LMN)

In this presentation I will be using the terms Spastic and Flaccid, as a reminder you will also see UMN and LMN

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Anatomy of the Bladder

- The urinary bladder is a temporary storage reservoir for urine.
- The important muscles to remember are called the detrusor, it is the contraction of these muscles that expels urine.



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Proper Hydration!

Child 1- 8 years : 1.3 – 1.7L (6 Cups)

Boys 9 – 18 years: 2.4 – 3.3L (10-13 Cups)

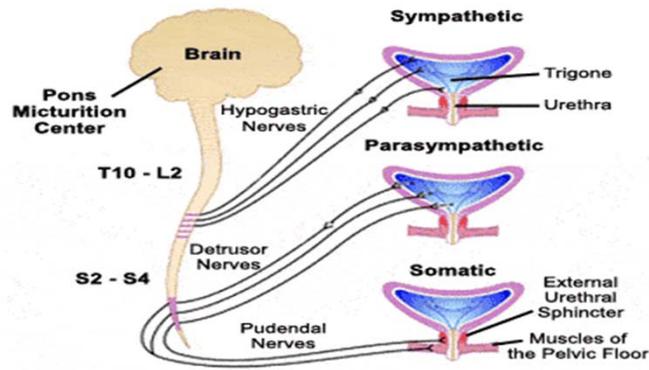
Girls 9 – 18 years: 2.1 – 2.3L (8 – 9 Cups)

Adult Male: 3.7L (15 Cups)

Adult Female: 2.7L (11 Cups)

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Bladder Control!



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Micturition Reflex

- This is a two stage process that is used as a protective mechanism for the kidney's.
- Stage One ~ Filling or Storage
- Stage Two ~ Emptying
- The ability to control the micturition reflex is something that we learn as we mature

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Control of the Micturition Reflex

- Our bodies are dependant on two systems being intact for us to control our Micturition reflex.
- Receptors and Chemicals must be balanced to have the muscles operate correctly.
- Neuro/Sensory Pathway must be intact between the brain, spinal cord and bladder.

Micturition Reflex

- The receptors in the bladder communicate with the receptors in the brain, via the spinal cord to control the reflex.
Neuroreceptors
 - a) **Alpha** (in the bladder neck, stimulated in the filling stage and blocked in the emptying stage.
 - b) **Beta** (in the bladder, stimulated during the filling phase and blocked during the emptying stage.
 - c) **Cholergenic** (throughout the bladder, stimulated during emptying phase to strengthen contraction)

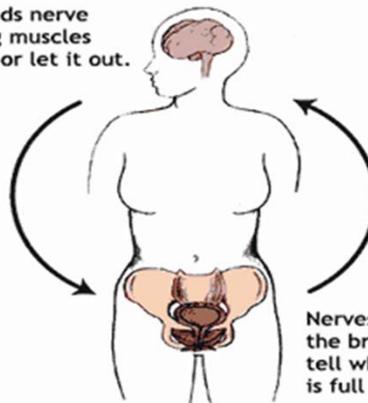
Neurogenic Bladder

- The muscles and the nerves of the urinary system work together to retain urine in the bladder, and release it at the right time.
- When the nerves that carry these messages don't work properly, we have a neurogenic bladder.

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Micturation Communications

The brain sends nerve signals telling muscles to hold urine or let it out.



Nerves send signals to the brain. The signals tell when the bladder is full or empty.

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Not just a Spinal Cord Injury Concern!

- Causes of a neurogenic bladder include:
 - ~ Acute infections.
 - ~ Heavy metal poisoning.
 - ~ Diabetes
 - ~ Spinal Cord Injury.
 - ~ Brain Injury.

Neurogenic Bladder

- Normal voiding reflex is disrupted.
 - ~ Bladder and reflex voiding centre (S2-S4) LMN
 - ~ Reflex voiding centre & brain (above T12-L1) UMN
- Sensory and motor control may be affected with injury at or below T12-L1.
- Altered communication between bladder and sphincter contraction and relaxation.
- Spastic or Flaccid Bladder

Classification of Neurogenic Bladder

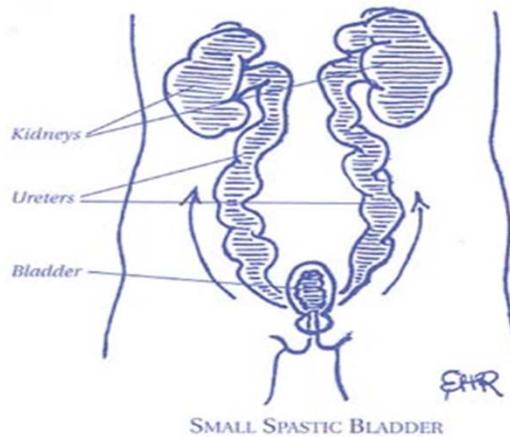
- **Upper Motor Neuron (UMN)**
 - a) Spastic (spinal cord injury above T12-L1)
 - b) Uninhibited (lesion in frontal or Pon Mic Centre)

- **Lower Motor Neuron (LMN)**
 - a) Flaccid (spinal cord lesion at/below T12- L1)
 - b) Motor paralytic (Interior horn cells of S2-S4)
 - c) Sensory paralytic (dorsal roots of S2-S4)

Spastic Bladder (UMN)

- Injury occurs T12/L1 (Transverse Myelitis, Tumors, or MS)
- Control lost from higher brain centres (voluntary control is impaired or lost, this results in uninhibited involuntary detrusor contractions of the bladder.
- Result = uncontrolled voiding

Small Spastic Bladder



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Management of a Spastic Bladder.

- Intermittent catheterization (q4-6h)
- Condom Catheter
- Indwelling catheter
- Voiding diary
- Crede/Valsalva technique if no reflex
- Medication ~ anticholinergics

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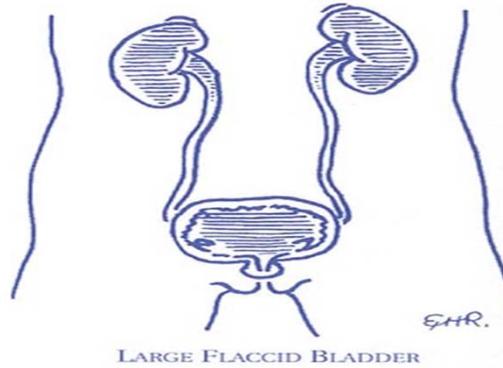
Flaccid Bladder LMN

- Sensory (afferent) from the bladder
 - ~ Decreased/absent sense of bladder fullness
 - ~ Increase bladder capacity (Incontinence)
- Motor (efferent) from the brain
 - ~ Partial/Complete loss of motor bladder
 - ~ Increase bladder capacity (Incontinence)
 - ~ Difficulty in starting stream

Management of Flaccid Bladder

- Flaccid and Motor Paralytic
 - ~ Intermittent Catheters
 - ~ Crede/Valsalva techniques
 - ~ Medication (Bethanecol)
- Sensory Paralytic
 - ~ Timed voiding
 - ~ Intermittent Catheters

Large Flaccid Bladder



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Stress Incontinence

- Is a storage problem in which the strength of the urethra sphincter is diminished.
- The sphincter is not capable to stop the flow of urine.
- Occurs at the same time that any internal pressure is put on the bladder wall, such as laughing, sneezing, or physical activity.

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Psychological indicators in nursing interventions.

- Motivation to learn and perform tasks
- Self Concept (assessing and monitoring)
- Ability to learn
- Cognitive function
- Judgment, orientation, memory

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Educating Patients

- Proper use of Kegel exercises
- Catheterizations
- Condom Catheters
- Crede Techniques
- Voiding Routines/Timed voiding
- Perineal Hygiene

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Kegel Exercises

- At first were used to strengthen the pelvic floor muscles of childbearing women.
- Now common for bladder control.
- Kegels work by strengthening the pelvic floor muscles and help by preventing the bladder from pushing down on the urethra.
- Both men and women can perform the these exercises.

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Muscle Location for kegel's

- The approach to teaching kegel exercises is to have the patient attempt to stop the flow of urine.
- This should be repeated several times so they can get use to the feel of the muscles that are required.
- Do *not* contract the abdominal, thigh, or buttocks muscles.

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Crede Technique

- Used in Flaccid Bladders
- The patient manually pushes down on the bladder to expel urine
- This motion will in effect squeeze the urine out of the bladder
- Use with caution if client has potential to have kidney reflux

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Timed Voiding

- Is a simple concept
- When we start a client on a timed voiding schedule we are having the client empty the bladder on a regular basis
- This means even if the client doesn't feel the urge to urinate, we ask them to attempt
- Difficulty in using the timed voiding method is in having the client remember to go every two hours
- Take into consideration the client's schedule

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Catheterizations

- Urinary catheters are used to drain the urine from the bladder, and prevent any reflux.
- Indwelling v.s. Intermittent catheterizations.
- Considerations for indwelling catheters
 - a) Drainage bag must be kept lower than the bladder, to prevent back flow.
 - b) If the catheter is clogged, painful or infected, it may require changing immediately.
 - c) Check for any latex allergies.

Intermittent Catheterizations

- Ensure that proper handwashing has taken place
- Ensure proper hygiene of penis or vagina
- Ensure proper size of catheter
- Insert the catheter slowly, do *not* force
- If you feel any resistance notify the MD
- When urine has stopped remove the catheter slowly
- Ensure that documentation is done on the success of the routine

Nursing considerations

- Ensure proper handwashing is being done.
- Ensure proper technique is being used.
- Ensure proper hygiene is being performed.
- Educate client/family on proper technique
- Monitor for UTI's.
- Discuss any concerns with physician.
- Document whether the current regime is working and evaluate success.

Urinary Tract Infections

- Is simply an infection in the urinary tract includes any parts between the kidney's and the external environment.
- Can occur at any site.
- An upper tract infection is defined as any infection above the bladder.
- A lower tract infection is any infection at or below the bladder.
- More common in women.

Risk Factors for UTI

- Kidney stones.
- Prostate inflammation & enlargement.
- Immobility.
- Lack of fluids.
- Bowel Incontinence.
- Catheterization.

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Signs and Symptoms of a UTI

- Painful or burning with urination.
- Frequent need to urinate.
- Cloudy urine
- Foul smelling urine
- Blood in the urine.
- Flank pain.

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Treatment of UTI's

- Urine sent to a lab for a culture and sensitivity test.
- Encourage client to drink lots of fluid.
- Common antibiotics used
 - ~ Cephalosporin's, Amoxicillin.
 - ~ Sulfa Drugs
 - ~ Nitrofurantoin.

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Autonomic Dysreflexia (AD)

- Also called Autonomic Hyperreflexia
- Only occurs in clients with injury at T-6 and above.
- Characterized by strong muscle spasms which are precipitated by cutaneous or visceral stimuli.

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Common Signs and Symptoms of AD

- Hypertension
- Bradycardia
- Pounding Headaches
- Blurred Vision
- Chills without fever
- Sweating above the level of injury
- Skin flushing above the level of injury
- Apprehension or anxiety

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Causes of AD

- Distended bladder
- Plugged catheter or missed catheter.
- Constipation.
- Fecal impaction.
- Pressure on the glands, penis.
- Stimuli from skin, ingrown toenail, small objects left in the bed, pressure ulcer.

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Problem Solving for AD

- Sit the client up and take a blood pressure reading
- Check the bladder for any distention, if an indwelling catheter is in place inspect for any blocks or kinks
- Check the bowel for any impaction
- Check the skin, relieve any pressure of tight clothes, diapers or adult incontinence briefs, or pressure ulcers
- Inspect bed/wheelchair for any objects that could be applying pressure
- In males ensure that genitals are not pinched
- In females check about the menstrual cycle

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Management of AD

- First goal should be in eliminating factors that might cause AD.
- Two goals if AD occurs,
 - a) Remove stimuli.
 - b) Lower blood pressure.

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Urology Testing

- Urodynamics: is a group of tests that are used to evaluate voiding disorders. Is a Pressure test of the bladder when water or air is instilled into the bladder. Shows how the bladder fills, holds and empties the urine. It also measures the sphincters tone.
- VCUG: Is an x-ray that is taken after a special dye is instilled into the bladder, and is used to check for reflux, it will also show the size and shape of the kidney.
- Renal Ultrasound: Shows the size and shape of the kidney

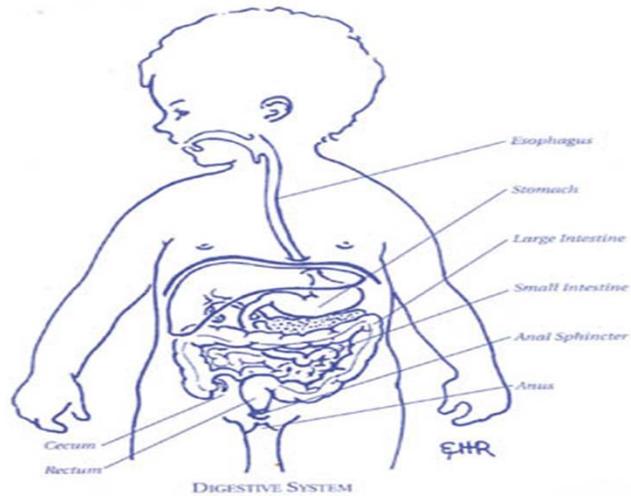
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Working Together

- How the Bowel and Bladder work together!
- When dealing with an incontinence issue investigate the bowel!

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Anatomy of the Digestive Tract



Gastrocolic Reflex

- The gastrocolic reflex is a partly neurogenic process in which there is an increase in colonic motility, which is triggered when food is passed from the stomach to the small intestine.
- The gastrocolic reflex causes periodic contractions of the colon, which regulate the flow of food.

Determining a Bowel Routine

- Obtain a bowel care history
- Consider the level the injury
- Assess current bowel care
- Consider medications
- Client's ability to perform the tasks
- Use of any bowel techniques
- Client's readiness to learn.

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Developing an Effective Bowel Routine.

- Ensure that this is a collaboration with the team and client/family.
- High Fibre/ Bulk
- Fluids (specifically water)
- Timing/Consistency
- Avoiding irritants that may cause diarrhea
- Promoting physical activity
- Gravity
- Use of medications

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Negative Effects on Bowel Function

- Lack of Fibre
- Low Fluid intake
- Inconsistent with bowel routine
- Lack of motivation
- Narcotics

Neurogenic Bowel

- The term neurogenic bowel relates to colon dysfunction due to a lack of nerve control.
- Neurogenic bowel is classified in two groups.
 - ~ UMN = Spastic
 - ~ LMN = Flaccid

Spastic bowel (UMN)

- Defecation can't be triggered by conscious effort.
- Reflex pathways usually continue to function below the lesion and can be utilized to stimulate defecation.
- Goal of bowel care for UMN ~ keep the stool soft yet formed, and evacuate bowel frequently.

Flaccid Bowel (LMN)

- Spinal Cord mediated reflex defecation does not occur, d/t damage at or below T-12.
- Results from partial or complete destruction of the sacral reflex arc at S2-4.
- Client LMN Bowel may not respond to usual nursing intervention such as digital stimulation.
- The goal in LMN function is to keep the stool well formed, and the rectal vault clear.

Spastic VS Flaccid Bowel

Spastic Bowel

- ~ Sit upright on commode if possible
- ~ Can use digital stimulation
- ~ Frequency: Daily until a schedule is established without any accidents, then as per routine.
- ~ Timing: 30 to 60 minutes after eating.

• Flaccid Bowel

- ~ Sit up right on commode if possible
- ~ Do NOT use digital stimulation
- ~ Frequency: Will require daily.
- ~ Timing: 30 to 60 minutes after eating.

Things to keep in mind!

- Bowel routines may require two methods, mechanical and chemical.
- Diet plays a large part in a good routine.
- Use a commode if possible, and if using a bedpan monitor for skin breakdown.

Fecal Impaction

- A fecal impaction is a large mass of dry, hard stool that can develop in the rectum due to chronic constipation.
- The mass can be so hard that it can't come out of the body.
- Watery stool from above the blockage may move around the mass and leak out.
- Treatment: Disimpaction

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Bowel Medications

- Stimulants (senokot, dulcolax)
- Suppositories (glycerin)
- Stool softeners (colace, mineral oil)
- Laxatives (milk of magnesia)

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Proper Hygiene

- Back to basics
- The perineal area is between the anus and the urinary opening.
- Important when caring for women to clean from front to back.
- Important when caring for men to retract the foreskin and clean under the scrotum.

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Psychological Effects of Incontinence

- Embarrassment.
- Depression.
- Social Isolation.
- Skin Problems.
- Financial cost.
- Caregiver stress.

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Conclusion

- Privacy
- Dignity
- Sensitivity
- Goal of bladder and bowel care should be to provide as much independence as possible.

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Thank You

- Good Luck with the rest of your studying and best wishes on the Exam in April.
- Contact Information
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References

- Body Basics: Basic Urodynamics, Retrieved January 18, 2007 from www.life-tech.com/uro/urolib/terms.html
- Bowel Management Retrieved January 30, 2007 from www.spinalinjuries.ie/spinal/Main/Bowel%20Management.htm
- The Evacuator Retrieved January 30, 2007 from www.theevacuator.com/bowel%20Therapy/bowel%20therapy.html
- SCI Neurogenic Bowel Care Nursing Guidelines Retrieved January 24, 2007 from www.aascin.org/pages.php?catid=pageid=46
- Treatments for Urinary Incontinence Retrieved January 24, 2007 from www.procure.ca/english/info/25sideeffects/2516inconttreatments.html
- Urology: Neurogenic Bladder, Retrieved January 15, 2007 from www.healthsystems.virginia.edu/uvahealth/adult_urology/neurblad.cfm
- Why is water so important? Retrieved January 22, 2007 from www.canadian-health-network.ca/serlet/contentServer?cid=1078693421239

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References

- Bladder Control Exercises, Biofeedback: Retrieved January 19, 2007 from www.bladderdisorders.info/treatment/bladder-control-exercises.php
- Bowel Function Dietary Fiber, Retrieved January 16, 2007 from www.slrhc.org/healthinfo/dietaryfiber/index.html
- Flaccid Bladder Overview, Retrieved January 18, 2007 from www.bladderdisorders.info/types/atonic-bladder.pho
- Canadian Paraplegic Association, (2002). Life after Spinal Cord Injury. Canadian Paraplegic Association.
- Urinary tract infection: Retrieved January 22, 2007 from www.virtualrenalcentre.com/diseases.asp?did=281
- Urinary Catheters Retrieved January 19, 2007, from www.nlm.nih.gov/medlineplus/ency/article/003981.htm
- Urinary tract infections health article Retrieved January 29, 2007. From www.healthline.com/adamcontent/urinary-tract-infection.

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References

- Hickey. J.V, The Clinical Practice of Neurological and Neurosurgical Nursing. 5th edition. Lippincott, 2003
- Stress Incontinence: Kegel Exercises, Retrieved January 31, 2007 from www.kegel-exercises.com/stress_incontinence.html
- Understanding Spina Bifida, Bloorview MacMillan Children's Centre (June 1998, produced by the Spina Bifida Team)