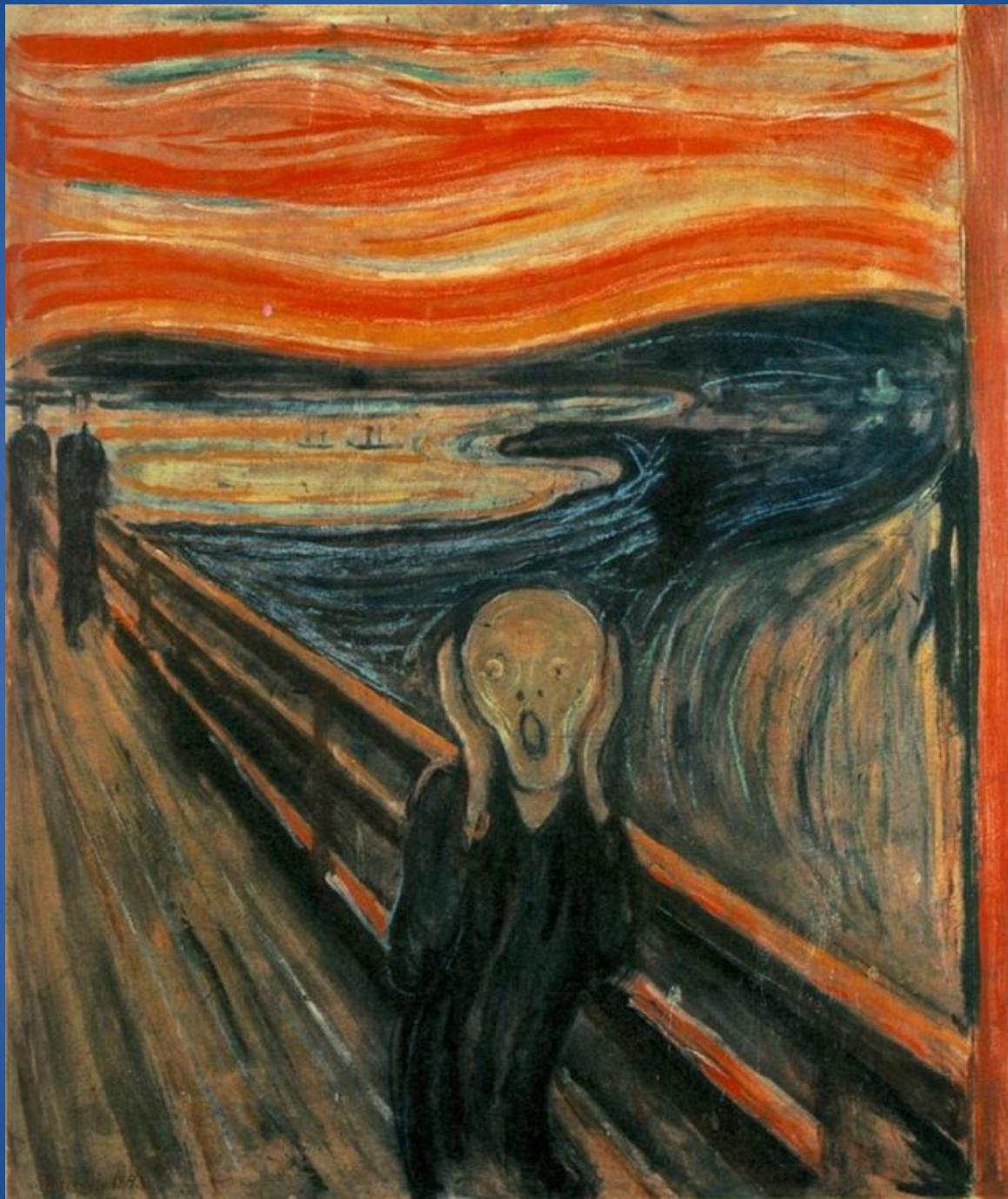


Recurrent Urinary Tract Infections in Women Fact or Fiction

Kristy M. Borawski, MD



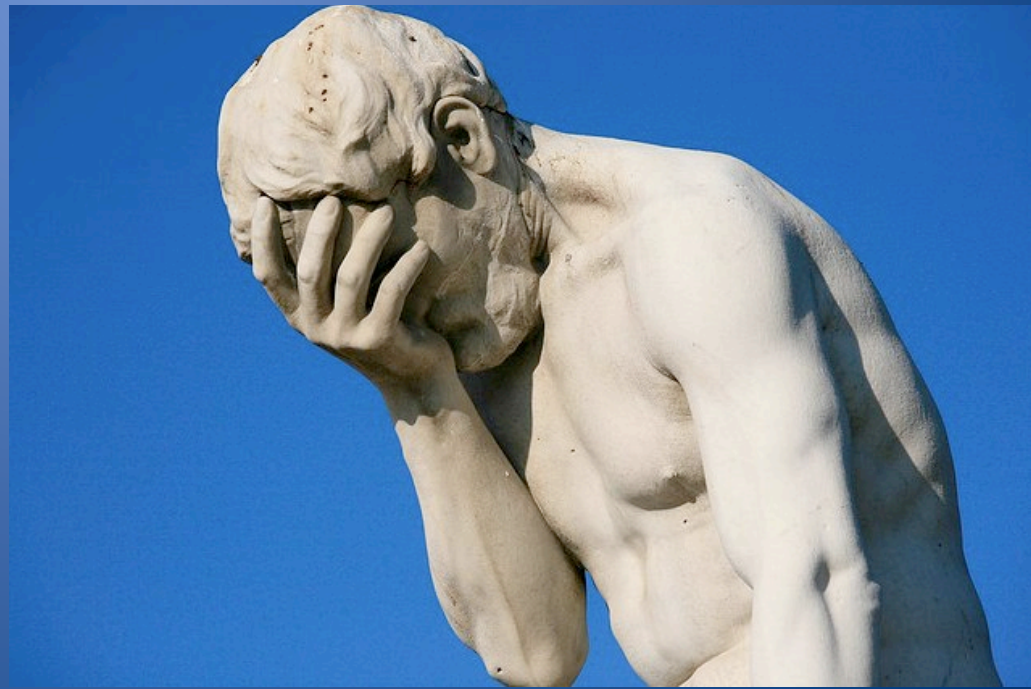
Disclosures / Disclaimers

- Nothing to disclose
- Non FDA regulated / approved treatment options for managing recurrent urinary tract infections (UTI)

- 50-70% of women will have a urinary tract infections (UTI) during their lifetime
 - 20-30% of these women will recur
 - Rate of 0.13 – 0.22 UTIs/month
 - 1.6 – 2.6 per year
- 7 million visits to health care providers
 - 1.2% of all office visits by women

- Uncomplicated, non catheter related, non hospital acquired infections
- 1995: \$1 billion in indirect costs
 - \$600 million indirect costs

Have we caused the problem??



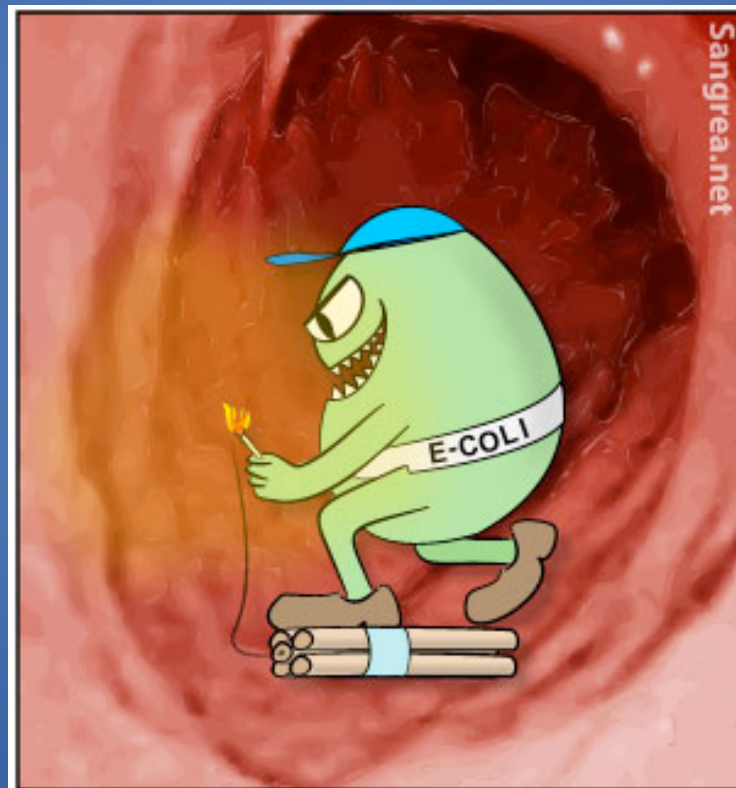
Have we caused the problem??

- 1800s: women with UTI were bedridden for many weeks while the physician attempted to “assist” mother nature
 - Bedrest, warm herbal compresses, opiate based enemas
 - Aggressive: mustard or ammonia-based plasters, oral alkali, bleeding
 - Late 1800s, William Osler’s treatment algorithm
 - Bedrest, cold compress to loins, dry cups to lumbar region and amylnitrate & quinine in large doses
 - Aggressive: acetates of lead and opium

Have we caused the problem??

- Felix Guyon (1831-1920) noted that many patients with cystitis did not experience recurrences after recovery
 - ? Autovaccination from absorption of toxins in a state of modified virulence
- Has early intervention with antimicrobials created the scenario of recurrent UTIs?
 - Results are mixed in limited studies

Defining the Problem



U.T.I. - URETHRAL TERRORIST INCIDENT

- *Uncomplicated UTIs*: sporadic, community-acquired episodes of cystitis & pyelonephritis in otherwise healthy individuals
- *Complicated UTIs*: UTI associated with a structural or functional urinary tract abnormality or an underlying pathology, both of which can increase the risks of acquiring an infection or failure of therapy

Table 1. Host factors that classify a urinary tract infection as complicated

Complication	Examples
Anatomic abnormality	Cystocele, diverticulum, fistula
Iatrogenic	Indwelling catheter, nosocomial infection, surgery
Voiding dysfunction	Vesicoureteric reflux, neurologic disease, pelvic floor dysfunction, high post void residual, incontinence
Urinary tract obstruction	Bladder outlet obstruction, ureteral stricture, ureteropelvic junction obstruction
Other	Pregnancy, urolithiasis, diabetes or other immunosuppression

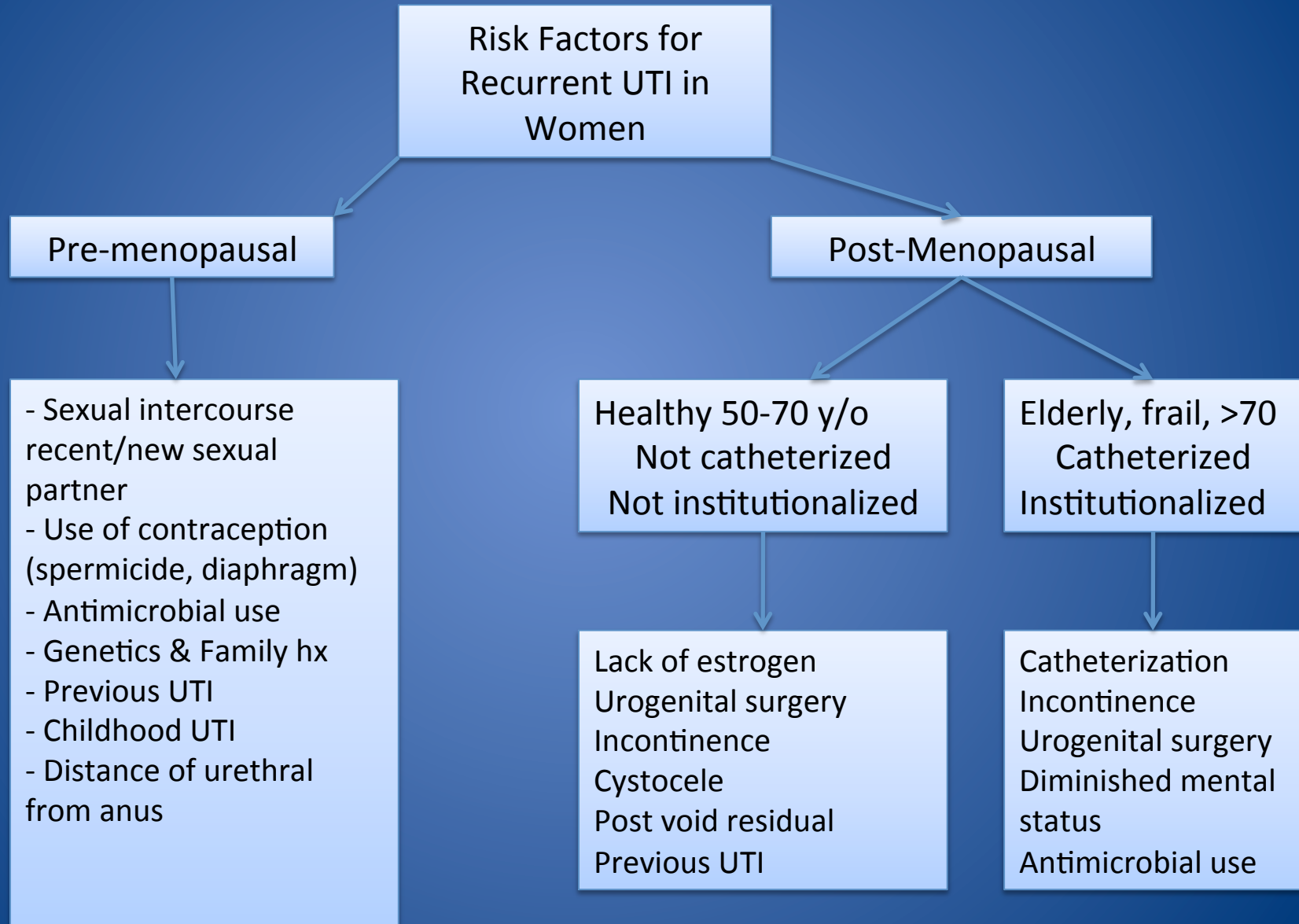
Recurrent UTI

- Recurrent UTI: documented by culture
 - More than 2 episodes in the previous 6 months
 - More than 3 infections in the last 12 months

- 4 main patterns of bacteriuria response to therapy
 - Cure
 - Bacteriologic persistence*
 - Persistence of same microorganism after 48 hours of treatment
 - Bacteriologic relapse*
 - Reinfection with the same microorganism that caused the initial infection usually within 1-2 weeks after cessation of treatment
 - Reinfection
 - Infection after sterilization of the urine
 - Most common cause of recurrent UTIs

* May be due to inadequate initial treatment

Risk Factors for Recurrent UTIs



US Guidelines for treating recurrent UTIs.....



International Clinical Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women: A 2010 Update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases

Clinical Practice Guidelines for the Diagnosis and Management of Intravascular Catheter-Related Infection: 2009 Update by the Infectious Diseases Society of America

Infectious Diseases Society of America Guidelines for the Diagnosis and Treatment of Asymptomatic Bacteriuria in Adults

Guidelines for the diagnosis and management of recurrent urinary tract infection in women

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Guidelines on Urological Infections

**M. Grabe (chairman), T.E. Bjerklund-Johansen, H. Botto,
M. Çek, K.G. Naber, R.S. Pickard, P. Tenke,
F. Wagenlehner, B. Wullt**



**European
Association
of Urology**

Diagnosis

- Urinalysis
- Urine Culture
 - Standard 10^5 colony count
 - EAU 10^3 plus symptoms
- Post void residual, esp in post menopausal women
 - Higher PVR associated with increased rUTI risk
 - 23% recurrent UTI in higher PVR vs. 2% in age matched controls with normal PVR
 - Slower uroflow associated with increased rUTI risk
 - 45% recurrent UTI in slower flow vs. 23%
 - Similar study in non pregnant women age 18-30
 - No difference in PVR & uroflow rates between women with recurrent UTI and controls

Imaging in Recurrent UTIs

Imaging in Recurrent UTIs

- No clear guidelines for imaging studies in women w/ uncomplicated recurrent UTIs
- Consider if:
 - High clinical degree of suspicion for abnormality
 - Atypical symptom presentation
 - Failure to respond to appropriate antimicrobial treatment

Indications for further evaluation

- Prior urinary tract surgery or trauma
- Gross/microscopic hematuria after resolution of infection
- Previous bladder or renal calculi
- Obstructive symptoms, low uroflowmetry, high PVR
- Urea-splitting bacteria on culture
 - *Proteus, Pseudomonas, Klebsiella, Staphylococcus, Yersinia, Mycoplasma*
- Bacterial persistence after sensitivity-based therapy
- Prior abdominopelvic malignancy
- Diabetes or otherwise immunocompromised
- Pneumaturia, fecaluria, anaerobic bacteria or h/o diverticulitis
- Repeated pyelonephritis

Imaging Modality

- CT A/P w/wo
- Ultrasound +/- KUB

Cystoscopy in Recurrent UTIs

Cystoscopy in Recurrent UTIs

Study	Patient	Abnormalities† at cystoscopy	Imaging modality	Recommendation
Engel <i>et al.</i> (1980) ¹⁵ <i>J. Urol.</i>	153	1 (1%)	IVU	Cystoscopy
Fowler <i>et al.</i> (1981) ¹⁰ <i>NEJM</i>	74	3 (4%)	IVU	No cystoscopy
Mogensen <i>et al.</i> (1983) ⁹ <i>Brit. J. Urol.</i>	93	11 (12%)	IVU	Cystoscopy
Nickel <i>et al.</i> (1991) ⁵ <i>Can. J. Surg.</i>	92	13 (14%)	IVU US	Cystoscopy
Van Haarst <i>et al.</i> (2000) ¹¹ <i>Urology</i>	100‡	0 (0%)	IVU US KUB	No cystoscopy
This study	118	9 (7.6%)	IVU US CT KUB	Cystoscopy in selected patients

†Non-specific and insignificant abnormalities such as inflammation were excluded in all reported results. ‡Only women 20–40 years of age. CT, computed tomography; IVU, intravenous urography; KUB, plain X-ray urinary tract (kidney, ureters, bladder); US, ultrasound.

Cystoscopy in Recurrent UTIs

- Retrospective review of 118 patients
 - All had imaging
 - 81% ultrasound, 45% IVP, 22% CT, 15% plain Xray
- Recommendations
 - Consider cystoscopy in setting of clinical risk factors and/or abnormal imaging

	Abnormal	Cystoscopy Normal	Total	
<i>Imaging results</i>				
Abnormal	8	23	31	PPV: $8/8 + 23 = 26\%$
Normal	1	86	87	NPV: $86/1 + 86 = 99\%$
Total	9	109	118	
<i>Risk factors †</i>				
Present	4	40	44	PPV: $4/4 + 44 = 9\%$
Absent	5	69	74	NPV: $69/5 + 69 = 93\%$
Total	9	109	118	

Treatment Options for Recurrent UTIs

Lifestyle

Antimicrobial

Nonantimicrobial

Behavioral / Lifestyle modifications

- Avoid spermicides or vaginal diaphragms
- Pre & post coital voiding habits*
- Frequency of voiding*
- Delayed voiding habits*
- Wiping patterns*
- Douching*
- Hot tubs / bubble baths*
- Body mass index*
- Use of tight clothing*
- Type of clothing*
- Bicycle riding*
- Volume of fluid consumed*

* NO DATA THAT CONFIRMS RELATIONSHIP WITH RECURRENT UTIs

Antimicrobial Treatment for Recurrent UTIs

Nonantimicrobial Treatment for Recurrent UTIs

Estrogen

Cranberry

Methenamine Salts

Vitamin C

D-Mannose

Lactobacillus

Other Food/Vitamin Based treatments

Colloidal Silver

Vaccination