



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?**

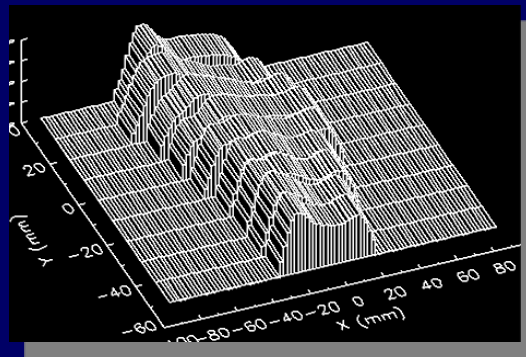
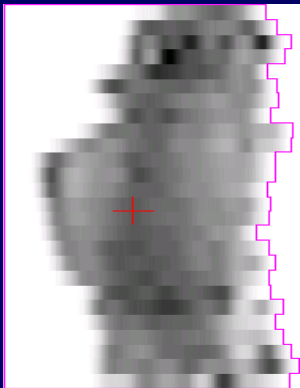
None? IMRT? Robot?

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

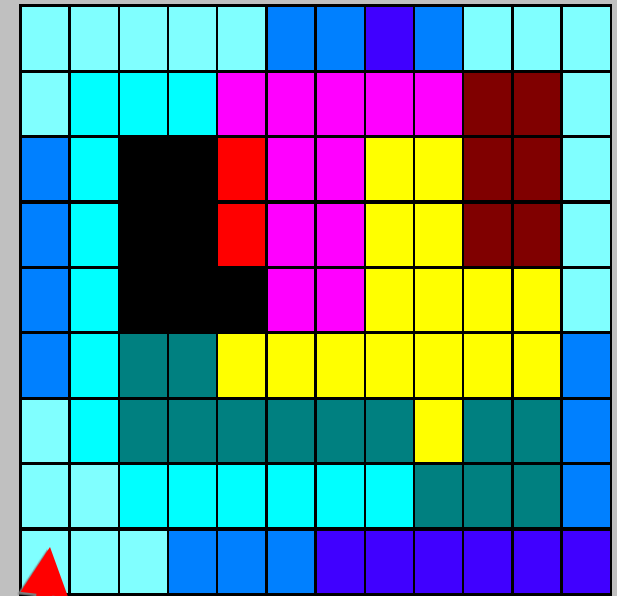
Radiation using IMRT?

The ability deliver many “beamlets” of varying radiation intensity, within one treatment field



“Fluence” or Intensity Map

field length



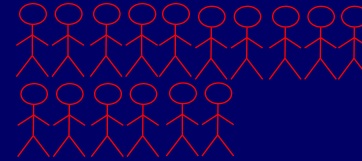
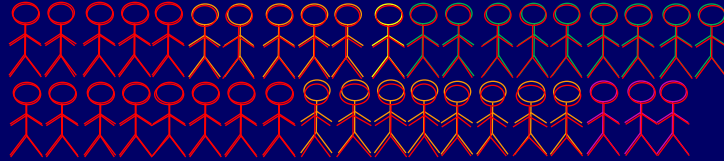
field width

“Beam-lets”

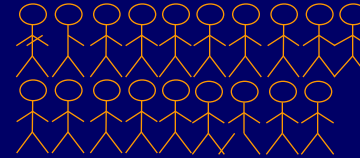
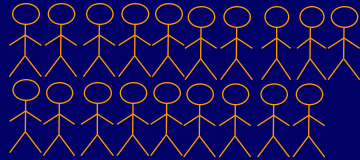
Self Referral

Non-Self Referral

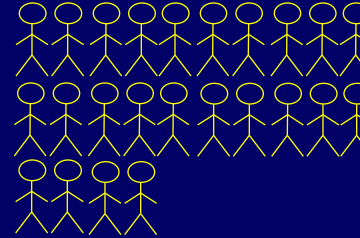
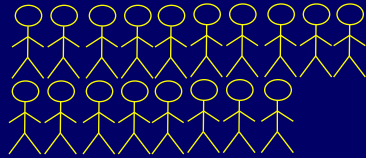
IMRT



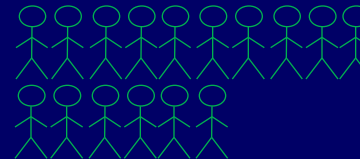
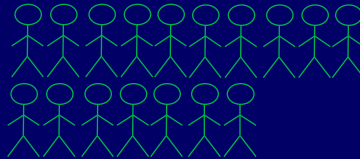
Brachy



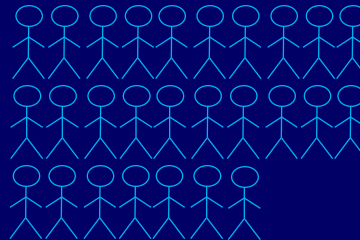
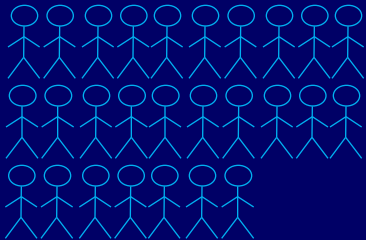
Rad
Px



ADT



AS



Other

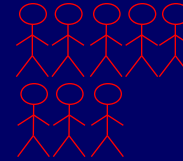
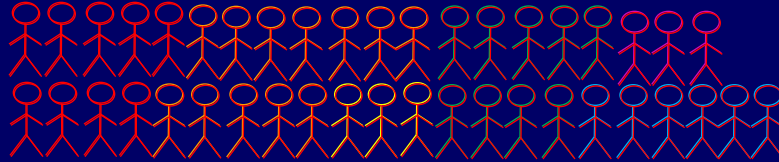


Table 2
Mitchell, NEJM, 2013

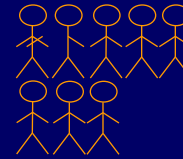
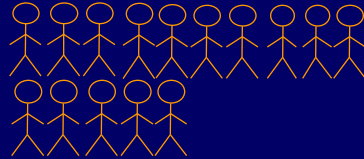
Self Referral

NCCN

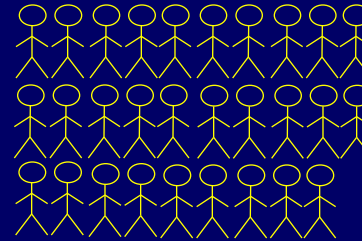
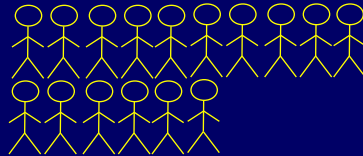
IMRT



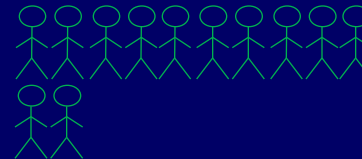
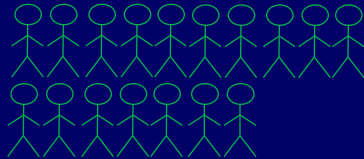
Brachy



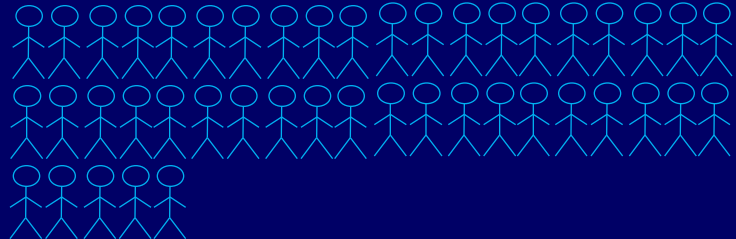
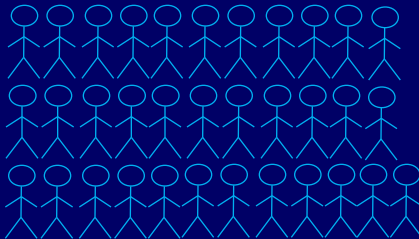
Rad
Px



ADT



AS



Other



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**

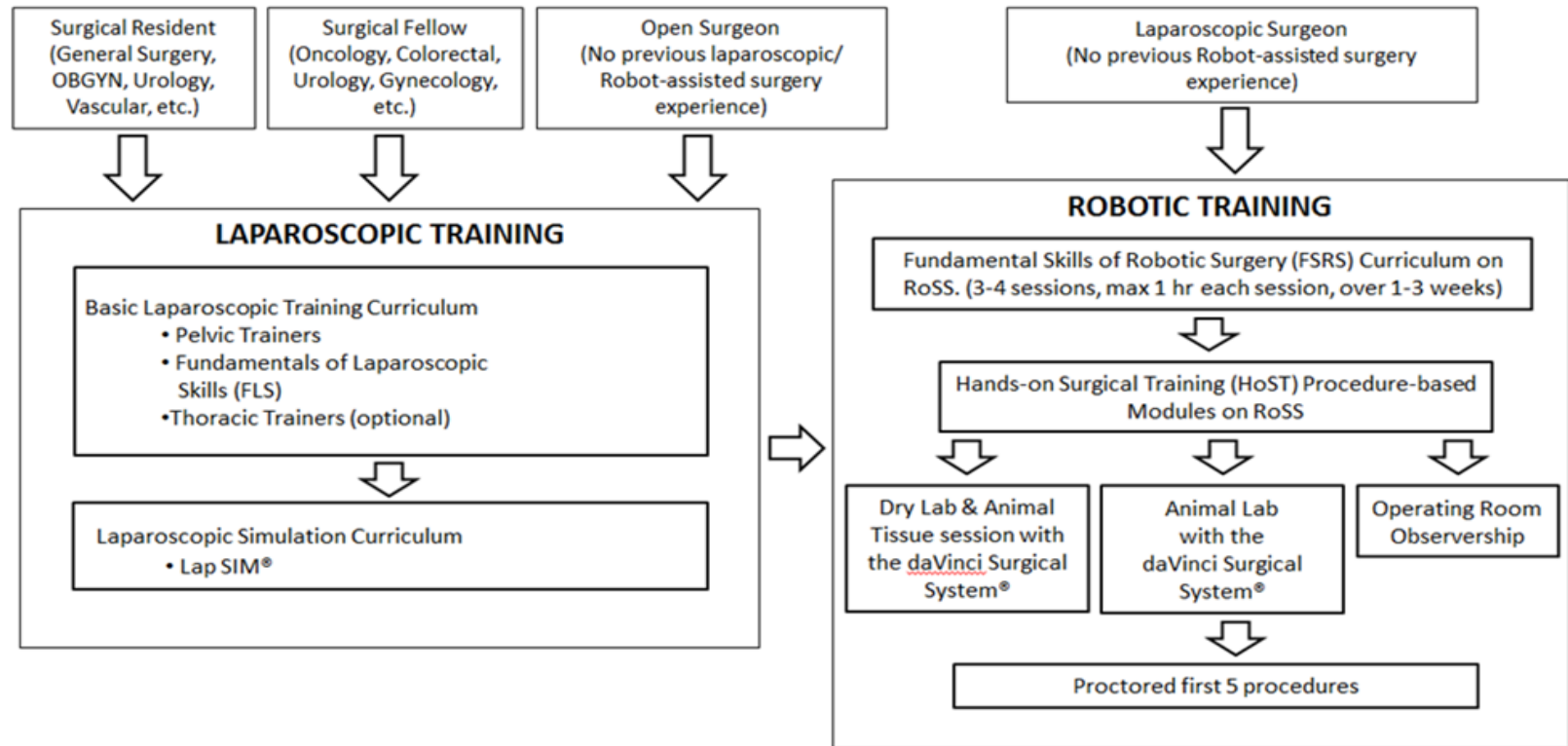
Porcine Lab

Test Drive

Surgeon's Procedure of Choice

- | | |
|--------|--------|
| • RARC | • RAPN |
| • RAN | • RAH |

Roswell Park Cancer Institute - Minimally Invasive Training Road Map



- Institutional MIS program developed
Attalla, Can J Surg, 2013; Raza, Urology, 2015
- Robotic simulator proven useful in RCT
Stegemann, Urology, 2013; Chowriappa, BJU Int, 2015
- Simulation-based training economically viable
Rehman, Int J Surg, 2013

International Robotic Cystectomy Consortium

	2006-7	2008-9	2010-11	2012-3	2013-4
Established	2006				
Participating Countries	3	5	9	13	14
Member Institutions	4	16	22	32	37
Member Surgeons	8	27	43	59	69
Patient Population	162	495	1305	1466	2187
Abstracts Presented	0	4	10	14	18
Peer-Reviewed Publications	0	0	4	4	6

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.”