Stony Brook Bladder Cancer Care
New Innovations

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The New Stony Brook University

- Stony Brook was established in 1957 in Oyster Bay as State University College on Long Island. In 1962 the University moved to its location in Stony Brook.

- In 1980 the hospital was opened.

- In June, 1991 Stony Brook Urology began its residency program.

- Innovations from the department include the pioneering of Cryo-surgery.
Stony Brook Urology

- Currently the department consists of:
  - 12 Providers
  - 11 Residents (4 Prelims, 7 Active)
  - 4 NPs
  - 5 PAs
  - Support staff
Stony Brook Urology

- With a catchment area of over 1.5 million and growing, Stony Brook Medicine is the premier institution on Long Island for multidisciplinary urologic care.
Stony Brook Urology

• Stony Brook is growing to meet the challenge

• With over $423 million dollars in capital investment Stony Brook Medicine remains on the cutting edge of medical innovation

• Includes:
  • Plans for Medical and Research Translational building
  • 245,000 square feet dedicated to translational research and Cancer treatment

• Plans for Children's Hospital
The Bed Tower housing Stony Brook Children’s Hospital

The Medical and Research Translation Building (MART)
New Equipment

- 2 daVinci Si Robots
- Plans for added capacity of the OR
- Blue Light with Cysview® cystoscopy system
Stony Brook Urology

- An emerging center for Bladder Cancer Care
  - 115 Bladder Cancer patients from 2012-2013
    - Ranging from T1-T4 disease
Economics of Bladder Cancer

- The direct medical costs of cancer care in the US were estimated at $125 billion in 2010.
- Costs are expected to rise to $155 billion by 2020.
- Bladder cancer is expected to account for >3% of all cancer related medical payments.
- **Diagnosis** alone of muscle invasive bladder cancer is approximately $150,000.

Avritscher et al Urology 2006
Economics of Bladder Cancer

- Non-medical costs of bladder cancer
  - Lost productivity
  - Time spent in recovery
    >100 million annually

- Cost due to untimely death from bladder cancer (value of life lost):
  17 billion annually

Svatek RS et al. Eururo 2014
Conundrum of Bladder Cancer Treatment

- Treatments and testing do not necessarily equate to equivalent benefit
  - More testing/treatment not always associated with better outcomes

- Major problem with all cost analysis is paucity of data on the effectiveness of therapy
Bladder cancer is notorious for gaps in knowledge
  • what works best--?

Absence of adequately powered randomized trials
75% are non-invasive

25% are muscle invasive

Herr et al. sciworldjou. 2011
US Bladder Cancer

30% upstaged on re-staging TURBT

25% are muscle invasive

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30-70% Recur

Herr et al. sciworldjou. 2011
US Bladder Cancer

75% are non-invasive

30% Upstaged on re-staging TURBT

25% are muscle invasive

10-30% will Progress

30-70% Recur

Herr et al. sciworldjou. 2011
Bladder Cancer Numbers

- 73,500 new cases each year in US
- 4th most common cancer in men
- 9th in women
- Over 520,000 bladder cancer survivors in the US
Screening for Bladder Cancer

• Currently there are no adopted screening programs in the US
Bladder Cancer Detection

- Urologists rely on primary care providers to:
  - identify patients at risk for bladder cancer
  - refer for a hematuria (blood in urine) evaluation

- Identification of risk factors:
  - Hematuria
  - Dysuria
  - Smoking
  - Exposure to chemicals
Detection of Bladder Cancer

- **Hematuria**
  - 3+ RBC per high powered field (HPF)
  - history, physical examination, and laboratory examination to rule out benign causes
  - Cystoscopy on all patients aged 35 years and older
  - A cystoscopy on all patients who present with risk factors for urinary tract malignancies regardless of age

AUA Guideline 2012
Hematuria Work Up

- **Upper tract evaluation**
  - Radiological $\rightarrow$ Computed tomography (CT) scan to examine the kidneys, bladder, and the tube that runs between them
Hematuria Work Up

- Lower tract Evaluation
- Cystoscopy procedure
Trans Urethral Resection (TUR) is an effective tool for diagnosis and management of Bladder Cancer.

Initial TUR is essential to decrease morbidity, disease recurrence, progression and decrease cost.

In 1 study, patients who underwent a re-TUR within 4 weeks of initial TUR:
- 70% had visible tumor
  - 30% of those at the original tumor bed
  - 70% of those had tumor at another site
First attempt at treatment is the best chance to optimize patient outcomes
Stony Brook Is Doing More

• While considered the "gold standard" for diagnosing bladder cancer, the traditional method of white-light cystoscopy has limitations.
However, now there is a way to overcome these limitations using a blue light
Stony Brook Is Doing More

- Blue-Light Cystoscopy with Cysview® is an innovative technology
- Cysview® is a solution that is placed into the bladder and is absorbed by cancerous tissue
- Cystoscopy is then performed with the PDD system (Storz)
- For patients suspected or known to have a certain kind of bladder cancer (any one receiving hematuria evaluation)
- Essential part of a comprehensive diagnostic and follow up program for bladder cancer
Blue Light with Cysview®

- Blue Light with Cysview® is a way to detect tumors in the bladder using photodynamic means.
- Abnormal tissue will illuminate.
Blue Light with Cysview®

- Cysview® (50 ml reconstituted solution) is introduced into the bladder 1 hour prior to resection (in pre-op)

(HEXAMINOLEVULINATE HCL)
Blue Light with Cysview®

- Protoporphyrin accumulates preferentially in neoplastic tissue
- Visualized as a clearly demarcated red fluorescence under BL illumination
Photodynamic Diagnosis

- **Goal of PDD**
  - Facilitate the detection of lesions
  - Reduce recurrence rates
  - Improve completeness of resection

- Cysview was approved by FDA in 2010 for use with the Karl Storz D-Light C PDD system with the blue light setting as an adjunct to the white light setting in the detection of NMIBC
Blue Light with Cysview®

White Light Cystoscopy

Blue Light with Cysview®
Blue Light with Cysview®

White Light Cystoscopy

Blue Light with Cysview®
Better Outcomes

- Stenzl et al conducted a prospective randomized multi-institutional study
- Study was the basis for FDA approval
  - 814 pts with Bca were randomized to WL vs BL
  - HAL Blue Light with Cysview® performed better than white light alone
Better Tumor Detection

16% more tumors detected

p<0.001

Stenzl et al, J Urol 2010
Better CIS Detection

40.8% Additional CIS detected

p<0.0001

Burger et al, Eur Urol, 2013
Reduced Recurrence Rates

Stenzl et al, J Urol 2010

p=0.026

9% Decreased Recurrence
Time to Recurrence

7 Additional Months

p=0.04

Stenzl et al, J Urol 2010
Trend Toward Progression

- 3.1% less progression
- $p = 0.066$

Stenzl et al, J Urol 2010
Continued Decreased Recurrence (12 mo)

RR 0.761 (.627-.924)

Burger et al, Eur Urol, 2013
Cost-effectiveness of Blue Light Cystoscopy with Cysview®

Initial Cysto/Turbt

<table>
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<tr>
<th>Cost for Pt treated with WL / 5 yrs</th>
<th>Cost for Pt treated with BL/ 5yrs</th>
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<td>$30,581.00</td>
<td>$25,921.00</td>
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15% reduction in 5 year costs is substantial on a population base

Patient examined on average spent less time managing disease recurrence during those 5 years (11% less) who had BL vs WL
Future of Cystoscopy

• “Technology is rapidly evolving …..it appears that fluorescence cystoscopy in some form is here to stay”
  • Dr. Harry W Herr
Stony Brook Future

- Stony Brook is growing on Long Island
- Committed to providing the best Urologic Oncology care to its patients
- Investments in Blue Light Cystoscopy with Cysview® are helping to make Stony Brook Urology the premier bladder care center on Long Island