

What are the SUPER foods and *villains* that affect the bladder?

What does the evidence  
tell us?

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# disclosure

- Worked on the Pre-conference planning committee
  - I find Continence information FASCINATING!

# Objective

To review the recent literature on diet, fluids, and supplements that affect the Urinary System so you may make educated decisions on behalf of your patients.

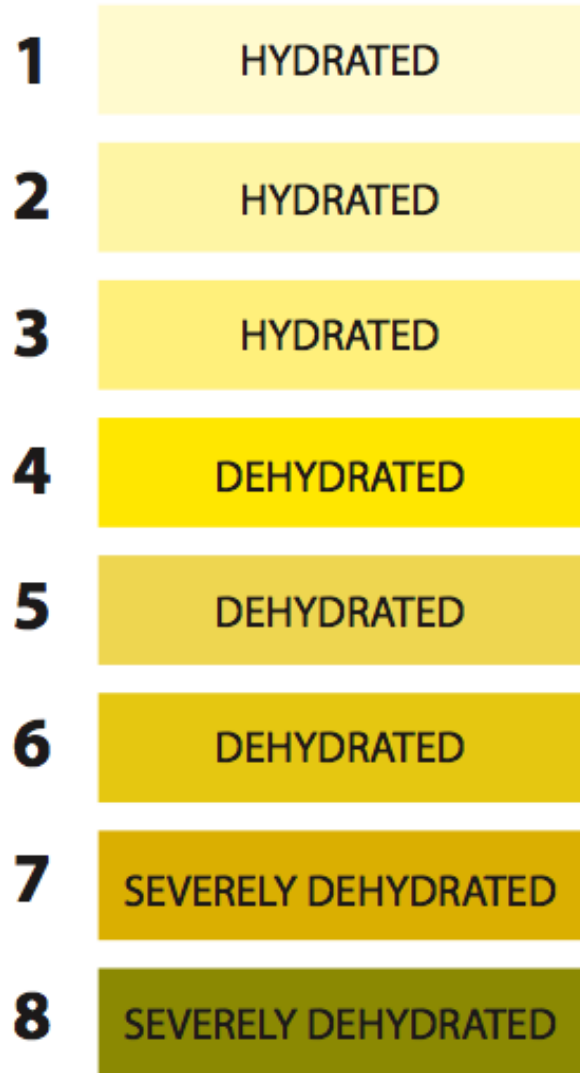
# water intake

## Literature- lack of high quality evidence

- Total Water intake recommended –
  - 91 oz. for women, 125 oz. for men
- Concentrated urine more irritating to bladder
- Overhydration contributes to rapid bladder filling and frequency symptoms, sometimes urgency



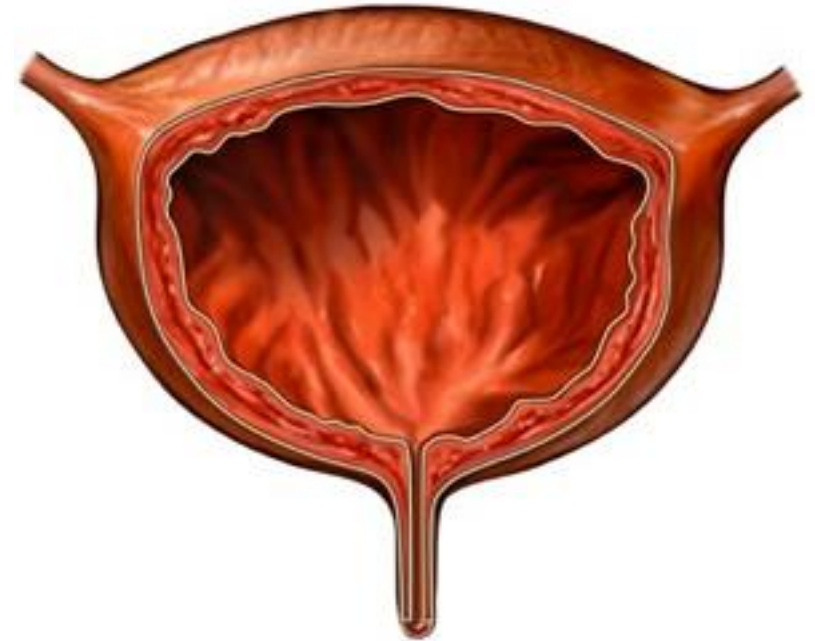
# Urinary incontinence and hydration



- Dehydration as a measure of urine osmolality was not associated with Urinary incontinence in men or women
- Overhydration caused more frequency and urgency and potential for urinary incontinence

fluid intake on the *severity* of Over active bladder symptoms

- Reducing fluid intake is
  - beneficial in lessening Overactive Bladder (OAB) symptoms of urge UI, urgency, and frequency.



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# Drink selection

- The effects of alcohol, caffeine, carbonated drinks, and artificial sweeteners are not well understood
- Evidence from epidemiological studies is mixed and sometimes contradictory



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# Over active bladder

## Tea - coffee - soft drinks

First-line treatment for OAB is behavioral and dietary modifications.

- No consistent association between these drinks and Overactive bladder (OAB) symptoms (Jura, et al)
- High caffeine intake, over 450 mg/day- correlates more often with urge incont. (Jura,et al)
- Diet soft drinks showed some relationship of increased symptoms (Ernst, et al)
- Increased fluid and caffeine intake increases urinary frequency/urgency. (Bradley, et al)

Jura, Townsend, Curhan, Resnick, Grodstien, Jour of Urology, 2011, Nurses Health Study,

[Bradley, Erickson, Messersmith, Pelletier-Cameron, Lai, Kreder, Yang, Merion, Bavendam, Kirkali, Ziya](#); The Journal of Urology, 2017, Vol.198(5);

Ernst, Michael , Gonka, Jacquelyn , Povcher, Olga , Kim, Jason, Current Bladder Dysfunction Reports, 2015, Vol.10(1)



# Coffee, Tea, Alcohol, Carbonated, and Artificially Sweetened Beverages

- Education to reduce potentially irritating beverages resulted in improvement in Lower urinary tract symptoms (LUTS)
  - reported reduction in ***symptoms*** of urgency & inability to delay voiding



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# The Effect of Caffeinated Versus Decaffeinated Drinks on Overactive Bladder

## Caffeine Content of Beverages



- Reduction of urinary urgency and frequency symptoms with the elimination of caffeine from drinks.

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[Wells, Jamieson, Markham, Green, Fader](#), Journal of Wound, Ostomy and Continence Nursing, 2014, Vol.41(4)

[Bradley, Erickson, Messersmith, Pelletier-Cameron, Kreder, Yang, Merion](#), Bavendam, Kirkali; The Journal of Urology, 2017, Vol.198(5)

# Diet/lifestyle and OAB in Men



- Physical activity, smoking and obesity were not significantly associated with OAB symptoms
- None of the food groups studied were associated with OAB onset

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# intake of Vitamins and Minerals in Relation to Urinary Incontinence, Voiding, and Storage Symptoms in Women

- **High dose vitamin C - increased frequency and urgency**
- **High dose calcium - increased frequency and urgency**
- **$\beta$ -carotene, lycopene, or other carotenoids – no association with symptoms**



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- Dietary Vitamin C intake from foods and beverages was inversely associated with:
  - progression of daytime urinary storage symptoms in men
  - urgency symptoms in women

Vitamin C  
Citrus fruits, green peppers, strawberries, tomatoes, broccoli and sweet and white potatoes are all excellent food sources of vitamin C (ascorbic acid)



- Supplemental Vitamin C use above recommended daily intake levels was associated with
  - greater daytime urinary storage symptoms in women

# Vitamin D

- Vitamin D had a positive affect on Lower Urinary Tract Symptoms in Post-menopausal women
  - Reduced severity of UI in high dose group
  - Less OAB symptoms
  - Vit. D deficiency had more LUTS

## Hypothesized Vit D effect:

- Pelvic floor strength
- Detrusor muscle activity



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# Cranberry and Urinary Tract Infections

- There is no evidence that cranberry can be used to TREAT UTIs
- Cranberry has been effective in vitro and in vivo studies for the prevention of UTI
  - Cranberry appears to work by inhibiting the adhesion of type I and P-fimbriated uropathogens (e.g. uropathogenic E. coli) to the uroepithelium, thus impairing colonization
  - Problems still exist with standardization of cranberry products, which makes it extremely difficult to compare products or extrapolate results
  - Adverse events include gastrointestinal intolerance, weight gain (due to the excessive calorie load) and drug-cranberry interactions (due to the inhibitory effect of flavonoids on cytochrome P450-mediated drug metabolism).
- The findings of the Cochrane Collaboration support the potential use of cranberry products in the prophylaxis of recurrent UTIs in young and middle-aged women

# the effectiveness of dried cranberries (*Vaccinium macrocarpon*)

- In men with lower urinary tract symptoms:
  - at risk of prostate disease with LUTS, elevated prostate-specific antigen (PSA), negative prostate biopsy, and clinically confirmed chronic non-bacterial prostatitis
  - Cranberry intake of 1500 mg/d had improved Symptoms-
- International Prostate Symptom Score
- QoL score
- Urination parameters of rate of flow, avg flow, total volume and post void residual volume
- Lower PSA level



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[Vidlar, Vostalova, Ulrichova, Stejskal, Reichenbach, Vrbkova, Ruzicka](#), Simanek, British Journal of Nutrition, 2010, Vol.104(8)



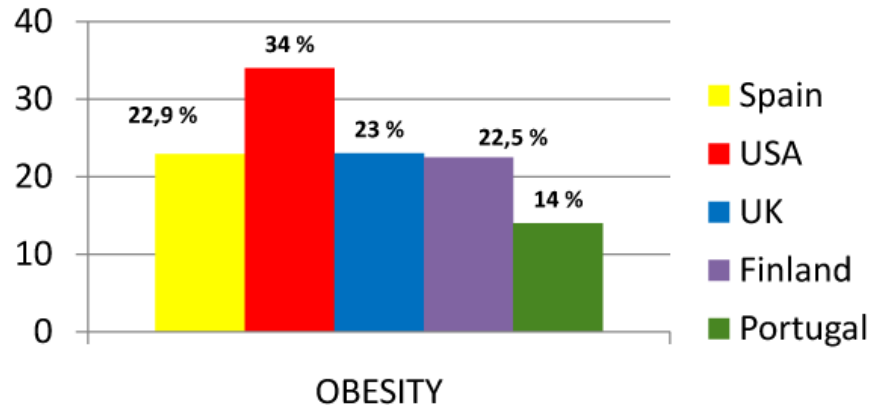
# D-mannose

- A simple sugar, C-2 epimer of glucose; some increase in blood glucose level and calories
- Competes with bacteria adhesion to bladder wall, mostly E.coli
- Limited research for treatment of UTIs and prevention of UTIs
- Foods: green beans, cabbage, broccoli, tomatoes, cranberries, apples, peaches, oranges and blueberries contain small amounts
- Widely sold, unregulated dietary supplement
- Typical dose for UTI treatment is 500 mg, capsule or powder in 8 oz fluid, 3 x day, for 5-13 days
- Typical dose for preventative after a UTI, 2 G/d for 6 mo. to prevent recurrence
- Side effects: loose stools and bloating
- Safety not determined during pregnancy, breast feeding or in children

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Porru, Parmigiani, Tinelli, et al., 2014; J Clin Urol, 7(3)  
Kranjcec, Papes, Altarac, 2014; World J Urol., 32(1)

# Dietary Macronutrient Intake



- Women with high total daily calorie intake and larger waist circumference (obesity)
  - were associated with moderate-to-severe Lower urinary tract symptoms

Maserejian, Giovannucci, Mcvary, Mckinlay, European Urology, 2011, Vol.59(6)

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# Interstitial cystitis

## Dietary Manipulation: Improved symptoms in female patients with interstitial cystitis

\*elimination or reduction in the following items

- Tomatoes and tomato products
  - Soybean and tofu products
  - Spices
- Excessive Potassium supplements
  - Citrus and high acidity foods



# bladder cancer increase risks

- The most common environmental risk for bladder cancer is active smoking
- Long-term ingestion of elevated nitrate in drinking water
- Processed meats
- Salted and barbecued meat, pork, total fat, pickled vegetables, salt, soy products
- Artificial sweeteners



# bladder cancer lower risk

- Mediterranean diet
- Diet rich in fresh fruit, yellow vegetables and carotenoids
- Total fluid intake of alcohol, coffee and tea, seem to have no influence on risk
- Total dairy intake was not significantly associated with risk
- Higher intakes of vitamins A, C, and E; the carotenoids  $\alpha$ -carotene,  $\beta$ -carotene, and  $\beta$ -cryptoxanthin; and folate
- Higher vit d serum levels
- Folate intake



# Bladder cancer

- Crawford, Laboratory Investigation, 2008, Vol.88(7)
- Brinkman, Zeegers, Scandinavian Journal of Urology and Nephrology, 2008, Vol.42, sup.218
- Burin, Gibb, Hill, Food and Chemical Toxicology, 1995, Vol.33(9)
- Jones, Weyer, Dellavalle, Inoue-Choi, Anderson, Cantor, Krasner, Robien, Freeman, Silverman, Ward, Jones, Environmental health perspectives, 2016, Vol.124(11)
- Vecchia , Negri, Cancer Causes & Control, 1996, Vol.7(1)
- Fankhauser, Mostafid, Current Opinion in Urology, 2018, Vol.28(1)
- [Bjerregaard, Bine Kjølner](#) et al.; International Journal of Cancer, 2006, Vol.119(10)
- [Zhao, Yue](#) , [Chen, Changhao](#) , [Pan, Wenwei](#) , [Gao, Ming](#) , [He, Wang](#) , [Mao, Ren](#) , Lin, Tianxin , [Huang, Jian](#), Nutrition, 2016, Vol.32(5)
- Larsson, Andersson, [Johansson](#) , [Wolk](#), Larsson, The American Journal of Clinical Nutrition, 2008, Vol.88(4)
- Park, Ollberding, Woolcott, Wilkens, Henderson, Kolonel; The Journal of Nutrition, 2013, Vol. 143 (8)
- He, [Shui](#), International Journal of Food Sciences and Nutrition, 2014, Vol.65(3)
- Crippa, Larsson, Discacciati, Wolk, Orsini, European Journal of Nutrition, 2018, Vol.57(2)
- Andreatta, Muñoz, Lantieri, Eynard, Navarro, Preventive Medicine, 2008, Vol.47(1)
- [Bravi, Speil, Polesel, Di Maso, Montella, Ferraroni, Serraino, Libra, Negri, La Vecchia, Turati](#); Nutrients 2018, 10(8)



*Thank you*



# Dietary Recommendations associated with Resolution of Enuresis in children

- A specific dietary plan
  - Reduced evening fluid intake & avoidance of spicy foods
  - Is recommended for the management of nocturnal enuresis in children age 5-14 yr



# Diet Strategies Used by Women to Manage Fecal Incontinence

**Diet strategies** : Lack of therapeutic guidance regarding diet modifications for fecal incontinence.

- Restricting diet and eating patterns
- Eating and dealing with the consequences
- Treating fecal incontinence with foods and fluids

# Diet Strategies Used by Women to Manage Fecal Incontinence

- Keeping a diary of food intake and bowel actions helped guide symptom management
- Stool consistency improved with soluble fiber supplementation and dietary intake
- Caffeine exacerbated urgency and fecal incontinence

**TABLE 1.****Diet Strategies Identified by Women for Managing Fecal Incontinence**

Interviewee	Diet Restrictions			Diet and Fluid Remedies for Treating Fecal Incontinence
	Specific Foods That Exacerbated Fecal Incontinence	Food(s) Causing Flatus	Meal or Portion Size and Eating Place	
1	Fat, chocolate, rich foods, spicy foods		Ate small (dry) sandwich or light lunch when away from home	Increased water intake Consumed dietary fiber supplement
2	Popcorn, peanuts, lettuce			Increased water intake
3	Caffeine, seeds, peelings, radishes, cucumbers, oranges, grapefruit		Ate small meals, always only one helping	Eliminated starches Ate fiber-containing foods, eg, shredded wheat
4	Caffeine, onions, dairy products, fats	Pea soup		Increased water intake to prevent constipation Ate fiber Ate yogurt
5		Onions, cabbage, brussel sprouts, cauliflower, apricots		Ate prunes to clean out bowel
6	Strawberries, watermelon, chocolate			
7	Caffeine, greasy foods, sausage, popcorn, peanuts			
8			Ate only at home	
9	Fried foods, onions, pizza, chocolate, dairy products	Onions, pizza, spicy foods, dairy products	Ate small meal or skipped a meal before going out	Took over-the-counter lactase enzymes
10	Cheese, dairy products		Ate very little in public	Ate yogurt Took over-the-counter lactase enzymes

**TABLE 1.****Foods Perceived to Worsen FI**

<b>Foods that Worsen FI</b>	<b>Subjects, %</b>
Overall	55.3
Acidic foods	1.1
Alcohol (beer, wine, red wines)	3.7
Beans/legumes	3.7
Caffeinated (coffee, colas, chocolate)	10.6
Carbohydrates (spaghetti, white breads, pancakes)	3.7
Dairy products (milk, cheese, chocolate milk, cream)	5.3
Ethnic (Chinese, Mexican, Italian, Ethiopian spices)	4.8
Fatty/greasy (fast food, pizza, bacon, gravy, fried foods)	11.2
Fiber (whole grains)	1.6
Fruits (orange juice, fruit juice, fresh fruit, raisins, prune juice)	11.2
Gas producing vegetables (broccoli, onions, cabbage, cauliflower, garlic, artichokes)	6.9
Any foods that produce gas	1.1
Nuts (peanuts)	1.1
Other (junk food, nondairy substitutes, monosodium gluconate, restaurant food)	3.7
Protein (shellfish, lutefisk fish, chili, beef, eggs)	4.3
Spicy foods (hot wings, chili)	11.2
Sugar/candy (pop)	5.9
Sugar substitutes/reduced calorie/diet foods (diet pop, sugar-free candy, aspartame sweetener, chips with fat substitute)	3.2
Vegetables (salad, lettuce, tomatoes, raw veggies, carrots, corn)	13.3

Abbreviation: FI, fecal incontinence.

Continence Nursing

Journal of Wound, Ostomy and

The end

