Assessment of New Medical Technologies for Cancer Treatment

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• Every 2 Minutes an American is Diagnosed with Prostate Cancer
• Every 18 Minutes an American Dies of Prostate Cancer
• What technology to use? None? IMRT? Robot?
Active Surveillance?

- High prevalence of prostate cancer upon autopsy
  Sakr, In Vivo, 1994
- High frequency of prostate cancer upon biopsy even when PSA and prostate exam normal
  Thompson, NEJM, 2004
- 29-50% of screen-detected prostate cancer over-treated
  Etzioni, JNCI, 2002; Draisma, JNCI, 2003; Miller, JNCI, 2006
- Side effects avoided if don’t receive treatment that was un-necessary
  NCCN Prostate Cancer Treatment Guideline, 2011
The ability deliver many “beamlets” of varying radiation intensity, within one treatment field.

“Fluence” or Intensity Map

“Beam-lets”
<table>
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<tr>
<th></th>
<th>Self Referral</th>
<th>Non-Self Referral</th>
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<tr>
<td>IMRT</td>
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Table 2
Mitchell, NEJM, 2013
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*Table 3*

Mitchell, NEJM, 2013
Robotic Surgery?
Get Real
- Fundamentals of Laparoscopic Surgery- FLS (Optional)
- Fundamental Skills of Robotic Surgery- FSRS
- Real-time daVinci® Surgical System Experience

Simulation to Console

Operating Room Observation

Seeing is Believing
- Robot-assisted approach to:
  - Radical Cystectomy (RARC)
  - Partial Nephrectomy (RAPN)
  - Prostatectomy (RARP)
  - Hysterectomy (RAH)

Team Approach
- Bedside Observation
- Hands-on Experience
- Troubleshooting

No One is Wise Enough Alone

Porcine Lab

Test Drive
- Surgeon's Procedure of Choice:
  - RARC
  - RAN
  - RAPN
  - RAH
• Institutional MIS program developed
• Robotic simulator proven useful in RCT
  Stegemann, Urology, 2013; Chowriappa, BJU Int, 2015
• Simulation-based training economically viable
# International Robotic Cystectomy Consortium

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Hayn, Eur Urol, 2010; Raza, Eur Urol, 2015
Conclusions

• Right-sizing prostate cancer treatment is challenging
• All appropriate treatment options outlined in evidence-based guidelines (NCCN) should be discussed
• Newer treatments (IMRT and Robots) should be evaluated critically and compared carefully to older treatments
• Treatment recommendations should not be influenced by any business and/or personal interests of the care provider
“... Or, if you elect not to have the surgery, the insurance company offers six days and seven nights in Barbados.”