Urology Teaching Day

Thursday, April 13, 2017
1:00pm – 6:00pm
The Grandview
176 Rinaldi Blvd
Poughkeepsie NY
12601

COURSE MATERIALS

Vassar Brothers Medical Center
45 Reade Place
Poughkeepsie, NY 12601

healthquest.org/VBMC
Please be sure to fill out your conference evaluation here:

https://www.surveymonkey.com/r/Uroeval2017
# Program Schedule

*This is a working agenda, it may change drastically between now and April 13, 2017*

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00pm</td>
<td>Registration</td>
</tr>
<tr>
<td>1:40pm</td>
<td>Welcome</td>
</tr>
<tr>
<td></td>
<td>- Naeem Rahman, MD,* Education Director,</td>
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<tr>
<td></td>
<td>Program Moderator, Chief of Urology, Vassar Brothers Medical Center,</td>
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<tr>
<td></td>
<td>Medical Director, Premier Medical Group</td>
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<tr>
<td>1:45pm</td>
<td>Translation of Pediatric urology to Adult Urology: Potential Treatment</td>
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<tr>
<td></td>
<td>Opportunities</td>
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<tr>
<td></td>
<td>- Israel Franco, MD, Pediatric Urologist,</td>
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<tr>
<td></td>
<td>Professor of Urology, Yale University, Director of Yale New Haven</td>
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<td></td>
<td>Children's Bladder and Continence Program</td>
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<tr>
<td>2:30pm</td>
<td>Blood and Bugs in the Urine - How Much to Care?</td>
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<td>- Paul Pietrow, MD, FACS,* Urologist , Premier Medical Group</td>
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<tr>
<td>3:15pm</td>
<td>Fighting the Fatigue: What to Do after Prostate Cancer Treatment</td>
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<td>- Joanne &quot;Jody Minnick, DNP, RN, ACNP-BC, FNP-BC</td>
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<tr>
<td></td>
<td>Army Healthcare, Walden University</td>
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<tr>
<td>4:00pm</td>
<td>Break</td>
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<tr>
<td>4:15pm</td>
<td>The Use of Multi-Paremetric MRI at 3T to Diagnose Clinically significant</td>
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<td></td>
<td>Prostate Cancer.</td>
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<tr>
<td></td>
<td>- Gary Grossman, MD, Medical Director, Medical Diagnostic Imaging</td>
</tr>
<tr>
<td>5:00pm</td>
<td>Update on Stress Urinary Incontinence and How Leaky Ladies Led Me to</td>
</tr>
<tr>
<td></td>
<td>Africa.</td>
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<td></td>
<td>- Kurt A. McCammon, MD, FACS, FPM-RSG, Executive Chairman of the</td>
</tr>
<tr>
<td></td>
<td>Department of Urology, Urology Residency Program Director as well as</td>
</tr>
<tr>
<td></td>
<td>Director of the Genitourinary Reconstructive Fellowship Program,</td>
</tr>
<tr>
<td></td>
<td>Eastern Virginia Medical School</td>
</tr>
<tr>
<td>5:45pm</td>
<td>Closing Remarks</td>
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<tr>
<td></td>
<td>- Naeem Rahman, MD,* Education Director,</td>
</tr>
<tr>
<td></td>
<td>Program Moderator, Chief of Urology, Vassar Brothers Medical Center,</td>
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<td></td>
<td>Medical Director, Premier Medical Group</td>
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</table>

**DINNER**

* In the spirit of keeping you well informed, the physician identified is neither an agent nor an employee of Health Quest or any of its affiliate organizations. This physician has selected our facilities as the place where they want to treat and care for their private patients.
Urology Teaching Day

General Information

Course Objectives
Following the completion of this conference, attendees should be able to:

1. Quantify and describe the population of young adult patients with congenital or childhood-acquired urologic problems who continue to be followed in pediatric urology clinic,
2. Discuss the numerous obstacles to successful care transition
3. Outline the design features of the dedicated transition clinic we established in response to the identification of a sizeable population in need.
4. Familiarity with current guidelines and recommendations concerning evaluation and management of asymptomatic microscopic hematuria and asymptomatic bacteriuria.
6. Discuss the advantages and disadvantages of conventional methods for imaging the prostate,
7. Know new developments for targeted imaging,
8. Consider the possible role of image-guided biopsy and therapy for localized prostate cancer.

Accreditation
Vassar Brothers Continuing Medical Education is accredited by the Medical Society of the State of New York to provide continuing medical education for physicians.

AMA Credit Designation
Vassar Brothers Continuing Medical Education designates this live education activity for a maximum of 4.00 AMA PRA Category 1 Credit(s). Physicians should only claim credit commensurate with the extent of their participation in the activity.

Nursing Accreditation
4.00 CME = 4.00 Contact Hours
http://www.nursecredentialing.org/RenewalRequirements.aspx

AAPA Accreditation
AAPA accepts certificates of participation for educational activities certified for Category 1 from AOACCME, Prescribed Credit from AAFP, and AMA PRA Category 1 Credit(s)™ from organizations accredited by ACCME or a recognized state medical society. Physician assistants may receive a maximum 4.00 of Category 1 Credit for completing this program.

Physical Therapy Accreditation
Vassar Brothers Medical Center is recognized by the New York State Education Departments State Board for Physical Therapy as an approved provider of physical therapist assistant continuing education. This activity has been approved for 4.00 hours.

Occupational Therapy
4.00CME = 4.00 Contact Hours
To claim units, you must submit your certificate of attendance with the activity brochure to NBCOT.
http://www.nbcot.org/pduchart
About Premier

Premier Medical Group represents the union of four highly respected medical groups: Hudson Valley Urology, Mid-Hudson Urologic Associates, GI Associates, and New Century Medical Associates. This union offers comprehensive, integrated care providing patients with access to state-of-the art procedures, advanced technology, excellent customer service and medical expertise. Eleven experienced urologists provide a full range of treatment for urological care, nine highly trained gastroenterologists focus on digestive tract disorders, and nine internal medicine physicians offer years of experience in the fields of general internal medicine, pulmonology, endocrinology, nephrology, geriatrics, family practice, and pediatrics. In 2014, Premier also opened its new Rheumatology and Podiatry divisions, expanding our scope of care. The expertise of our physicians is complemented by the availability and experience of our allied professionals including physician assistants and nurse practitioners. Premier Medical Group also has the distinction of being one of the largest providers of clinical research in the Hudson Valley. At Premier, patients are afforded more than just great medical care; they are provided exceptional customer service and consideration. Patients can also be assured that every effort is made to see them on time. Now when you need a specialist, you have the option of going to a “specialty” medical practice. The physicians at Premier Medical Group know there is a tremendous value to working together and bringing specialty care to their patients in one place. With offices in Poughkeepsie, Fishkill, Rhinebeck, Kingston, Newburgh, New Windsor, and Montgomery, there is no need to travel for the specialty care you deserve.

The physicians at Premier Medical believed that part of their professional obligation is to support the community in which they live and practice. With the changing economy, more people than ever are limited in their ability to get the medical supportive services that they need and deserve. Premier Cares Foundation is a fully credited tax-exempt 501 (C)(3) organization. Premier Cares Foundation wants to ensure that no one goes without diagnosis and treatment of urologic & gastrointestinal conditions. The mission of the Foundation is to provide support and education to individuals in our community lacking sufficient funds to address significant health issues including prostate and colon cancer, and other diseases and conditions.
Americans with Disabilities Act
We encourage participation by all individuals. If you have a disability, advance notification of any special needs will help us to better serve you. Please notify us of your needs in advance of the program. Thank you.

Acknowledgements
Special thanks to:
- Naeem Rahman, MD, Teaching Day Education
- The Staff at Premier Medical Group, Urology Division
- Vassar Brothers Medical Center, Premier Medical Group, & Premier Cares Foundation for sponsoring this event
- Staff of Vassar Brothers CME

Disclosure
In accordance with the disclosure policies of Vassar Brothers CME, the effort is made to ensure balance, independence, objectivity, and scientific rigor in all educational activities. These policies include resolving all conflicts of interest between faculty and commercial interest that might otherwise compromise the goal and educational integrity of this activity. All faculty members participating in this activity have disclosed all significant relationship - financial or otherwise - with the manufacturers or providers of products or services mentioned in the activity. The planners of this activity have reviewed these disclosures and have determined that the faculty relationships are not inappropriate in the context of their respective presentations and are consistent with the educational goals and integrity of the activity. The planners and faculty participants do not have any financial arrangements or affiliations with any commercial entities whose products, research or services may be discussed in these materials. The following Faculty have indicated a relationship with the following: Dr Kurt McCammon has disclosed that he has received a grant/research support from Solace. He will support his presentation and clinical recommendations with the “best available evidence” from the medical literature. He will refrain from making recommendations, regarding products or services, e.g., limit presentation to pathophysiology, diagnosis, and/or research findings. He will submit his talk in advance to allow for adequate peer review. Dr. Israel Franco, Dr. Paul Pietrow, Joanne Minnick, or Dr. Gary Grossman have nothing to disclose. No commercial funding has been accepted for the activity.

Vassar Brothers CME gratefully acknowledges the support of the following exhibitors: Coloplast, Bayer Akina Pharmacy, Pfizer/Astellas Oncology, Ferring Pharmaceuticals, MD Imaging, Neotrac, Quest Diagnostics, Boston Scientific, Myraid Genetics, Astellas, AbbVie, Amgen, Cook, Accu Refernce Lab & Enzo Clinical Lab

Upcoming CME Teaching Days
4th Annual Hospital Medicine Conference
April 28, 2017 | 7am-4pm

Oncology Teaching Day
May 24, 2017 | 12:30pm-6:00pm followed by dinner

21st Annual GI Teaching Day
September 20, 2017 | 8am-3pm

7th Annual Breast Cancer Symposium
October 5, 2017 | 11:30am-5pm followed by dinner

47th Annual Cardiology Teaching Day
October 18, 2017 | 7:30am-4pm

5th Annual Orthopedic Education Day
November 3, 2017 | 7:00am-4pm

Trauma Teaching Day
November 15, 2017 | 7:30am-4pm

For more information call 845.483.6013.
TTY for the hearing impaired 800.421.1220.
Register online at http://cmetracker.net/HQ/Catalog

Vassar Brothers Medical Center
45 Reade Place
Poughkeepsie, NY 12601
Urology Teaching Day

Online Resources

During the conference, the full digital syllabus will be available on the conference webpage: http://vbmc.libguides.com/2017urology. You can view and take notes on this PDF syllabus on your mobile device through the free Adobe Reader app downloadable at http://www.adobe.com/products/reader-mobile.html.

Keep up-to-date on what other Vassar Brothers CME activities are offered on our website:http://vbmc.libguides.com/CME.

On staff with Health Quest?
Need research or information? Check out the Health Quest Knowledge Resources website: infoDispensary at http://vbmc.libguides.com.

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Follow Vassar Brothers CME on Social Media:

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Vassar Brothers Continuing Medical Education
Translation of Pediatric Urology to Adult Urology: Potential Treatment Opportunities.

Israel Franco, MD
Pediatric Urologist, Professor of Urology, Yale University, Director of Yale New Haven children’s Bladder and Continence Program
Blood and Bugs in the Urine—How Much to Care?

Paul Pietrow, MD, FACS
Urologist, Premier Medical Group
Blood & Bugs in Urine: How much to care?

Paul K. Pietrow, MD, FACS

Hematuria

–Gross
  • Macroscopic
  • visible
  • obvious

–Microscopic
  • Dipstick
  • unseen
Asymptomatic Microscopic Hematuria (AMH)

- Estimated Incidence:
  - 2.4% – 31.1% in various studies
  - higher in Males
  - higher with age
  - higher with risk behaviors

AMH

Definition:
>3 red blood cells/high powered field (RBC/hpf)

Should NOT base evaluation solely on dipstick
r/o benign causes
AMH

Causes: Too many!
- benign
- malignant
- urologic
- nephrologic
  (casts, dysmorphic RBC’s, hx, proteinuria)

Consider benign causes:
- UTI
- Exercise
- Viral illness
- Trauma
- GU procedures
- Menses

Reassess after clears
AMH

Why screen?

• Overall malignancy rate: 2.6%
• Individual studies: 0% to 25.8%
• Malignancy rate 5% with risk factors

AMH

Why screen?

• Rate of stone disease: 6%
• Rate of BPH: 12.9%
• Rate of urethral stricture: 1.4%

• Most common findings: UTI, BPH, stones
### AMH – risk factors

<table>
<thead>
<tr>
<th>Males</th>
<th>Irritative voiding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (&gt;35 years)</td>
<td>Pelvic irradiation</td>
</tr>
<tr>
<td>Smoking</td>
<td>Chronic UTI</td>
</tr>
<tr>
<td>Exposure (aromatics)</td>
<td>Carcinogens (alkylating agents)</td>
</tr>
<tr>
<td>Analgesic abuse</td>
<td>Chronic foreign body</td>
</tr>
<tr>
<td>Gross hematuria</td>
<td></td>
</tr>
</tbody>
</table>

### AMH

**Anti-Coagulants:**

Do **NOT** excuse the call for evaluation

**Nephrologic findings:**

Do **NOT** excuse the call for evaluation
AMH - Evaluation

• Cystoscopy
  – Any pt. >35yo
  – All pts with risk factors
  – Pts <35yo at discretion of MD
  – office procedure
  – Local anesthetic (lidocaine gel)

AMH - Evaluation

• CT Urography is imaging of choice
  – renal parenchyma
  – collecting system
  – requires IV contrast
AMH - Imaging

Imaging Options:
- MR Urography
- non-con CT w/ Retrograde Pyelograms
- Renal U/S w/Retrograde Pyelograms

Urine Tests
- Cytology
- UroVysion (FISH)
- BTA-stat
- NMP22

**NOT** for routine use
Cytology if risk factors for CIS
What?!! Negative?

Now What?

Negative F/U

Annual urinalyses
- cease if negative for 2 years
- maintain for 5 years if still present

Consider repeat evaluation after 3-5 yrs
Gross Hematuria

Higher rates of malignancy
- presenting sign in 80% of bladder cancer
- presenting sign in >90% upper tract TCCa
- 18% malignancy rate (up to 30% with risk factors)
Gross Hematuria

- Treat immediate causes
- Reassess for persistence of hematuria

Asymptomatic Bacteriuria

- $10^5$ cfu/ml in 2 separate specimen (female)
- $10^5$ cfu/ml in 1 specimen (male)
- $10^2$ cfu/ml from catheterized specimen

- ABSENCE of symptoms:
  - fever, chills, worsened frequency or urgency, dysuria, pyuria, back/flank pain
Asymptomatic Bacteriuria

So What?
• Overtreatment creates *RESISTANCE*
  – *VRE, MRSA, CRE*
• Overtreatment has $$$$ 
• Overtreatment alters flora
  – C. Diff, malabsorption
Asymptomatic Bacteriuria

Incidence

- 1-9% healthy women
- 2-9% pregnant women
- 3-9% postmenopausal women
- 9-20% Diabetic women. 1% Diabetic men
- 25-50% NH women. 15-40% NH men
- 100% chronic catheters
Asymptomatic Bacteriuria

Randomized trials of Treatment
Healthy, premenopausal women

Benefits of Treatment?
- Lower rates of bacteriuria at 6 months
  Meh?!?
- Similar rates UTI at 1 year
- Similar, mortality, renal complication rates

Risk of Treatment?
- Higher rates of resistant bacteria on f/u

Asymptomatic Bacteriuria

Screen & Treat
asymptomatic women?
Asymptomatic Bacteriuria

Screen & Treat asymptomatic women?

Benefits of Treatment?
• Some improvements in symptomatic UTI rates
  Meh?!?
• No change in mortality rates

Risk of Treatment?
• Higher rates of treatment side effects
Asymptomatic Bacteriuria

Screen & Treat
Elderly, institutionalized?

Asymptomatic Bacteriuria

Screen & Treat
Elderly, institutionalized?
Spinal Cord Injury Patients

Urinary Tract Infections
• Associated with higher morbidity
• Associated with higher mortality
• Source of recurrent admissions
• $$$$  

Asymptomatic Bacteriuria

Randomized trials of Treatment Spinal Cord Injury Patients

Benefits of Treatment?
• Not many
Meh?!?
• Rapid recolonization of bacteriuria
• 90% after 30 days

Risk of Treatment?
• Higher rates of resistant bacteria on f/u
Asymptomatic Bacteriuria

Screen & Treat
Spinal Cord Injury Patients?
**Indwelling Catheter Patients**

- Bacteriuria rate approaches 100%
- Can be difficult to Dx UTI
- Pyuria unreliable indicator
- Resistance is prevalent
- Abx can prevent symptomatic UTI at catheter removal

**Asymptomatic Bacteriuria**

Randomized trials of Treatment
Indwelling Catheter Patients

Benefits of Treatment?
- Not many

Risk of Treatment?
- Higher rates of resistant bacteria on f/u
Asymptomatic Bacteriuria

Screen & Treat Indwelling Catheter Patients?
Pregnant Women

- Bacteriuria rate 3-9%
- 20-30x risk of pyelonephritis
- Increased risks:
  - low birth weight
  - Preterm birth
- Group B Strep

Asymptomatic Bacteriuria

Randomized trials of Treatment
- Pregnant women

Benefits of Treatment?
- ↓ Pyelo, preterm, low birth weight
- Cochrane review

Risk of Treatment?
- Single dose not as effective
- Old trials
Asymptomatic Bacteriuria

Screen & Treat Pregnant Women?

<table>
<thead>
<tr>
<th>Patient Population</th>
<th>Screening Recommended</th>
<th>Treatment Recommended</th>
<th>Evidence Summary based on Randomized Controlled Trials</th>
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</thead>
<tbody>
<tr>
<td>Perimenopausal, non-pregnant women</td>
<td>No</td>
<td>No</td>
<td>No benefit of treatment of UTI on mortality, renal function complication rates</td>
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<tr>
<td>Pregnant women</td>
<td>Yes</td>
<td>Yes</td>
<td>Decreased risk of UTI, pyelonephritis, prematurity birth and low birth weight with treatment</td>
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<tr>
<td>Diabetic patients</td>
<td>No</td>
<td>No</td>
<td>No benefit of treatment of UTI on mortality, complication or adverse event rates</td>
</tr>
<tr>
<td>Elderly patients living in community housing or institutions</td>
<td>No</td>
<td>No</td>
<td>No benefit of treatment of UTI on mortality or complication rates</td>
</tr>
<tr>
<td>Patients with spinal cord injuries</td>
<td>No</td>
<td>No</td>
<td>No benefit of treatment for symptomatic UTI rates</td>
</tr>
<tr>
<td>Patients with short- and long-term indwelling catheters</td>
<td>No</td>
<td>No</td>
<td>No benefit of treatment of UTI or fever</td>
</tr>
<tr>
<td>Immunosuppressed patients</td>
<td>No</td>
<td>No</td>
<td>No benefit of treatment on loss of graft function or mortality</td>
</tr>
<tr>
<td>Patients undergoing urological procedures</td>
<td>Yes, if procedure associated with urothelial bleeding</td>
<td>Yes, if procedure associated with urothelial bleeding</td>
<td>Decreased rates of UTI, bacteremia and sepsis with targeted treatment</td>
</tr>
</tbody>
</table>
Fighting the Fatigue: What to Do After Prostate Cancer Treatment

Joanne “Jody” Minnick, DNP, RN, ACNP-BC, FNP-BC
Army Healthcare, Walden University

VASSAR BROTHERS MEDICAL CENTER
Prostate Cancer: Fighting the Fatigue

DR. JOANNE “JODY” MINNICK
DNP, APRN, ACNP-BC, FNP-BC

SUNA 2016 ANNUAL CONFERENCE
NOVEMBER 4-7TH, 2016

Objectives

• PROSTATE CANCER BASICS
• TREATMENT OPTIONS
• WHAT IS FATIGUE IN RESPECT TO PROSTATE CANCER?
• OPTIONS FOR FATIGUE RELIEF
• MYTH OR FACT, DECODING WHAT WORKS
• GETTING HELP
Let’s review some basics

### Treatment Options

- Active Surveillance
- Hormone Therapy
- Radiation
- Brachytherapy or “seeds”
- Radical Prostatectomy
- Chemotherapy
Active Surveillance

- Based on the fact that some men will not get better with other treatment options
- It includes: physicals, PSA testing and biopsies as needed
- Active surveillance has 2 goals (AUA, 2007):
  1. provide definitive trx for men with localized PCA that are likely to progress
  2. reduce the “treatment related” side effects from other therapies

Hormone Replacement Therapy (HRT)

- Primary (ADT) for patients that can’t receive radiation or a prostatectomy.
- Can be used in advanced prostate cancer to reduce the PSA
- Can cause hot flashes and **FATIGUE**
- Short acting higher doses versus longer acting HRT are available
- Can be expensive
Radiation

- Started in the 1930s
- Recommended for a Gleason <7 and PSA < 20
- Better used with HRT in some RCT studies
- In 1980s CT was used inclusively to trx with radiation and in 1990 IRMT was finalized with better targeted treatment and less side effects
- Radiation is delivered to the prostate, lymph nodes and seminal vesicles
- Side effects include: hematuria, cystitis, scarring and **fatigue**

Brachytherapy or “Seeds”

- Performed since the 1960s
- Some patients that are treated are low to low-mod risk for progression and severity
- The goal is that at least 90% of the prostate volume receives 100% of the radiation
- High complications down the road: hematuria and cystitis
Radical Prostatectomy

- Surgical removal of prostate (open v. robotic)
- More desired choice with patients that has aggressive types of prostate cancer
- Can cause incontinence, fatigue, erectile dysfunction, damage to urethra (striction), and/or overactive bladder.
- Patients should have urodynamics (UDS) done initially if “retention” or high PVRs are found on evaluation pre-op
- Used in conjunction with hormones for aggressive and invasive prostate cancer

Chemotherapy for Prostate Cancer

- Not first line treatment
- Doxcetaxel is commonly used
- Has a lot of side effects (N/V, fatigue, infection, loss of appetite, etc.)
- Can exacerbate the side effects of prostate cancer
- Worsen quality of life (QOL)
- Causes fatigue due to lower RBC counts
Side effects of Prostate Cancer Treatment

- Erectile Dysfunction
- Decreased Libido
- Depression
- Bladder Incontinence
- Low Testosterone
- Night Sweats
- Loss of Muscle Mass
- **FATIGUE**

Fatigue and Prostate Cancer

- Fatigue is related to many different treatment plans for prostate cancer
- Fatigue related to cancer is different than “normal” fatigue
- But what makes fatigue r/t cancer different?
Cancer Related Fatigue (CRF)

- “Cancer related fatigue (CRT) can be defined as a persistent, subjective sense of tiredness r/t cancer or cancer treatment that interfaces with usual functioning” (Charalambous & Kouta, 2015, p.1)
- It differs from “normal” fatigue in that it is more devastating, longer-lasting and persistent
- Second it involves mental, physical and emotional fatigue with sleep deprivation and rest

Treatable contributing factors for cancer-related fatigue.

- Sleep disorders
- Emotional distress: Depression, Anxiety
- Noncancer comorbidities: Endocrine dysfunction (hypothyroidism), Infection, Cardiac dysfunction, Pulmonary dysfunction, Renal dysfunction, Hepatic dysfunction, Neurologic dysfunction
- Malnutrition
- Pain
- Anemia

Fatigue Relief

- Healthy Lifestyles
- Sleep
- Exercise
- Alternative Therapies & Complimentary Alternative Medicine (CAM)
- Medications

Healthy Lifestyles

- Get help from a Nutritionist
- Diet
  - No “Fad” diets
  - Avoid high sugar & high fat foods and beverages
  - Fiber rich food
    - Fruits and vegetables
    - Cereals with 6 gms of fiber
  - Protein rich foods
    - Fish, chicken and eggs
    - Peanut Butter
    - Nuts
    - Milk, cottage cheese, yogurt, beans
Tips on Eating for Low Energy Days

- Eat small frequent meals and include a protein rich snack
- Stock the pantry to avoid frequent, energy draining shopping trips
- Keep high-calorie, high-protein nutrition supplements such as Boost, Ensure Plus, nutrition bars
- Try batch cooking
- Keep pre-packaged snacks on hand (yogurt, pudding, peanut butter)

Sleep/Insomnia

- Sleep deprivation is common in prostate cancer patients causing fatigue, memory issues and depression.
- It is recommended that cancer patients sleep at least 6-8 hours of sleep
- Avoid naps, caffeine & exercise 6 hours prior to bed
- Related to treatments such as chemo, radiation & hormone therapy
Treatment for Insomnia

- Avoiding caffeine and stimulants
- Cool environment (68 degrees)
- Over the Counter Medications (consider the interactions)
  - Melatonin
  - Unisom
  - Tylenol or Advil PM

EXERCISE for Body and Mind

- Strength & Resistance Training (2 x a week for 50 minutes)*
  - Hand held dumbbells, using your body weight, and resistance bands
- Yoga (2-3 x a week)

*Better Long term outcomes*
Exercise for Body and Mind

- Aerobic exercises (2x a week for 50 minutes)
  - Swimming, cycling, walking and running are examples

- Cognitive Behavior Therapy (weekly) individual v. group

Modified Exercises

- Some prostate cancer patients are unable to do intense workout or exercises due to “bad knees”, bone pain, weight &/or weakness/fatigue
- Alternatives:
  - Swimming (except butterfly stroke)
  - Elliptical
  - Stationary Exercises (sitting in a chair, stationary bike, walker use)
# Alternative Therapies & CAM

There are many types of Alternative Therapies & CAM for treatment of Fatigue related to Prostate Cancer

- Acupuncture
- Caffeine
- Massage

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## Acupuncture

- Recommended to receive 1-2 treatments a week for 6 weeks to notice benefit and alleviation of fatigue
- Total length of treatment can vary, once relief is obtained than a “weaning” process begins
- Side effects: The only risk is that you do not receive a benefit from acupuncture. Very low risk for bleeding or infection
Caffeine

- Caffeine is a stimulant and considered a source by some for “energy”
- Previous research shows increased exercise tolerance and muscle strength with ingestion of caffeine 1 hour prior to exercise in prostate cancer patients
- No increase in fatigue afterwards
- Examples
  - Coffee
  - Sodas (Coke, Jolt, Mountain Dew)
  - Over the counter Supplements (No Doz, Revive, Stay Awake, Vivarin)
  - Energy Drinks (Monster, 1 hr energy)

Massage

- Many different forms available (deep tissue, light touch, acupuncture, reflexology)
- Results vary and no research to verify effectiveness & “Controversial”
CAM

- CAM can be helpful but also dangerous if not used properly
- For example: KAVA KAVA used to treat depression can cause liver damage - or - St. John’s Wort can cause anticancer medications to be less effective
- Link to CAM PDF handout: https://www.cancer.gov/publications/patient-education/thinking-about-cam

Supplements

- **Calcium** - no long term prevention of PCA
- **Green Tea** - prevention of PCA, not enough evidence
- **Lycopene** - (tomatoes) better with olive oil, not worse, but some get better, research inconclusive
- **Modified Citrus Pectin** - not approved by FDA, shows some work on secondary tumors, but not primary, again no proof

There are many more listed on this site with exact info on research, myths, etc...
Prescription Medications

- Corticosteroids reserved for Fatigue in Metastatic Advanced PCA (prednisone)

- Medications to treat Depression: SSRIs (Sertraline, Bupropion) or a Tricyclic can improve fatigue

- Medications to treat Anemia: epoetin alfa (Procrit)

- Stimulants are controversial: Methylphenidate (Ritalin), dexetroamphetamine/amphetamine (Adderall)

Getting Help

- Be aware of available resources and support groups for your patients
Provider & Patient Resources and Support

- Link to CAM PDF handout: https://www.cancer.gov/publications/patient-education/thinking-about-cam
- National Center for Complimentary Medicine: https://nccih.nih.gov/
- Prostate Cancer Options: https://www.cancer.gov/types/prostate

Prostate Cancer Support Groups

- Movember: https://us.movember.com/
- National Cancer Cancer Network: https://www.nccn.org/
- Prostate Cancer Foundation: http://www.pcf.org/site/c.leJRIROEpH/b.5856543/k.6599/Finding_a_Support_Group.htm
- Tackle Prostate Cancer: http://www.tackleprostate.org/
- Us TOO: http://www.ustoo.org/
- Urology Health/ AUA: http://www.urolgyhealth.org/
- Zero: http://www.zerocancer.org/
REFERENCES


REFERENCES


The Use of Multi-Paremetric MRI at 3T to Diagnose Clinically Significant Prostate Cancer

Gary Grossman, MD
Medical Director, Medical of MD Imaging
The use of Multi-Parametric MRI at 3T to detect clinically significant prostate Ca

Gary Grossman, MD
Medical Director
MD Imaging, Poughkeepsie, NY

Gleason Score

- Gleason scores range from 2 through 10, with higher number indicating greater risks and higher mortality. A total score is calculated based on Histology, with half the score based on the appearance of the most common cell morphology (scored 1—5), and the other half based on the appearance of the second most common cell morphology (scored 1—5). These two numbers are then combined to produce a total score for the cancer.
Gleason grade — Lower grades are associated with small, closely packed glands. Cells spread out and lose glandular architecture as grade increases.

Gleason Histologic Patterns

Gleason 3

Gleason 4

Gleason 4 on left and Gleason 5 on right
Defining Clinically Significant PCa

- Gleason score 4+3 or more or any disease with total cancer core length of 6mm or more or maximum cancer core length of 6 mm or more.
- Or - Gleason score of 3+4 or more or any disease with total cancer core length of 6mm or more or maximum cancer core length of 4mm or more.
- And/or - Volume ≥.05 cc
- And/or - Extraprostatic extension (EPE)


Prostate Anatomy- 4 anatomic zones

- 1- Anterior Fibromuscular Stroma (AFS) – No Glands.
- 2- Central Zone (CZ) – surrounds the ejaculatory ducts. 20% of glandular tissue.
- 3- Transitional Zone – surrounds the urethra. 5% of glandular tissue which increases with BPH (20-30% PCa occur here.)
- 4- Peripheral Zone – Most glandular zone. Contains 70-80 % of glandular tissue. (70-75% PCa occur here.)
Prostate anatomy

- Inverted pyramid morphology
- Base is superior surface in contiguity with urinary bladder.
- Mid gland
- Apex – inferior contiguity with urogenital diaphragm
Prostate Anatomy

Conventional Prostate Ca (PCa) Diagnosis

- conventional diagnostic pathway in men with elevated serum prostate-specific antigen (PSA) levels and/or abnormal digital rectal examination consists of a random systematic transrectal ultrasound (TRUS)-guided prostate biopsy (PB) [1]. The main disadvantages are that (1) TRUS-guided PB misses a substantial proportion of significant PCa (approx. 20%) because of sampling errors, especially in the anterior part of the prostate gland [2] and [3], and (2) a high proportion of men are diagnosed with clinically insignificant disease, which may result in subsequent overtreatment.

The random TRUS-Bx PCa lesion locations

- In the peripheral zone (70-75% PCa), anterior cancers make up 10% of the total and posterior cancers 90%.
- In the transitional zone (20-30% PCa) nearly the opposite is the case. Anterior cancers are found in 53% and posterior cancers are found in only 12%. The remaining tumors occur in the middle.

Haffner J et al. The Prostate 2009
Bouye S et al. The Prostate 2009
MultiParametric MRI (mpMRI) to detect clinically significant PCa

- Negative mpMRI has a high negative predictive value (NPV) between 90-98% for presence of clinically significant disease of the prostate [1].
- mpMRI detects both high-grade and larger tumors accurately, which means it may perform particularly well for detection of clinically significant disease [2].
- Review of the literature: accuracy, sensitivity, and specificity ranges were 44–87%, 58–96%, and 23–87%, respectively [3].


PI-RADS
Prostate Imaging- Reporting and Data System 2015 v2

- Designed to improve detection, localization, characterization and risk stratification of patients with suspected PCa.
- Based on evidence and consensus opinion
- Sets minimum requirements for MR acquisition protocols
- 5 point assessment scale based on the likelihood (probability) that a combination of mpMRI findings on T2W, DWI and DCE correlates with the presence of clinically significant PCa
- 5 point scale for sequence scoring T2 and DWI weighted images
- Each lesion is given an overall score to indicate the chance of being a clinically significant PCa lesion.
mpMRI Prostate Clinical Considerations

- Timing of MRI following Prostate Biopsy – Hemorrhage manifests as hyperintense signal on T1 weighted images post TRUS biopsy most commonly in PZ and seminal vesicles.
- Signal changes from post bx hemorrhage diminish over time and an interval of 6 weeks or longer between bx and MRI should be considered for staging.

mpMRI Prostate Technical Considerations

- All exams should include smFOV T2W, DWI and DCE
- Magnetic Field Strength – 3T MRI recommended. Fundamental advantage of 3T compared with 1.5T is the exponential increase in signal to noise ratio (SNR).
- Endorectal coil – Not necessary at 3T.
- Computer aided evaluation can be helpful but not required. Facilitates integration of MRI data with MR targeting biopsy systems.
Benign Prostate signal abnormalities

- BPH – expands the TZ
- Hemorrhage – common after TRUS bx
- Cysts
- Calcifications
- Prostatitis – usually subclinical, ↓ PZ signal and ↑ DCE can result in false positive.
- Atrophy – aging or chronic inflammation
- Fibrosis – usually post inflammatory

PI-RADS v2 Assessment and Reporting

- PIRADS1 – Very low (clinically significant cancer is highly unlikely to be present).
- PIRADS2 – Low (clinically significant cancer is unlikely to be present)
- PIRADS3 – Intermediate (the presence of clinically significant cancer is equivocal)
- PIRADS4 – High (clinically significant cancer is likely to be present)
- PIRADS5 – Very high (clinically significant cancer is highly likely to be present)
Measurement of the Prostate Gland

- Volume of the prostate: $LWH/0.52$
- Prostate volume useful to calculate PSA density (PSA/prostate volume). PSA density higher in pts with PCa. PSAD > 0.2

PI-RADS v2

- Different weighting for PZ and TZ
- DWI dominates in PZ
- T2W dominates in TZ
- DCE plays a minor role
### PI-RADS PZ Assessment T2W

<table>
<thead>
<tr>
<th>Score</th>
<th>Peripheral Zone (PZ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Uniform hyperintense signal intensity (normal)</td>
</tr>
<tr>
<td>2</td>
<td>Linear or wedge-shaped hypointensity or diffuse mild hypointensity, usually indistinct margin</td>
</tr>
</tbody>
</table>
| 3     | Heterogeneous signal intensity or non-circumscribed, rounded, moderate hypointensity  
Includes others that do not qualify as 2, 4, or 5 |
| 4     | Circumscribed, homogenous moderate hypointense focus/mass confined to prostate and <1.5 cm in greatest dimension |
| 5     | Same as 4 but ≥1.5cm in greatest dimension or definite extraprostatic extension/invasive behavior |

### PI-RADS TZ Assessment T2W

<table>
<thead>
<tr>
<th>Score</th>
<th>Transition Zone (TZ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Homogeneous intermediate signal intensity (normal)</td>
</tr>
<tr>
<td>2</td>
<td>Circumscribed hypointense or heterogeneous encapsulated nodule(s) (BPH)</td>
</tr>
</tbody>
</table>
| 3     | Heterogeneous signal intensity with obscured margins  
Includes others that do not qualify as 2, 4, or 5 |
| 4     | Lenticular or non-circumscribed, homogeneous, moderately hypointense, and ≤1.5 cm in greatest dimension |
| 5     | Same as 4, but ≥1.5 cm in greatest dimension or definite extraprostatic extension/invasive behavior |
### DWI Assessment PZ or TZ

<table>
<thead>
<tr>
<th>Score</th>
<th>Peripheral Zone (PZ) or Transition Zone (TZ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No abnormality (i.e., normal) on ADC and high b-value DWI</td>
</tr>
<tr>
<td>2</td>
<td>Indistinct hypointense on ADC</td>
</tr>
<tr>
<td>3</td>
<td>Focal mildly/moderately hypointense on ADC and isointense/mildly hyperintense on high b-value DWI.</td>
</tr>
<tr>
<td>4</td>
<td>Focal markedly hypointense on ADC and markedly hyperintense on high b-value DWI; &lt;1.5 cm in greatest dimension</td>
</tr>
<tr>
<td>5</td>
<td>Same as 4 but ≥1.5 cm in greatest dimension or definite extraprostatic extension/invasive behavior</td>
</tr>
</tbody>
</table>

### PI-RADS Assessment for DCE PZ or TZ

<table>
<thead>
<tr>
<th>Score</th>
<th>Peripheral Zone (PZ) or Transition Zone (TZ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-)</td>
<td>no early enhancement, or diffuse enhancement not corresponding to a focal finding on T2W and/or DWI or focal enhancement corresponding to a lesion demonstrating features of BPH on T2WI</td>
</tr>
<tr>
<td>(+)</td>
<td>focal, and; earlier than or contemporaneously with enhancement of adjacent</td>
</tr>
</tbody>
</table>
TZ P5 Lesion  69 yo elevated PSA w/ Negative bx

PZ P5 Lesion  70 yo w/ ↑ PSA Positive bx
P4  Lesion PZ  77 yo ↑ PSA no bx

TZ P5  69 yo with ↑ PSA neg bx
TZ P5  64 yo with ↑ PSA neg bx

T2 Axial

DWI

ADC

DCE

Staging

T2 COR

T2 AXIAL

T1fs C+
BPH

- MR can characterize the enlarged Prostate
- Commonly associated with urinary retention.
- Visualize causes of bladder outlet abnormality
- Urinary bladder wall thickening and intravesicular BPH nodules

3 cm intravesicular BPH nodule
BPH

Emerging Technologies

- Molecular imaging of PCa with PET
  - 18F-PSMA w/wo fusion (CT or MRI)
  - 68Ga-PSMA w/wo fusion

18F-PSMA enhances the visual conspicuity of suspected sites (arrows) of metastatic prostate cancer. Image courtesy of Dr. Martin Pomper, PhD.
18F-PSMA-1007 PET/CT Detects Micrometastases in a Patient With Biochemically Recurrent Prostate Cancer

Frederik L. Giesel, Claudia Kesch, Myiin Yun, Jens Cardinaux, Uwe Haberkorn, Klaus Kopka, Clemens Kratochwil, Boris A. Hadaschik

Clinical Genitourinary Cancer
DOI: 10.1016/j.clgc.2016.12.029

Emerging Technologies

Comparison of MR/Ultrasound Fusion-Guided Biopsy With Ultrasound-Guided Biopsy for the Diagnosis of Prostate Cancer

M. Mohag Siddig, MD, Soroosh Reza-Bahmani, MD, Bais Taktay, MD, Annie K. George, MD, Jesse Rothwaar, BS, Nabil Al-Ali, BS, Chiropractor Oliven, BS, BMS Radiological, BS, Houston, MD; W. Michael Levine, MD, Maria J. Menas, MD, Richard M. Simon, DS, Peter L. Choyke, MD, Bradford J. Wied, MD, Peter A. Pinto, MD

RESULTS: Targeted MR/Ultrasound fusion biopsy diagnosed 465 prostate cancer cases, and standard biopsy diagnosed 466 cases. There was exact agreement between target and standard biopsy in 46 cases (10%). Targeted biopsy was associated with a significantly higher percentage of high-risk cases in 222 cases (47%) compared to standard biopsy in 128 cases (27%) (P = 0.001). The predictive ability of targeted biopsy for differentiating low-risk from intermediate- and high-risk disease in 197 cases with whole-gland pathology after prostatectomy was greater than that of standard biopsy or the 2 approaches combined (area under the curve, 0.73, 0.69, and 0.67, respectively, P < 0.05 for all comparisons).

CONCLUSIONS: Targeted MR/Ultrasound fusion biopsy was associated with increased detection of high-risk prostate cancer and improved differentiation of intermediate-risk prostate cancer. Further studies will be needed to assess the ultimate clinical implications of targeted biopsy.

TRIAL REGISTRATION: clinicaltrials.gov identifier: NCT0102544

April 2015;3:16; doi:10.1016/j.rvsma.2014.12.001
MR Guided TRUS Bx Prostate

MR Guided TRUS Bx Prostate
Update On Stress Urinary Incontinence and How Leaky Ladies Led me to Africa.
Update on Stress Urinary Incontinence and How Leaky Ladies Led me to Africa"

Kurt McCammon

Disclosures

- Boston Scientific
- Allergan
- Solace
Objectives

- Define Types of Urinary Incontinence
- Discuss epidemiology
- Describe evaluation of Stress Urinary Incontinence
- Describe Treatment Options for Stress Urinary Incontinence
- Discuss FDA warning on Vaginal Mesh
- Discuss surgical volunteerism

Urinary Incontinence

- Incontinence: The unexpected and unwanted leakage of urine
- Uromythology:
  - Uncommon
  - Natural part of aging
  - Nuisance but not a health issue
  - Not cost effective to treat
  - These are Expensive, Debilitating but Treatable Entities
Urinary Incontinence

- EPIDEMIOLOGY
  - 26 Million Americans
  - 50% of nursing home patients
  - 26% of female patients between 30-59
  - 30% patients male or female >60
  - 17 million American men and women suffer from overactive bladder

Pelvic Organ Prolapse

- More than 30 million US women over age 45 suffer from pelvic organ prolapse
- 1 out of 2 women over age 45 suffer from some type of prolapse
- Only 10 - 15% of women affected by prolapse seek treatment
Prevalence of urinary incontinence and its association with body mass index among women in Puerto Rico.

- The prevalence of UI was 34.8%
  - Stress incontinence 46.8%
  - Mixed 41.5%
  - Urge incontinence 11.7%
  - 45% of participants were overweight or obese

CONCLUSIONS:

- UI is a public health problem among this population, and obesity marginally increases the possibility of having this condition. Public health efforts should focus on reducing obesity in PR, in order to have an impact on UI morbidity.

Urinary Incontinence

- COSTS
  - 26.3 Billion Dollars spent in 1995
  - 11 Billion spent on routine care
  - 600 Million spent on surgical treatment
**Cost of Urinary Incontinence**

Total Costs in 1995 > US $26 Billion

$3,600 Annually Per Person Aged > 65 Years

- Incontinence Consequence Costs 50%
- Indirect Costs 3%
- Diagnostic Costs 1%
- Treatment Costs 3%
- Routine Costs 43%


---

**Urinary Incontinence: Total Impact**

- **ECONOMIC**
  - Routine Care: Supplies, labor, laundry
  - Diagnosis: Labor, procedural charges, supplies, other
  - Evaluation and treatment costs: Physical direct costs and cost of long-term care

- **PSYCHOLOGICAL**
  - **Individual:** Embarrassment, anger, social restriction and isolation, loss of self-esteem, sexual functioning
  - **Family and paid caregiver:** Guilt, frustration, caregiver burden, risk of mistreatment, job absenteeism

- **PHYSICAL**
  - **Direct costs:** Skin irritations, pressure, ulcers, falls, urinary sepsis, physical activity restrictions
  - **Indirect costs:** Drug side effects and adverse events

Urinary Incontinence

- **EFFECTS ON QUALITY OF LIFE**
  - 19% of female patients decreased activity
  - 46% change lifestyle (e.g., less travel, decrease social activity etc.)
  - Dramatically reduces Quality of Life

Patients are embarrassed to talk to physicians about voiding problems.

Many physicians don’t typically ask patients about voiding problems.

In 1995 survey:
- 21% of urologists and 68% of family practitioners did not ask their patients about incontinence.
Types of Incontinence

<table>
<thead>
<tr>
<th>Overflow</th>
<th>Stress</th>
<th>Urge</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Urethral blockage</td>
<td>- Relaxed pelvic floor</td>
<td>- Bladder overactivity from infection</td>
</tr>
<tr>
<td>- Bladder unable to empty properly</td>
<td>- Increased abdominal pressure</td>
<td>- Neurologic disorders</td>
</tr>
</tbody>
</table>

OVERLAP BETWEEN CONDITIONS

Urgency: "A sudden compelling desire to pass urine, which is difficult to defer"

Urgency: "The only symptom a patient must have to be described as having OAB"
Stress Urinary Incontinence

Definition:
- Involuntary urine leakage during activity (effort/exertion).\(^1\)
- Occurs with loss of normal rise in urethral closure pressure in response to rising abdominal pressure.\(^2\)
- Anatomic and physiologic factors result in disordered pressure transmission.\(^2\)
- **Distinguished from URGE Incontinence:**
  - Involuntary loss of urine associated with a sudden, strong desire to void.\(^1\)

Risk factors for SUI
- Age
- Estrogen status
- Tobacco use
- Weight
- Genetic
- Radiation
- Childbirth
- Trauma
- Previous surgery
Childbirth

- Risk Factors
- Birth weight > 4000g
- > 1 vaginal delivery
- Forceps
- Increased time in 2nd stage
- 3rd degree tear

SUI Pathophysiology

1. Loss of anatomic urethral support
   Urethral Hypermobility (UH) - weakness of pelvic structures that support urethral compression during increased abdominal pressure

2. Intrinsic Sphincter Deficiency (ISD)
   Deficiency of urethral intrinsic closing mechanism
Traditional Concept of SUI

Pathophysiology

SUI

UH

ISD

ISD & Loss of Urethral Support

A Clinical Continuum

SUI

ISD

Present to some degree in all SUI cases

Loss of Urethral Support with UH

Coexists with ISD in most cases

UH

Loss of support with both UH & ISD

ISD
How did I get involved with IVUmed?

Vaginal Fistula

- “Every minute, a woman dies in pregnancy or childbirth, and for every woman who dies, 20-30 others will survive but with morbidity, one of which is obstetric fistula”

Source: G. Lewis, WHO Press.  
G. Le G. Lewis, WHO Press WIS, WHO Press
Vesicovaginal Fistula

- Devastating injury
- Prolonged obstructed labor (97%)
- Frequency is under-reported
- Estimated > 3 million women in Africa
- 30,000 to 130,000/year
- Cause in US iatrogenic

Women with Vaginal Fistula

- Live in shame and isolation
- Often abandoned by their husbands and communities
- Many live in poverty
- Shunned or blamed by society
- Unable to earn money
- Depression
Urethrovaginal Fistula

How did I go from VVF to Strictures
SUI Evaluation

- Urinary history
  - Symptoms of SUI
  - Amount of leakage
  - Types of pads and degree of dampness
  - Precipitants of incontinence
  - Fluid intake patterns
  - Alterations in bowel habits or sexual function
  - Overactive bladder symptoms
  - Previous Treatment
  - Bother from Incontinence

SUI Assessment

Pelvic Examination

- Prolapse may mask incontinence
- Pelvic floor muscle tone
- Voluntary pelvic floor contraction
- Perineal skin condition
- Palpation of anterior vaginal wall and urethra
- Determine degree of estrogenization
- May observe leakage on coughing
Indications for advance testing

- Inability to make definitive diagnosis
- Concomitant OAB symptoms
- Previous lower urinary tract surgery
- Known or suspected neurogenic bladder
- Negative stress test
- Elevated residual urine
- Grade 3 or higher prolapse
- Dysfunctional voiding

SUI Assessment (continued)

**Urodynamic Observations**

**Tests of detrusor function**
- Postvoid residual (PVR) volume
- Flow rate
- Filling cystometrogram (CMG)

**Tests of urethral sphincter function**
- Valsalva leak point pressure (VLPP)
- Maximum urethral closure pressure (MUCP)
Access to Surgical Care:

- 5 billion people lack access to basic surgical care
- 56 million in sub-Saharan Africa alone need surgical care today
- To have the same density of surgeons as Canada, East Africa would need 42,000 more surgeons TODAY.
- Access to specialized care like reconstructive urology is even more restricted
- Approximately 25% of urologic patients have strictures

What’s the Problem?

“Surgery: The neglected stepchild of public health”

Paul Farmer
What do I personally gain?

- Opportunity to learn every time I go
- Ability to make lifelong friendships
- Challenging cases
- Thirst for knowledge

Attitudes of a successful volunteer

- Focus on Teaching
- Resourcefulness
- Adventurous
Non Surgical Treatment

- Kegels
- Physical Therapy
- Meds
- Pessary
- Urethral plugs
Incontinence: Urethral Devices

- Tricyclic antidepressants
  - Central and peripheral anti muscarinic
  - Blocks reuptake of norepinephrine

- Duloxetine
  - Serotonin-norepinephrine reuptake inhibitor
  - Increases sphincteric activity
SUI Surgical Treatments

Traditional Surgical Approach

1. Elevate bladder neck and proximal urethra
2. Support bladder neck and prevent funnelling
3. Increase outflow resistance

Long-term results of Burch colposuspension

- N=109
- 93.7% cure at 12.4 years (mean)
- 18.7% rectocele
- 16.6% 'de novo' detrusor overactivity (DO)
SUI Surgical Treatments

Traditional vs. New

Traditional Surgical Approach
1. Elevate bladder neck and proximal urethra
2. Support bladder neck and prevent funnelling
3. Increase outflow resistance

New Surgical Approach
1. ‘Integral Theory’ of urinary incontinence
2. Control of urethra depends:
   - pubourethral ligaments
   - suburethral vaginal hammock
   - pubococcygeus muscle

Mid-Urethral Slings

Goals
- Recapitulate the support of the pubourethral ligaments.
- Recreate a physiological “backboard” between the urethra and anterior vaginal wall at the level of the mid-urethra.
Evolution: Mid urethral Slings

Retro

1996 Ulmsten
Retropubic placement
GYNECARE TVT
Efficacious (10 year data)

Evolution: Mid urethral Slings

Retro

2001 Delorme
Transobturator placement
Avoids retropubic space
Evolution: Mid urethral Slings

- Designed to be less invasive
- Minimal passage through tissues
- Less material left behind in the patient than Retro & TOT

TVT Results

<table>
<thead>
<tr>
<th>STUDY</th>
<th>NO. PATIENTS</th>
<th>FOLLOW-UP</th>
<th>CURE RATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ward and Hilton, 2002</td>
<td>175 TVT</td>
<td>6 mo</td>
<td>66% TVT</td>
</tr>
<tr>
<td>Ward and Hilton, 2004</td>
<td>169 Burch</td>
<td>24 mo</td>
<td>57% Burch</td>
</tr>
<tr>
<td>Ward and Hilton, 2005</td>
<td>175 TVT</td>
<td>5 yr</td>
<td>63% TVT</td>
</tr>
<tr>
<td>El-Baky et al, 2005</td>
<td>196 Burch</td>
<td>25 mo</td>
<td>51% Burch</td>
</tr>
<tr>
<td>Bai et al, 2005</td>
<td>31 TVT</td>
<td>12 mo</td>
<td>88% TVT</td>
</tr>
<tr>
<td>Wadie et al, 2005</td>
<td>28 TVT/25 PVS</td>
<td>6 mo</td>
<td>92% TVT</td>
</tr>
<tr>
<td>Persson et al, 2002</td>
<td>37 TVT/31 lap colposuspension</td>
<td>12 mo</td>
<td>94% TVT</td>
</tr>
<tr>
<td>Ustar et al, 2003</td>
<td>23 TVT/23 lap colposuspension</td>
<td>24 mo</td>
<td>100% laparoscopic colposuspension</td>
</tr>
<tr>
<td>Patino et al, 2004</td>
<td>36 TVT/36 lap colposuspension</td>
<td>18 mo</td>
<td>82% TVT</td>
</tr>
<tr>
<td>Vajpes et al, 2004</td>
<td>70 TVT/51 lap colposuspension</td>
<td>18 mo</td>
<td>81% laparoscopic colposuspension</td>
</tr>
</tbody>
</table>
Monarc® Clinical Data

Transobturator vs Transabdominal Mid-Urethral Slings: a Multi-Institutional Comparison of Obstructive Voiding Complications

Morey et al, Journal of Urology, 2006

- 154 Monarc patients, 350 TVT patients
- Transobturator and transabdominal slings have similar efficacy rates (TO 89% vs TVT 86%)
- Fewer major obstructive complications with Monarc (8.7%, 0 urethrolysis) than with TVT (17.6%, 5 urethrolysis)
- No perioperative complications in the TO group
- Transabdominal group had one hematoma and 4 bladder perforations

A Combined Analysis of the Safety and Efficacy of the Monarc® Transobturator Hammock at 12 Months Follow-Up in Two Prospective Studies in 9 Countries with 272 Patients

- 211 patients with 12 months follow up
- Continence rate: 92% (negative cough stress test)
- Mean blood loss = 37 mL
- Mean time to urinate without a catheter 10hr (99% of patients when home without a catheter)
- Mean operative time = 12.8 minutes
- 1.1% had extrusions; 0.4% retention
- No bladder, bowel, nerve or vascular injuries

Moore et al, IUGA, 2006
Mini Sling Published Data

Other MiniArc studies ranked by number of patients

<table>
<thead>
<tr>
<th>Study</th>
<th>#pts</th>
<th>Success rate (%)</th>
<th>Definition of success</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennelly, MJ, et al.</td>
<td>188</td>
<td>90.6</td>
<td>Negative CST</td>
<td>1 year</td>
</tr>
<tr>
<td>Jiménez Calvo J, et al.</td>
<td>135</td>
<td>91.9</td>
<td>Negative CST</td>
<td>495 days (mean)</td>
</tr>
<tr>
<td>Pickens RB et al.</td>
<td>120</td>
<td>93.5a</td>
<td>Subjective: no leakage</td>
<td>1 year</td>
</tr>
<tr>
<td>Hogewoning, CRC, et al.*</td>
<td>77</td>
<td>44a</td>
<td>Subjective: no leakage</td>
<td>1 year</td>
</tr>
<tr>
<td>De Ridder, D, et al.</td>
<td>75</td>
<td>85</td>
<td>Negative CST</td>
<td>1 year</td>
</tr>
<tr>
<td>Deboeck, P, et al.</td>
<td>72</td>
<td>69.1</td>
<td>Negative CST</td>
<td>1 year</td>
</tr>
<tr>
<td>Moore, RD, et al.</td>
<td>61</td>
<td>91.4</td>
<td>Negative CST</td>
<td>1 year</td>
</tr>
<tr>
<td>Sottner, O et al.</td>
<td>38</td>
<td>76.7a</td>
<td>Subjective: no leakage</td>
<td>19 months</td>
</tr>
</tbody>
</table>

* No objective outcome measures
World Wide Surgery

- 234 million surgeries annually worldwide
- 8.1 million (3.5%) in low-income countries
- 6000 short term medical missions a year from USA
- Cost $250 million
- ? Percentage are surgical
Need for better global education

- US Population 300 Million
- 275 new urology residents a year
- Approximately 9000 urologists in US
- Africa > 1 Billion
- < 1000 urologists

Need for better global education

- Funding for surgical missions not on par for medical
- Up to 90% of urology residents would like to do volunteer work
- IVUmed
  - Resident scholars > 10 years
  - Approximately 20-15 a year
IVUmed

Mission:

IVUmed is committed to making quality urological care available to people worldwide. In fulfilling this mission, IVUmed provides medical and surgical education to physicians and nurses, and treatment to thousands of suffering children and adults.

Our History: A Dynamic Organization

In the Beginning:

- Establishing and refining our model
- Locating partners and building global networks
- Identifying key training centers

Now:

- Building Centers of Excellence
- Supporting future leaders
Our Programs in Action

- Surgical workshops
  - On-site
  - Intensive
  - Hands-on
- Visiting professors
- Consultation and telehealth
- Scholarships and fellowships

What We Do?

- Teaching
- Building local capacity
- Addressing a significant need
- Focusing on long term solutions
Global Strategy: Centers of Excellence

- Regional Centers
  - Senegal
  - Ghana
  - Zambia
  - Rwanda
  - Trinidad
  - Vietnam
  - Mexico

- Local Leadership

- Sustainability

- Collaboration: SIU, AUA, Universities, Industry, PAUSA

Site Development Goals: Pediatric

PEDiatric Regional Hub Development Goals (3-5 Years)

- Dakar, Senegal
- Luanda, Angola
- Lubumbashi, Congo
- San Pedro Sula, Honduras
- Ho Chi Minh City, Vietnam
- Kigali, Rwanda
- Kumasi, Ghana
- San Fernando, Trinidad

EXPLORE BUILD ADVANCE OUTREACH
FDA Public Health Notification
October 2008

- **Title:** Serious complications assoc. with transvaginal placement of surgical mesh in repair of POP/SUI
- “Over a 1000 reports fm 9 surgical mesh mfctr”
- “Most frequent: Extrusion, infxn, pain, urinary problems, recurrence; bowel/bladder/vessel injury, vaginal scarring and mesh erosion led to significant decrease in pt QOL due to pain, incl. Dyspareunia”
- Specific characteristics of pts at risk not determined. Factors may incl: Health of pt, mesh material, size and shape of mesh, surgical technique used, conc. Procedures (ie hyst) and poss
In October 2008, the FDA issued a Public Health Notification (PHN) to inform clinicians and patients of adverse events related to urogynecologic use of surgical mesh, and to provide recommendations on how to mitigate risks and how to counsel patients. Following the PHN, the FDA continued to monitor the outcomes of urogynecologic use of surgical mesh. A search of the FDA’s Manufacturer and User Device Experience (MAUDE) database from the last 3 years (January 1, 2008 - December 31, 2010), identified 2,874 Medical Device Reports (MDRs) for urogynecologic surgical meshes, including reports of injury, death, and malfunctions. Among the 2,874 reports, 1,505 were associated with pelvic organ prolapse (POP) repairs, and 1,371 were associated with stress urinary incontinence (SUI) repairs.
Stress urinary incontinence (SUI) is defined as the involuntary leakage of urine with effort or exertion, such as physical exercise, sneezing or coughing. Approximately 50% of all women experience SUI symptoms, and many of these women are sufficiently bothered by their symptoms to seek treatment from a physician. Pelvic floor muscle exercises and other nonsurgical treatments can be effective therapies, but many women choose to undergo surgery to treat their SUI symptoms. Suburethral synthetic polypropylene mesh sling placement is the most common surgery currently performed for SUI. Extensive data exist to support the use of synthetic polypropylene mesh suburethral slings for the treatment of female SUI, with minimal morbidity compared with alternative surgeries. Advantages include shorter operative time/anesthetic need, reduced surgical pain, reduced hospitalization, and reduced voiding dysfunction. Mesh-related complications can occur following polypropylene sling placement, but the rate of these complications is acceptably low. Furthermore, it is important to recognize that many sling-related complications are not unique to mesh surgeries and are known to occur with non-mesh sling procedures as well. It is the AUA's opinion that any restriction of the use of synthetic polypropylene mesh suburethral slings would be a disservice to women who choose surgical correction of SUI.

- Multiple case series and randomized controlled trials attest to the efficacy of synthetic polypropylene mesh slings at 5-10 years. This efficacy is equivalent or superior to other surgical techniques. There is no significant increase in adverse events observed over this period of follow-up. Based on these data, the AUA Guideline for the Surgical Management of Stress Urinary Incontinence (2009) concluded that synthetic slings are an appropriate treatment choice for women with stress incontinence, with similar efficacy but less morbidity than conventional non-mesh sling techniques. The AUA Guideline also indicates that intra-operative cystoscopy should be performed during all synthetic sling procedures to identify urinary tract injury.

- The AUA strongly agrees with the FDA that a thorough informed consent should be conducted prior to synthetic sling surgery. The AUA also agrees that surgeons who wish to perform synthetic sling surgery should:
  - Undergo rigorous training in the principles of pelvic anatomy and pelvic surgery.

Society for Female Urology and Urodynamics (SUFU) Response: FDA Safety Communication: UPDATE on Serious Complications Associated with Transvaginal Placement of Surgical Mesh for Pelvic Organ Prolapse (July 2011)

Specifically with respect to the updated FDA posting, SUFU is unequivocally supportive of the following statements:

- Surgeons require rigorous training in the principles of pelvic anatomy, and pelvic surgery as well as in proper patient selection for pelvic organ prolapse (POP) reconstructive procedures. Such measures should be in place PRIOR to attempting implantation of surgical mesh for prolapse.
- Prior to utilization of mesh in pelvic floor repair, surgeons should be properly trained in specific mesh implantation techniques.
- Prior to implantation of mesh, the surgeon should be competent in recognizing intraoperative and postoperative complications as well as comfortably and completely managing these adverse events. Such adverse events include those involving the urinary and gastrointestinal tracts.
- Prior to implantation of surgical mesh for the treatment of pelvic organ prolapse, the surgeon and patient MUST have a proper informed consent discussion regarding the risks, benefits, alternatives and indications for the use of mesh.
Rationale for mesh repairs

- Recurrence rates
  - Standard Repairs 20 – 45% 1
  - 60% of recurrences in the same compartment 2

- Randomized trial 3
  - Recurrence with mesh 7%
  - Recurrence without mesh 39%

- Cochrane meta-analysis supported use of mesh for anterior repairs 4

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<table>
<thead>
<tr>
<th>Author</th>
<th>n</th>
<th>Prosthesis</th>
<th>Follow-up</th>
<th>Success</th>
<th>Complications</th>
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<tbody>
<tr>
<td>Eglin 2003</td>
<td>103</td>
<td>Polypropylene (Anterior Transabt.)</td>
<td>18 mos</td>
<td>97%</td>
<td>5% extrusion</td>
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<tr>
<td>Yan 2004</td>
<td>30</td>
<td>27 Polypropylene, 3 Polyester (Anterior Transabt.)</td>
<td>6.7 mos</td>
<td>97%</td>
<td>7% extrusion  (n=2)</td>
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<tr>
<td>Dwyer 2004</td>
<td>64</td>
<td>Polypropylene (Atrium)</td>
<td>29 mos</td>
<td>94%</td>
<td>9% extrusion</td>
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<td>Gomelsky 2004</td>
<td>70</td>
<td>Porcine Dermis (AMS)</td>
<td>24 mos</td>
<td>87.1%</td>
<td>Nil</td>
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<tr>
<td>De Tayrac 2006</td>
<td>143</td>
<td>Polypropylene (Pelvix)</td>
<td>10 mos</td>
<td>92.3%</td>
<td>6.3% extrusion  (n=9)</td>
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<tr>
<td>Moore 2007</td>
<td>114</td>
<td>Soft polypropylene (Telex)</td>
<td>16.6 mos</td>
<td>90.5%</td>
<td>9.6% extrusion (n=11)</td>
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<tr>
<td>Nguyen 2008</td>
<td>66</td>
<td>Polypropylene RCT comparing Perigee w/IntePro vs. AC</td>
<td>24 mos</td>
<td>86% Mesh 47% AC</td>
<td>5% extrusion Dyspareunia: 16% AC, 18% mesh</td>
</tr>
</tbody>
</table>
How can we help maximize good outcomes and minimize complications?

- Surgical Technique
- Patient Selection
- Product Performance

How can you get started?
IVUmed Scholarships: 1999-Present

- Current funding
  - AUA Sections
  - Industry
  - Individuals/alumni
- 15-25 residents per year
- Number of scholarships limited by funding

Before you go

- Get all your immunizations
- Bring some breakfast bars
- Go with someone who has been there before
- Take the basics
- Have a great time and along the way give back!
How can you get started

IVUmed
Teach One, Reach Many

www.IVUmed.org
Email: mccammka@evms.edu

Conclusion

- Education of professionals and patients
- Help is available
- New options
- Incontinence and prolapse are not something women have to live with
- Talk to your patients
“We make a living by what we get, but we make a life by what we give”

Winston Churchill

Questions?
IVUmed’s Approach

- Long-term collaboration with local partners
- Hands-on training
- Building capacity for sustainable surgical care

A Complete Educational Experience

- On-site workshops
- Intensive training in regional centers
- Long-term fellowships with SIU
  - Telehealth training
  - IVUmed global fellowships
  - Outcomes measures
Questions?

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