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# Prostatectomy: Prehab, Rehab, Hope?

Sarah Haag, PT, DPT, WCS, Cert. MDT

1

## Learning Outcomes

After this course, participants will be able to:

- Independently list at least two common side effects of prostatectomy.
- Describe how physical therapy may impact the various mechanisms believed to be responsible for post-prostatectomy dysfunctions.
- List at least two evidence-based interventions for post-prostatectomy sequelae.

2

## Conflicts of Interest

- Co-owner of Entropy Physiotherapy and Wellness
- Co-Instructor for Introduction to Men's Pelvic Health

3

## Statement of Bias

- I think I help people
- I think that people can get better

4

## Prostate Cancer

- About 1 in 9 men will be diagnosed with prostate cancer in his lifetime.
- 60% of men are aged 65 years or older when they are diagnosed with prostate cancer.

American Cancer Society 2019

5

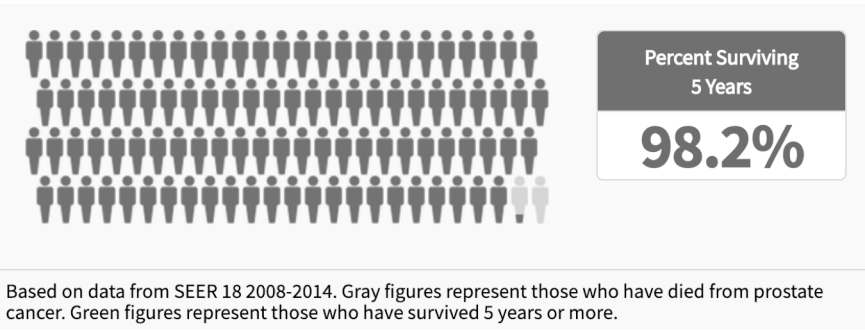
## Prostate Cancer

- The most common cancer among men in the United States, for men of all races.
- 2nd leading cause of cancer death among white, black, and Hispanic men.

Centers for Disease Control

6

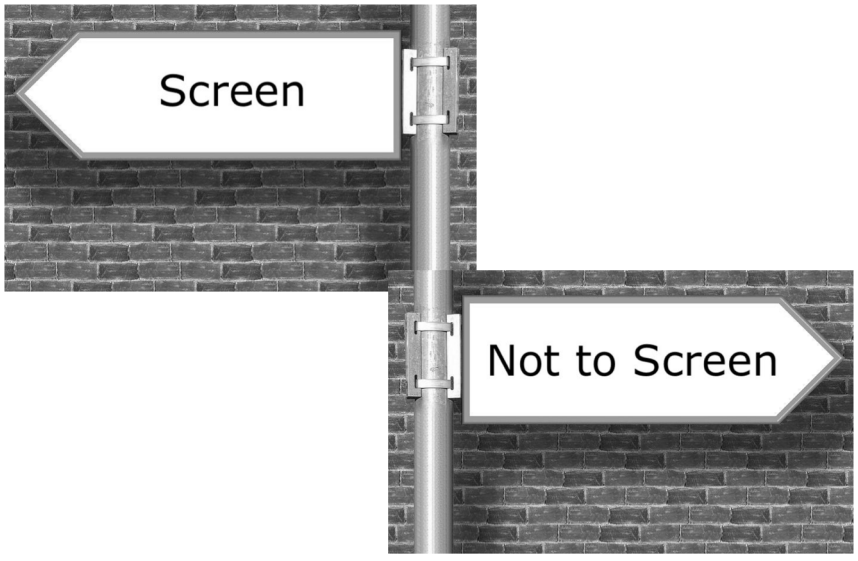
## Prostate Cancer




Based on data from SEER 18 2008-2014. Gray figures represent those who have died from prostate cancer. Green figures represent those who have survived 5 years or more.

https://seer.cancer.gov/statfacts/html/prost.html

7

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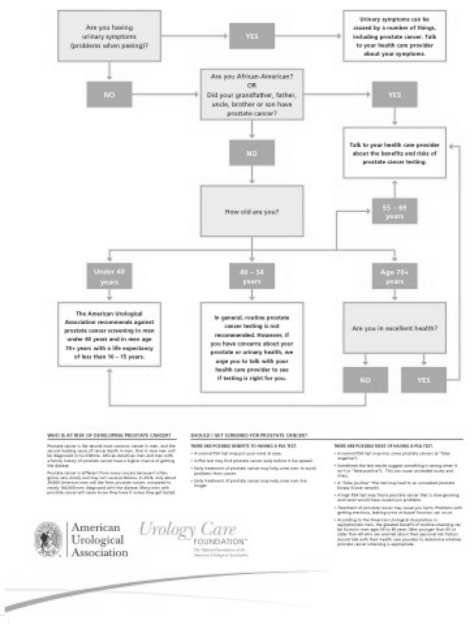
## Should You Be Screened for Prostate Cancer?

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*5.1.1* ***Guidelines for screening and early detection***

| Recommendations | LE | GR |
|---|---|---|
| Do not subject men to prostate-specific antigen (PSA) testing without counselling them on the potential risks and benefits. | 3 | B |
| Offer an individualised risk-adapted strategy for early detection to a well-informed man with a good performance status and a life-expectancy of at least ten to fifteen years. | 3 | B |
| Offer early PSA testing in well-informed men at elevated risk of having PCa:<br>• men > 50 years of age;<br>• men > 45 years of age and a family history of PCa;<br>• African-Americans > 45 years of age;<br>• men with a PSA level of > 1 ng/mL at 40 years of age;<br>• men with a PSA level of > 2 ng/mL at 60 years of age. | 2b | A |
| Offer a risk-adapted strategy (based on initial PSA level), with follow-up intervals of two years for those initially at risk:<br>• men with a PSA level of > 1 ng/mL at 40 years of age;<br>• men with a PSA level of > 2 ng/mL at 60 years of age;<br>Postpone follow-up to eight years in those not at risk. | 3 | C |
| Decide on the age at which early diagnosis of PCa should be stopped based on life expectancy and performance status; men who have a life-expectancy of < 15-years are unlikely to benefit. | 3 | A |

EAU Guidelines 2017

10

## Common Treatment Options

- Prostatectomy
- Radiation Treatment
- Hormonal Therapy

11

## Prostatectomy : The Mechanics

- Nerve sparing surgery
  - Focuses on preserving sexual function
  - You can check it out here:
    - https://youtu.be/_atrOlj_MjU

12

## Prostatectomy: The Results

- Cure rates are high!
- Men will likely die from some other cause.
  - Almost 100% will survive 5 years
  - 91% will survive 10 years
  - 76% will survive 15 years!

**This great, but….**

http://www.webmd.com/prostate-cancer/prostate-cancer-survival-rates-what-they-mean?page=2

13

## Prostatectomy: The Results

**Urinary Incontinence**

**Sexual Dysfunction**

14

CONTINUED

## I Want My Prostate Back

The urologist diagnosed his prostate cancer. A high-tech robot removed the diseased organ. Then came two common aftereffects: sexual dysfunction, and nagging questions. Was it all a monstrous mistake?

That's a lot of treatment- with few lives saved. The study's conclusion: If you aggressively screened, 1,410 men, and cut or irradiated 48 of them, you'd save exactly one man's life.

Were those my odds? I hate those odds.

Did I need surgery or not? Because if I didn't, I want my prostate back.

15

CONTINUED

## Prostatectomy: The Results

- Impact on Urinary Continence
  - Reports of post-prostatectomy range from 1%-90%!! (Borgermann, et al 2010)
  - How is this possible??

16

## Definition of Continence

- Total Dryness?
- Score of zero on ICIQ?
- No reports of leakage?
- 24 hour pad test?
- One pad or less per day?

**IT DEPENDS!!**

17

## Prostatectomy: The Results

- Impact on Sexual Function
  - Orgasm will be dry
  - Erectile dysfunction is highly prevalent
    - 54-90% will recover in 12 months
    - 63-94% will recover in 24 months

Alenizi 2015, Emanu 2016

18

## Summary of Slides so far…

- Prostate cancer is very prevalent ☹
- Prostate cancer is highly treatable! ☺
- Men can live a *long time* after treatment ☺
- This means men may have to deal with *urinary incontinence AND erectile dysfunction* for *a long time* ☹

19

## Can we make a difference?

**Prehab?**

**Rehab?**

**Hope??**

20

# Urinary Incontinence

21

## Who might it happen to?

- Older Men
- Black/African-American Men
- Higher PSA at diagnosis
- Multiple comorbidities
  - Smoking
  - Depression
  - Circulatory Disease
- Men with urine loss ratio of >15% are significantly more likely to be incontinent at 1 year.
  - ULR = weight of urine in pad/daily micturition volume (Ates 2007)

Anderson 2012

22

## Who might it happen to?

- Age and IPPS were independent predictors of continent at 1 month

Lavigueur-Blouin 2015

**International Prostate Symptom Score (I-PSS)**

**Patient Name:** _____ **Date of birth:** _____ **Date completed** _____

| In the past month: | Not at All | Less than 1 in 5 Times | Less than Half the Time | About Half the Time | More than Half the Time | Almost Always | Your score |
|---|---|---|---|---|---|---|---|
| **1. Incomplete Emptying** How often have you had the sensation of not emptying your bladder? | 0 | 1 | 2 | 3 | 4 | 5 | |
| **2. Frequency** How often have you had to urinate less than every two hours? | 0 | 1 | 2 | 3 | 4 | 5 | |
| **3. Intermittency** How often have you found you stopped and started again several times when you urinated? | 0 | 1 | 2 | 3 | 4 | 5 | |
| **4. Urgency** How often have you found it difficult to postpone urination? | 0 | 1 | 2 | 3 | 4 | 5 | |
| **5. Weak Stream** How often have you had a weak urinary stream? | 0 | 1 | 2 | 3 | 4 | 5 | |
| **6. Straining** How often have you had to strain to start urination? | 0 | 1 | 2 | 3 | 4 | 5 | |
| | **None** | **1 Time** | **2 Times** | **3 Times** | **4 Times** | **5 Times** | |
| **7. Nocturia** How many times did you typically get up at night to urinate? | 0 | 1 | 2 | 3 | 4 | 5 | |
| **Total I-PSS Score** | | | | | | | |

**Score:** 1-7: *Mild* 8-19: *Moderate* 20-35: *Severe*

| **Quality of Life Due to Urinary Symptoms** | Delighted | Pleased | Mostly Satisfied | Mixed | Mostly Dissatisfied | Unhappy | Terrible |
|---|---|---|---|---|---|---|---|
| If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that? | **0** | **1** | **2** | **3** | **4** | **5** | **6** |

23

## Why does it happen after prostatectomy?

- Injury to proximal urethral sphincter?
- Impaired bladder compliance?
- Detrusor overactivity?
- Sphincter weakness?
- Reduced functional length of urethra?

Ko 2008, Hamada 2014

24

## Injury to proximal urethral sphincter?

25

## Role of overactive detrusor

- Men with pre-operative detrusor over-activity were more likely to be incontinent after surgery than men without (34% vs 5%)

Dubbleman 2012

26

## Sphincter weakness?

- Due to injury during surgery?
- Due to weakness pre-op?

Moore 2010

27

## Reduced functional length of urethra?

28

## Evidence for Pre-habilitation

- Higher levels of physical activity prior to prostatectomy reduced sick leave after surgery.

Angente 2016

29

## Evidence for Pre-habilitation

- Self-reported continence was improved at 1 month and 3 months when pelvic floor exercises were started 30 days prior to surgery and continued post-op vs. post-op only.

After 1 month, 44% were continent in the pre-hab group vs. 20.3% in the rehab group.

So what was the intervention??

Centemero 2010

30

## Evidence for Pre-habilitation

- One physiotherapist
- 30 days prior to surgery
  - Intensive 30 min sessions, 2x/week
  - Home program 30 min daily.
    - Focus on tonic contractions
  - Feedback on contraction quality was given based on visual assessment and subscrotal palpation

Centemero 2010

31

## Evidence for Pre-habilitation

**Preoperative Pelvic Floor Muscle Exercise and Postprostatectomy Incontinence: A Systematic Review and Meta-analysis**

- Conclusion: Preoperative PFME improves postoperative urinary incontinence after radical prostatectomy at 3 months, but not at 6 months, suggesting it improves early continence rates but not long-term continence rates.

Chang 2015

32

## Evidence for Pre-habilitation

- Data indicate that the majority of men who undergo PFM strength assessment and training prior to RARP will maintain or improve their strength postoperatively and that PFM strength correlated with continence at 4 weeks post-catheter removal.

Manley 2016

33

## Evidence for Pre-habilitation

- Conclusion: According to this meta-analysis, additional preoperative PFMT did not improve the resolution of UI after RP at early (<3 months), interim (6-month) or late (1 year) recovery stages. However, the results of time to continence and quality of life were inconclusive because of insufficient data. More high-quality RCTs are needed for better evaluation of the effectiveness of preoperative PFMT on post-prostatectomy UI.

Wang 2014

34

## Bummer!

- Or is it….
  - Compared Prehab plus Rehab to Rehab only
  - Only 5 articles
  - Variability of definition of continence, variability in the interventions
  - Some studies showed *earlier* continence and improved quality of life.

35

## Other studies….

- Compared 3 pre-op visits to 1 post-op visit with physio. Recommends pelvic floor PT following surgery. (Geraerts 2013)

36

## So what can we do?

- Here's what I do *before surgery*….

- Educate
- Check baseline function
- Give an individualized program based on physicial evalulation.

37

## Clinical Observations

- Education DOES help!

- Patient report increased confidence

- Patients report feeling better knowing what is ahead.

38

## In spite of little evidence

- Why do I do what I do?
- No evidence that the education and exercise will make people worse
- Improvement in quality of life scores

39

## Evidence for Post-Prostatectomy Rehabilitation for Urinary Incontinence

**Do we have any??**

40

## Evidence for Post-Prostatectomy Rehabilitation for Urinary Incontinence

- Physiotherapy seems to help regain continence sooner
- Starting physiotherapy earlier is better than starting later
- Several different physiotherapy interventions were considered, none were found to be superior.

Rajkowska-Labon 2014

41

## Evidence for Post-Prostatectomy Rehabilitation for Urinary Incontinence

- No clear support that conservative management of any type is helpful for postprostatectomy UI whether delivered as treatment to men who are incontinent of as a prevention to all men undergoing radical prostatectomy.

Anderson 2015 – Cochrane Review

42

## Possible Physical Therapy interventions

- Pelvic Floor Exercises
- Biofeedback
- Functional Training
- Bladder Training
- Electrical Stimulation

43

## Pelvic Floor Exercises

- What is the best cue??
  - 'Stop the flow of urine'
  - 'lift the floor'
  - 'Shorten the penis'
  - 'Lift the testes'
  - 'Tighten around the anus'
  - 'Prevent passing gas'

44

## So what worked best??

- Depends on what you're trying to accomplish!

'Elevate the bladder'

-Greatest increase in abdominal EMG and IAP

'Tighten around the anus'

-greatest anal sphincter muscle activity

'Shorten the penis'

- Greatest dorsal displacement of the mid-urethra and SUS muscle activity

Stafford 2015

45

## Pelvic Floor Exercises

- Proper Dosage?

- Quick flicks vs. Endurance Holds

46

## Pelvic Floor Exercises

- Improving compliance
  - Meaningful?
  - Manageable?
  - Effective?

47

## The 4-3-2 Method for Kegel Exercises

**Table 1.** Daily Routine With the 4-3-2 Method

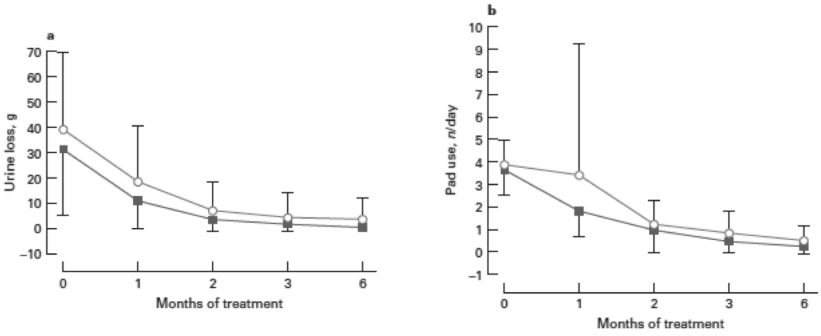
| | | | | | |
|---|---|---|---|---|---|
| Set 1 | Contract 2 breaths | Relax 2 breaths | Contract 2 breaths | Relax 2 breaths | Contract 2 breaths |
| Set 2 | Contract 2 breaths | Relax 2 breaths | Contract 2 2 breaths | Relax breaths | Contract 2 breaths |
| Set 3 | Contract 2 breaths | Relax 2 breaths | Contract 2 breaths | Relax 2 breaths | Contract 2 breaths |
| Set 4 | Contract 2 breaths | Relax 2 breaths | Contract 2 breaths | Relax 2 breaths | Contract 2 breaths |

Bridgeman 2010

48

## Pelvic Floor Exercises

- Biofeedback vs. Verbal Instruction




Floratos 2002

49

## Bladder Training

- Typically including timed voiding, bladder training, reduction of bladder irritants.
- Recommended by International Continence Society and European Association of Urologists
- However, not strongly supported by evidence and not standardized.

Bauer 2009

50

## Combo??

- RCT (n=208)
  - Community-swelling men who continue to have incontinence >1 year after radical prostatectomy.
  - Compared Behavioral Therapy and Pelvic Floor Exercises to Behavioral Therapy, Pelvic Floor Exercises, Biofeedback and Estimf

Goode 2011

51

## Not necessarily….

- Addition of biofeedback and electrical stimulation did not improve outcomes over CBT and exercise.

52

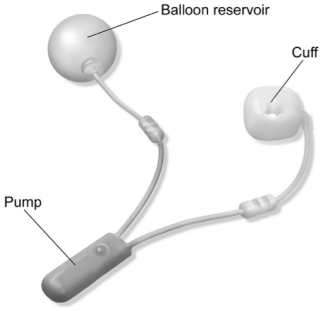
## Pharmaceutical Interventions

- Duloxetine (Bauer 2008, Filocamo 2007 - in conjunction with physiotherapy, Cornu 2011)
- Alpha-adrenoceptor agonists
  - Ephedrine, phenylpropanolamine, midodrine
- Beta$_2$-adrenoceptor agonist
  - Clenbuterol

53

## Surgical Interventions for Incontinence

- Gold Standard
  - Artificial Urinary Sphincter (Bauer 2009)




Artificial Urinary Sphincter

•Blausen.com staff (2014). "Medical gallery of Blausen Medical 2014". *WikiJournal of Medicine* **1** (2). DOI:10.15347/wjm/2014.010. ISSN 2002-4436.

54

## Slings

- Sling placed in men (n=10) with moderate to severe UI. Assessed with urodynamics, improvement in UI, no episodes of obstruction. (Horstmann 2012)

- Not usually recommended for men with severe UI.

55

## Penile Vibratory Stimulation?

- Pudendal Nerve Stimulation has been show to increase external urinary pressure in men with SCI and in healthy women.

Fode 2013

56

## Penile Vibratory Stimulation?

- No significant improvement in UI (Fode 2013, Fode 2014)
- May help with erectile function? (Fode 2014)

57

## Electrical Stimulation?

- Not strongly supported by evidence
  - The only study that showed evidence for the use of electrical stimulation was published in 1976, but there was a number of issues with the study design and statistical analysis. In several subsequent studies no significant effectiveness of electrical stimulation could be shown.

Bauer 2009

58

## So what should men do??

Much of the current treatment choice in clinical practice depends on patient's or surgeon's preference and may be biased by open or hidden commercial activities of producers, patient groups, or publication activities of single centers. No general recommendations exist on who the most suitable candidate for which treatment is. Until now, only a few randomized-controlled trials (RCTs) have been published.

Gajewski 2010

59

## Sexual Dysfunction

60

## Why does it happen?

- Proposed mechanisms is neuropraxia during surgery.

61

## Who will it happen to?

- Decreased erectile function prior to surgery
- Depression

Gandaglia 2016

62

## Physical Therapy

- Pelvic Floor Muscle Exercises improved climacturia and erectile function 1 year after nerve sparing radical prostatectomy.
- Significant improvement on IIEF in treatment group vs. control.

| Pros* | Cons* |
|---|---|
| • RCT<br>• Good randomization<br>• No other aids allowed | • Small study (n=33)<br>• Did PFMT with electrical stimulation |

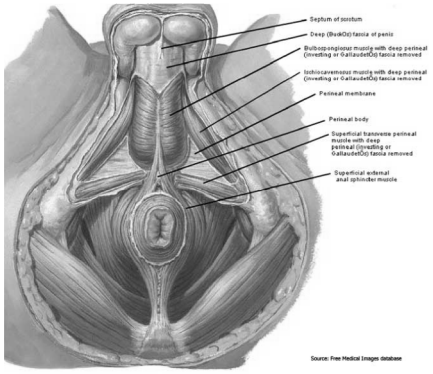
*Sarah's opinion

Geraerts 2015

63

## Role of pelvic floor in erectile function

- Superficial layer
  - Bulbospongiosus, ischiocavernosus, superficial transverse perineal, and external anal sphincter




64

## Role of pelvic floor in erectile function

- Superficial (primarily bulbospongiosis) muscles play a role in
  - Ejaculation
  - Emission
  - Penile rigidity and hardness
- It's possible that improving pelvic floor function can improve rigidity,

Cohen 2016

65

## Is penile pre-hab a thing?

- Not exactly, but…

Men who received demonstration of erectile management technique prior to surgery reduces long-term regret.

Kinsella 2011

66

## Penile Rehab

- No consensus on protocol
  - Frequently includes
    - Phosphodiesterase type 5 inhibitor
    - Vacuum erectile device
    - Intracavernosal self-injection
    - Intraurethral suppositories
    - Combination of the above methods

67

## Penile Rehab

- Vacuum Therapy
  - Utilizes negative pressure to distend the corporal sinusoids, increasing the infusion of blood to the penis.
  - Can maintain tissue health until full recovery of nerves
    - 60% of control reported decreased penile length and girth, compared to only 23% of vacuum users

Qian 2016

68

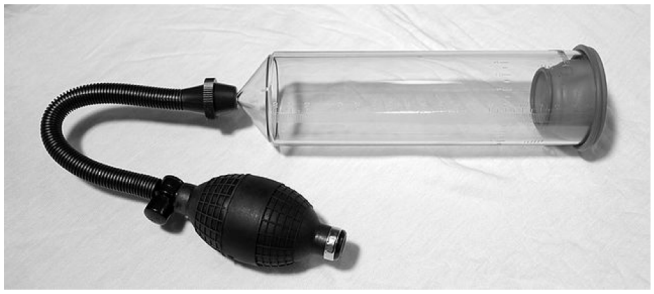
## Penile Rehab

- Compliance with Vacuum Protocols
  - 80% compliance rate
    - 55% who used vacuum daily reported natural erections sufficient for vaginal penetration.

Zippe 2001

69

## Vacuum pump



By Bjoernnielsen - https://www.staustinreview.com/top-3-penis-pumps, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=57165388

70

## Pharmaceutical Options

- PED5I are still the first line therapy for penile rehab after radical prostatectomy
  - Mechanism is unclear, and benefits are variable
    - Prevention of degradation of cyclic guanosine monophosphate?
      - It's necessary for intact nerves to produce nitric oxide for proper function.

Qian 2016

71

## Pharmaceutical Options

- Intracavernosal Injections (ICI)
  - 2nd line treatment since PDE5I
  - Injection is usually alprostadil
- Some studies show good compliance…

Belew 2014

72

## But….

- You can see what it entails…

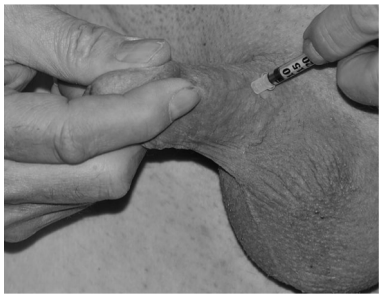


Image: By Post Prostate - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=35172002

Belew 2014

73

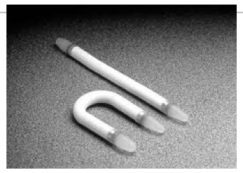
## Intraurethral pellet

- MUSE® (alprostadil)

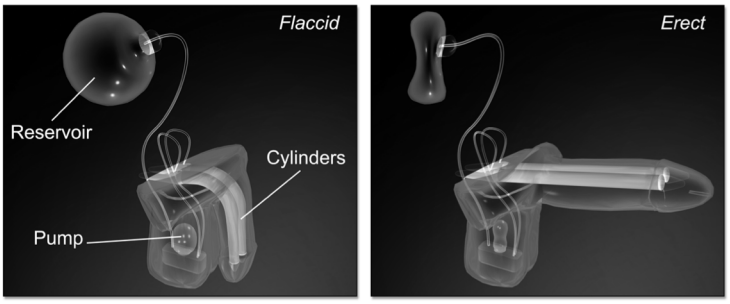
74

## Surgical Options

- Penile prosthesis



**Inflatable Penile Implant**




By BruceBlaus - Own work, CC BY-SA 4.0,
https://commons.wikimedia.org/w/index.php?curid=44923324

75

## So what can we really do?

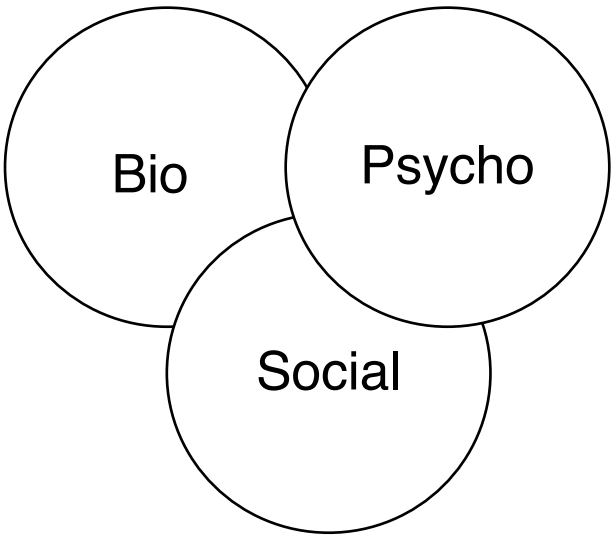
- Educate!
- Encourage!
- Refer!

76

## Educate

- Ask for help
- Starting earlier is better
- Sticking with it….

77




78

**KEY POINTS**

- Approximately 85% of men will report difficulties with erections following radical prostatectomy.
- Penile rehabilitation should be the standard of practice for men with erectile dysfunction, following radical prostatectomy.
- Men with prostate cancer report significant emotional distress related to erectile dysfunction.
- This emotional distress can lead to avoidance of utilizing erectile dysfunction treatments and penile rehabilitation.
- Current psychosocial interventions have demonstrated initial promise in helping men utilize erectile dysfunction treatments; however, continued work is needed to improve sexual functioning outcomes for men with prostate cancer.

- 69% of men did not accept they had ED
- Median time to pursue treatment was 2 years
- 50% of men interested in seeking treatment for ED actually did.
- In men who did seek help, 50-80% discontinue treatment within 1 year.

Emanu 2016

79

## Everyone deserves support

- Most studies on sexual quality on life after prostate surgery have focused on men who have sex with women.
- 16 men who have sex with men were interviewed
  - Limited access to psychosocial support
  - Decreased confidence to meet new partners
  - Negative impact is severe on sexual Quality of Life

Lee 2015

80

## Encourage

- Erectile function is usually slower to return than continence
- Rehab needs to start soon, but results will be slow

81

## Refer

- Physician
- Sexual Counselor
- Clinical Sexologist
- Relationship Counselor

Ljunggren 2015

82

## Facts

- Many men will experience urinary incontinence and sexual dysfunction after prostatectomy.
- Many men will get better without the intervention of a physical therapist.
- There is no gold standard for rehabilitation after prostatectomy.

83

## Services to be offered??

- Pre-op assessment of LUTS
  - Men with LUTS referred for intervention
  - Men without LUTS educated
- Conclusion
  - Early intervention may help?
  - Noted increased referral rates over 8 years
  - No comments on actual outcomes

Almallah 2014

84

## So what should we do?*

*Sarah's opinion only!

- Pre-op
  - Assessment of current function
    - Motor control of pelvic floor
    - Bowel, Bladder, Sexual Function
  - Education
    - Recovery expectations
    - Discussion of protective undergarments
    - Individualized HEP
  - Encouragement
    - Discuss sexual/penile rehab with physician

85

## So what should we do?*

*Sarah's opinion only!

- Post-op
  - Assess function
    - Pelvic floor function
    - Functional challenges
    - General feelings
    - Voiding log
  - Support
    - Encourage activity
  - Educate
    - Home Program update
    - Progression back to life!

86

A standardized program of pelvic floor muscle reeducation that would guarantee complete therapeutic success is yet to be developed.

Rajkowska-Labon 2014

87

## Going forward

- We need more GOOD studies.
- We need to continue educating doctors and the public about what we know (and be honest about what we don't know).

88

CONTINUED

# Thank you

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89