Point Counterpoint Debate: Penile Rehabilitation is beneficial after pelvic oncology surgery
Estimated New Cancer Cases* in the US in 2016

Males 841,390
Females 843,820

- **Prostate** 21%
- **Lung & bronchus** 14%
- **Colon & rectum** 8%
- **Urinary bladder** 7%
- **Melanoma of skin** 6%
- **Non-Hodgkin lymphoma** 5%
- **Kidney & renal pelvis** 5%
- **Oral cavity & pharynx** 4%
- **Leukemia** 4%
- **Liver & intrahepatic bile duct** 3%
- **All other sites** 22%

- **Breast** 29%
- **Lung & bronchus** 13%
- **Colon & rectum** 8%
- **Uterine corpus** 7%
- **Thyroid** 6%
- **Non-Hodgkin lymphoma** 4%
- **Melanoma of skin** 3%
- **Leukemia** 3%
- **Pancreas** 3%
- **Kidney & renal pelvis** 3%
- **All other sites** 21%

*Excludes basal cell and squamous cell skin cancers and in situ carcinoma except urinary bladder.
## Trends in Five-year Relative Cancer Survival Rates (%), 1975-2011

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>All sites</td>
<td>49</td>
<td>55</td>
<td>69</td>
</tr>
<tr>
<td>Breast (female)</td>
<td>75</td>
<td>84</td>
<td>91</td>
</tr>
<tr>
<td>Colorectum</td>
<td>50</td>
<td>60</td>
<td>66</td>
</tr>
<tr>
<td>Leukemia</td>
<td>34</td>
<td>43</td>
<td>62</td>
</tr>
<tr>
<td>Lung &amp; bronchus</td>
<td>12</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>Melanoma of the skin</td>
<td>82</td>
<td>88</td>
<td>93</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>47</td>
<td>51</td>
<td>72</td>
</tr>
<tr>
<td>Ovary</td>
<td>36</td>
<td>38</td>
<td>46</td>
</tr>
<tr>
<td>Pancreas</td>
<td>3</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Prostate</td>
<td>68</td>
<td>83</td>
<td>99</td>
</tr>
<tr>
<td>Urinary bladder</td>
<td>72</td>
<td>79</td>
<td>79</td>
</tr>
</tbody>
</table>

*Cancer Statistics 2016, American Cancer Society, Inc.*


Source: Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2015.
Robot

1999

2014
Robot Numbers

• 2015 3500 robotic platforms in the world
  – 2203 in US, 183 in Japan, 11 in China
• 2015 700,000 robotic procedures (world)
• 80% urologic or gynecologic

• About 90,000 American men underwent radical prostatectomy each year, 4/5 patients will have robot-assisted surgeries.

Cancer Bulletin, 8/9, 2011
WSJ, Nov 2014-5NCI
ED compared between open and robot-assisted laparoscopic surgery using various definitions and as reported by patients 12 mo after surgery

<table>
<thead>
<tr>
<th>Definition of erectile dysfunction</th>
<th>Open surgery, n (%)</th>
<th>Robot-assisted surgery, n (%)</th>
<th>Adjusted A, OR (95% CI) **</th>
<th>Adjusted B, OR (95% CI) †</th>
<th>Adjusted C, OR (95% CI) ‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIEF score §</td>
<td>531 (75)</td>
<td>1200 (70)</td>
<td>0.80 (0.64–1.00)</td>
<td>0.79 (0.63–1.00)</td>
<td>0.73 (0.58–0.93)</td>
</tr>
<tr>
<td>IIEF-5 score # at 12 mo ≤16</td>
<td>570 (81)</td>
<td>1311 (78)</td>
<td>0.86 (0.68–1.09)</td>
<td>0.75 (0.58–0.96)</td>
<td>0.75 (0.58–0.97)</td>
</tr>
<tr>
<td>IIEF-5 score # at 12 mo ≤21</td>
<td>654 (93)</td>
<td>1508 (90)</td>
<td>0.71 (0.50–0.99)</td>
<td>0.61 (0.42–0.88)</td>
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</tr>
<tr>
<td>Penile stiffness less than half of the time</td>
<td>574 (81)</td>
<td>1323 (77)</td>
<td>0.81 (0.64–1.03)</td>
<td>0.75 (0.59–0.96)</td>
<td>0.75 (0.58–0.97)</td>
</tr>
<tr>
<td>No spontaneous morning erection</td>
<td>664 (93)</td>
<td>1522 (89)</td>
<td>0.59 (0.42–0.82)</td>
<td>0.52 (0.36–0.76)</td>
<td>0.50 (0.35–0.74)</td>
</tr>
<tr>
<td>Erectile dysfunction, combined variable †</td>
<td>561 (79)</td>
<td>1282 (75)</td>
<td>0.80 (0.64–1.00)</td>
<td>0.74 (0.59–0.95)</td>
<td>0.75 (0.58–0.96)</td>
</tr>
</tbody>
</table>

CI = confidence interval; IIEF = International Index of Erectile Function; OR = odds ratio.
Information on unadjusted risk and ORs is available in Supplementary Table 3.
** Adjusted A: adjusted for age at surgery, educational level, smoking, employment, cardiovascular disease.
† Adjusted B: adjusted for same as A plus all four preoperative tumour characteristic variables.
‡ Adjusted C: adjusted for same as A plus B plus degree of neurovascular bundle preservation.
§ IIEF Questionnaire, question 3: “When you had erections with sexual stimulation, how often was your erection hard enough for penetration during the last 3 months?” with cutoff between response 2 and 3. The following responses were available: “No sexual activity” (0); “Almost never or never” (1); “A few times (much less than half the time)” (2); “Sometimes (about half the time)” (3); “Most times (much more than half the time)” (4); and “Almost always or always” (5).
# IIEF Questionnaire modified version with five questions, six answer categories, 0–5 points per question; score ≤16 = erectile dysfunction; score ≤21 = some erectile function.
† Erectile dysfunction implies a lack of stiffness at sexual activity or morning erection.

Incidence of ED after Radical Prostatectomy

- Based on current literature, it is not possible to accurately give the true incidence of post-RP ED because reported postoperative ED is extremely discrepant among series; a great variation in the nature of the populations studied and the modality for data collection and reporting; the great inconsistency in the definition of what is considered a normal EF before surgery and after RP.
- Overall, ED is still a very common problem after RP with the incidence varies between 14% and 90%.

Salonia et al. Transl Androl Urol 4:421, 2015
Clavell and Wang. Transl Androl Urol 2016 (accepted)
Prostate and Neurovascular Plexus

- Many urologists believe that we have maximized our techniques for nerve sparing with current technology.

- We need to look for other modalities to improve recovery of the EF after prostatectomy.
Penile Rehabilitation

The concept of penile rehabilitation is based on the use of any therapy able to preserve EF through the improvement of cavernosal oxygenation, in order to preserve endothelial function and to prevent smooth muscle fibrosis before the recovery of the cavernosal nerve function.
# Attitudes and Practice Patterns of Penile Rehabilitation

**ISSM Study**
- 301 physicians from 41 countries
- 83.7% performed rehab.
- Rehab strategies:
  - **PDE5 inhibitors**: 95.4%
  - **ICI**: 75.2%
  - **VED**: 30.2%
  - **MUSE**: 9.9%

**AUA Study**
- 618 urologists
- 85.8% performed rehab.
- Rehab strategies:
  - **PDE5 inhibitors**: 1<sup>st</sup> choice
  - **VED**: 2<sup>nd</sup> choice
  - **ICI**: 3<sup>rd</sup> choice
  - **MUSE**: 4<sup>th</sup> choice

_Teloken et al. JSM 6:2032, 2009_  
_Tal et al. JSM 8: 2370, 2011_
It is working?

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Landon Trost, MD