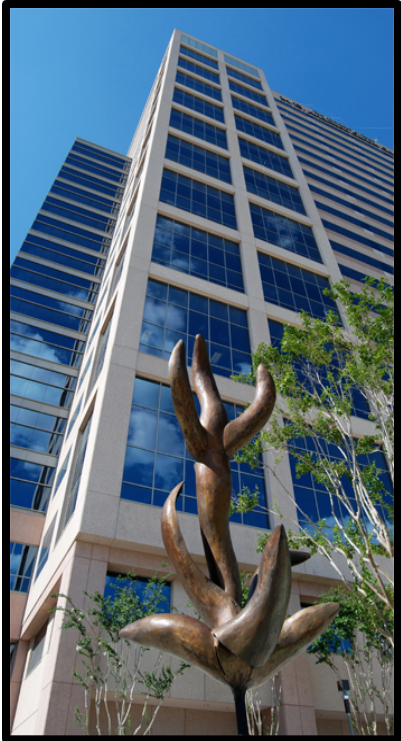




Provider Ownership and the Diffusion of New Technologies

Stephen B. Williams, MD

Department of Urology

**The University of Texas, MD Anderson Cancer
Center**

THE UNIVERSITY OF TEXAS

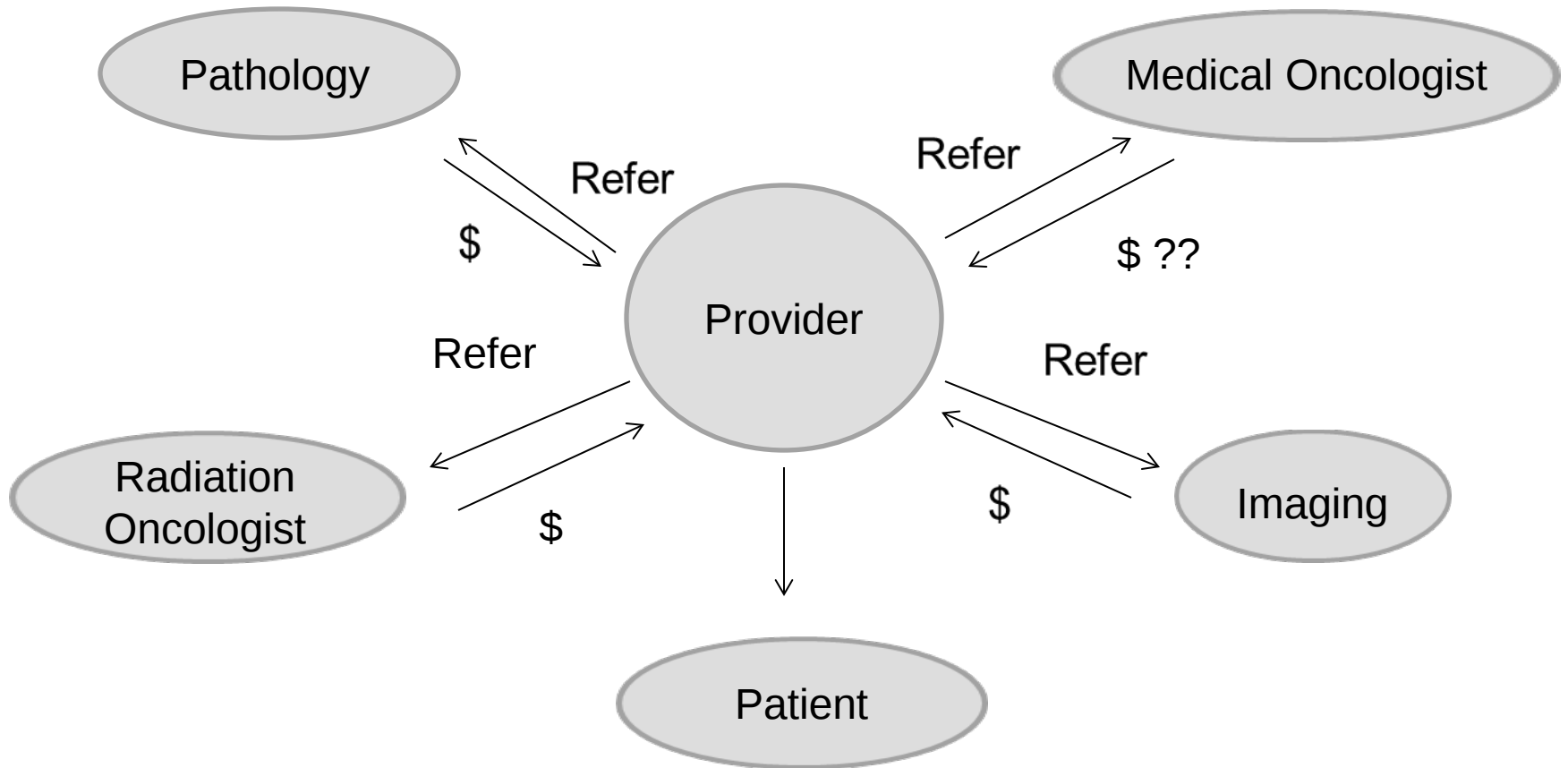
**MD Anderson
Cancer Center**

Making Cancer History®

Outline

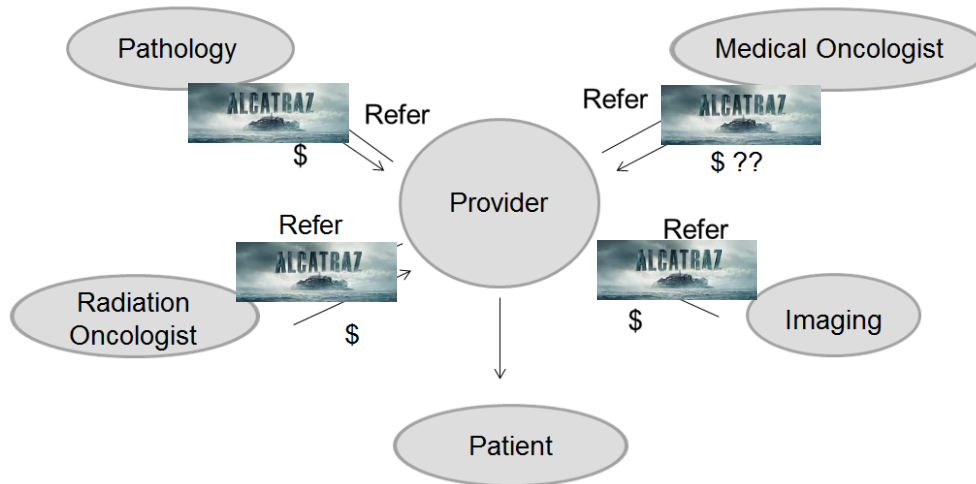
- Stark Law
- Urology as Model System for Provider Ownership
- Provider Ownership and Utilization of Imaging and Pathology in Urology
- Provider Ownership and Utilization of Radiotherapy in Urology

Understanding Provider Behavior



Stark Law

- Under federal law, it is generally illegal for a physician to refer Medicare or Medicaid patients for designated health services in which the physician has a financial interest.
- The federal law, also known as Stark II (named for Rep. Pete Stark [D-CA], its sponsor), prohibits many physician self-referral arrangements.



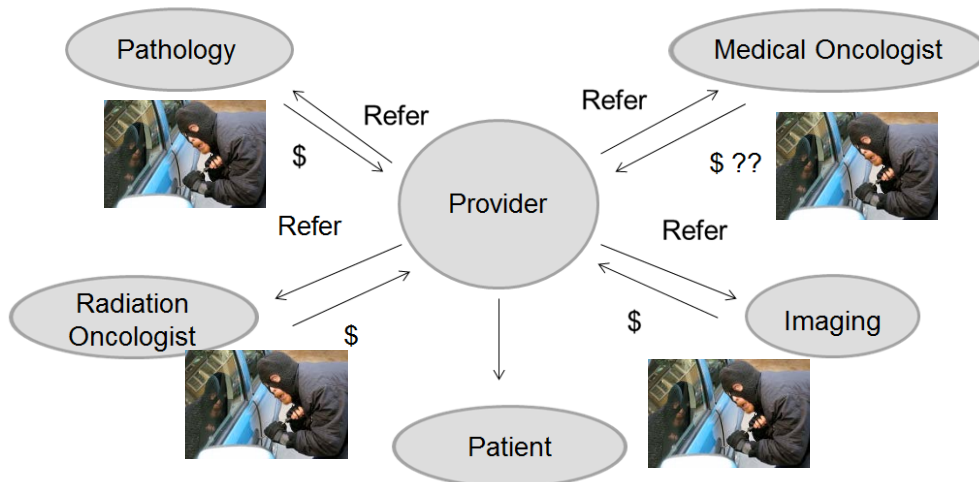
Mitchell J. Health Affairs, 2005.

Stark Law

- Enacted by Congress in 1993 to address many of the shortcomings of the federal antikickback statute.
- Under that statute, criminal, civil, or administrative liability can result if one knowingly and willfully offers to pay for, solicit, or receive any remuneration to induce referrals of items or services reimbursable under federal health programs.

Stark Law-Exemptions

- Physician group practices are exempt for in-office ancillary services if the group practice meets specific criteria
- May self-refer if the services are personally performed or supervised by another physician in the same group practice
- Does not apply to specific types of facilities—in particular, ambulatory surgical centers and so-called whole hospitals



Mitchell J. Health Affairs, 2005.

Provider Ownership

Pros

- Improved access to care and dissemination of advanced technologies and services—the one stop shop.
- Patient convenience
- Higher volume of patients treated may translate into superior outcomes

Cons

- Potential for financially rather than clinically appropriate decision-making
- Potential for overutilization of expensive technologies and increase in health care spending

Nguyen PL. JCO, 2011.

Advanced Technologies-Provider Ownership in Urology

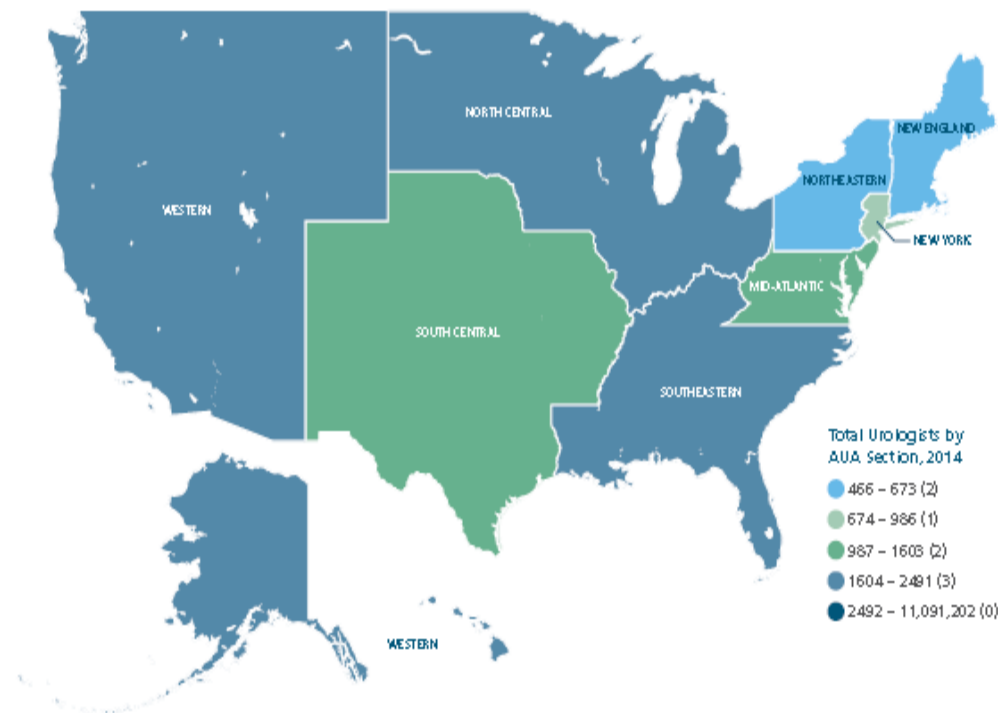
The State of the Urology Workforce and Practice in the United States 2014



American
Urological
Association

Advancing Urology™

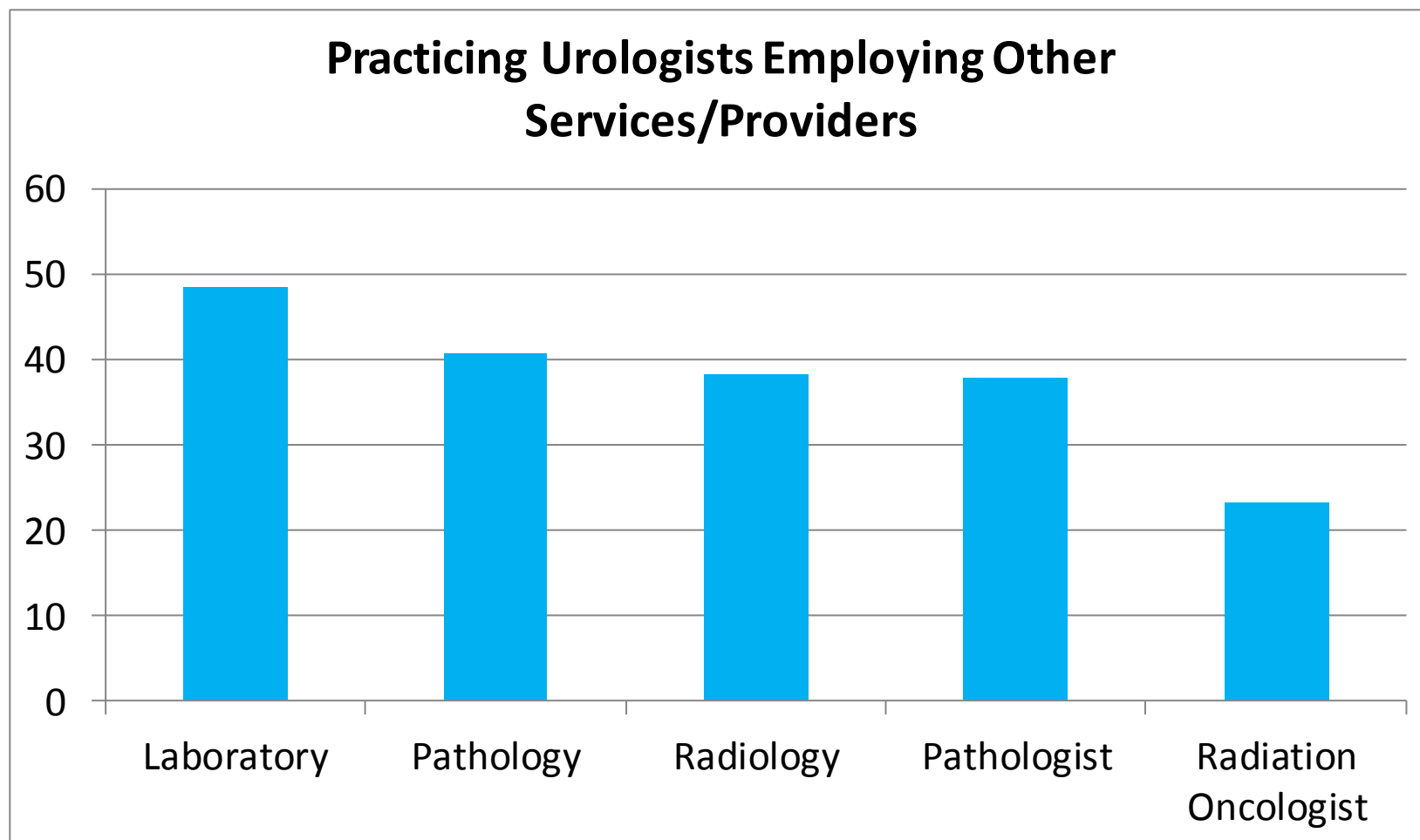
Practicing Urologists by AUA Section (United States Only)



(Data source: National Provider Identifier 11/2014 file; ABU certification files and AOA DO Directory)

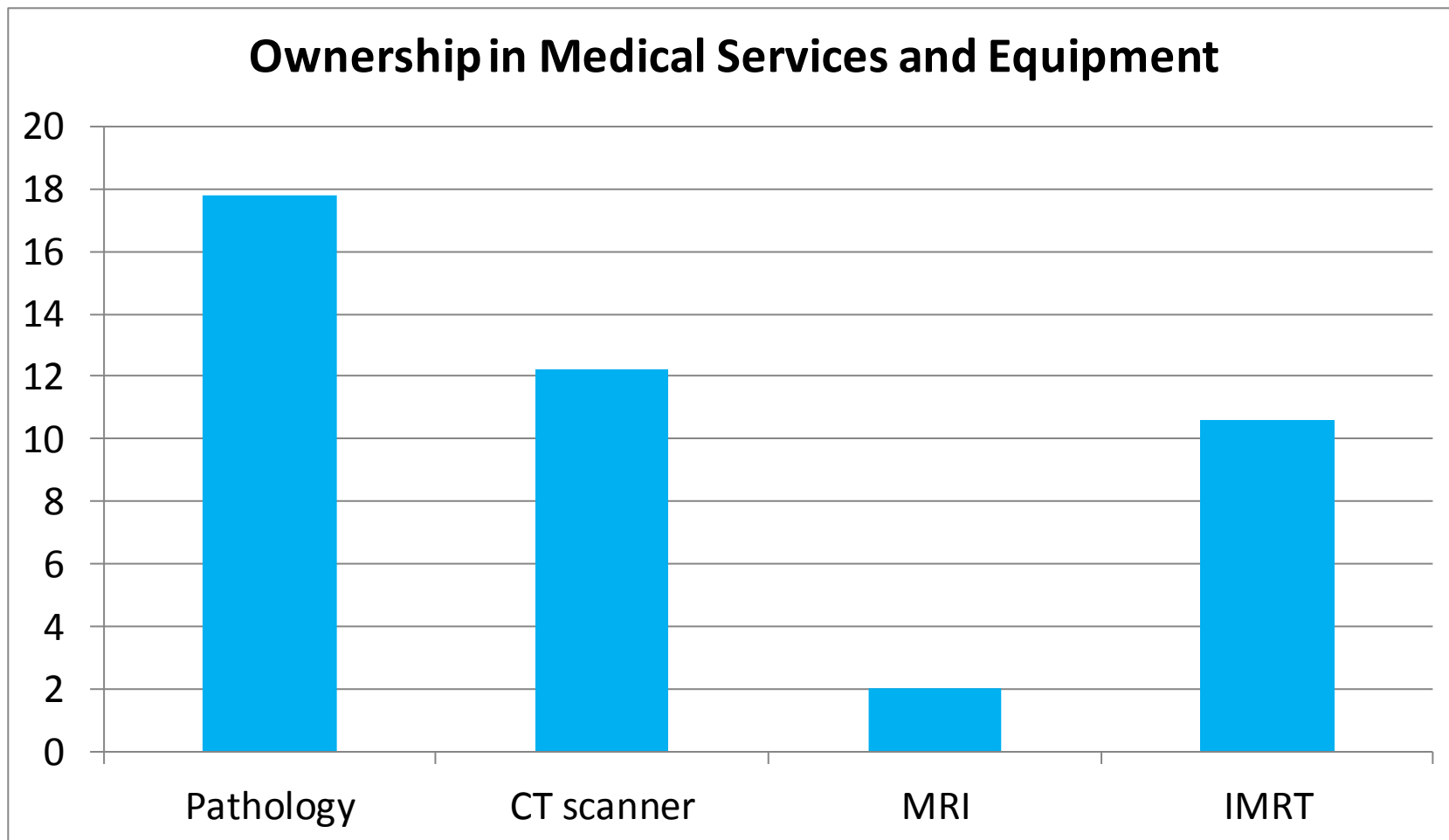
2014 AUA Annual Census

Advanced Technologies-Provider Ownership in Urology



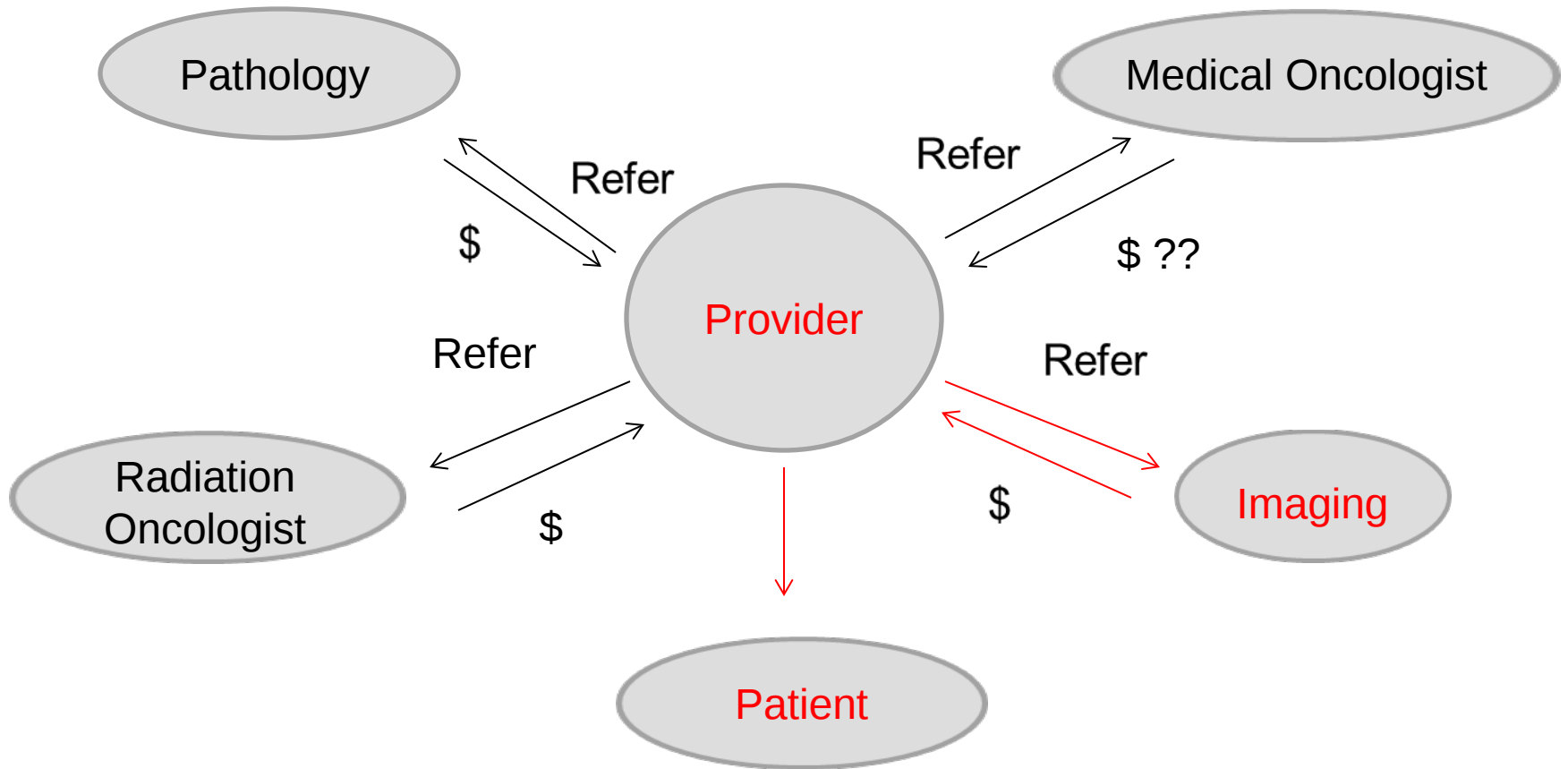
2014 AUA Annual Census

Advanced Technologies-Provider Ownership in Urology



2014 AUA Annual Census

Understanding Provider Behavior



The Prevalence Of Physician Self-Referral Arrangements After Stark II: Evidence From Advanced Diagnostic Imaging

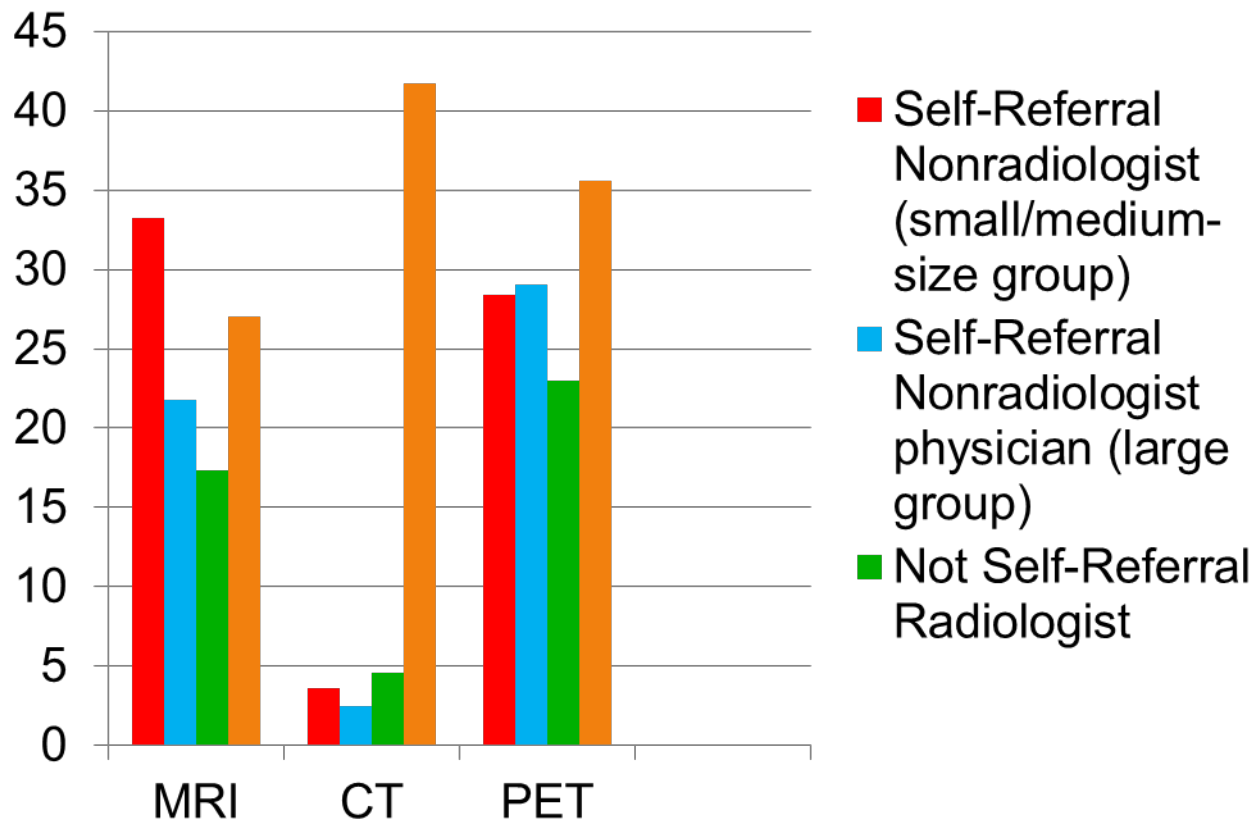
Data from California suggest that physicians exploit exceptions in the Stark II law to continue to self-refer patients for imaging.

by Jean M. Mitchell

Mitchell J. Health Affairs, 2005.

Provider Ownership- Imaging

Prevalence of Diagnostic Imaging Providers By Self-Referral Status

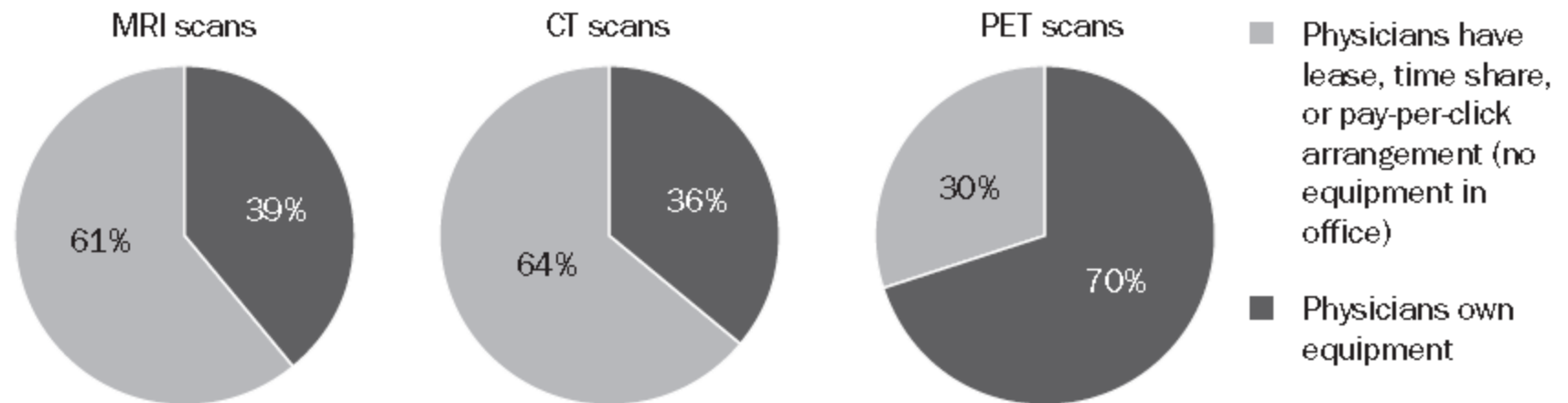


Mitchell J. Health Affairs, 2005.

Provider Ownership- Imaging

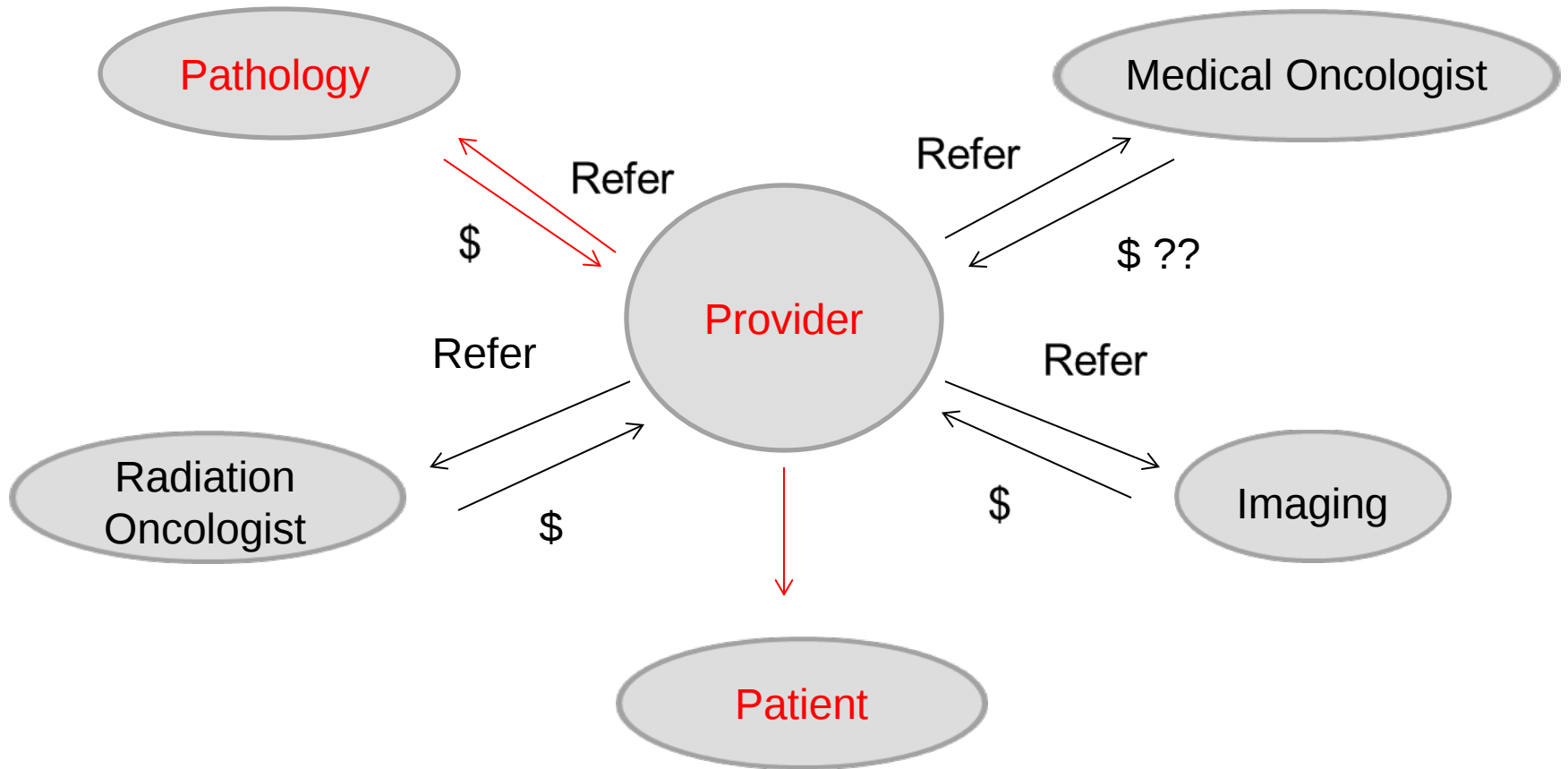
EXHIBIT 3

Diagnostic Imaging Used By Nonradiologist Physician Providers In Small Or Medium-Size Groups, By Type Of Self-Referral Arrangement, California, 2004



Mitchell J. Health Affairs, 2005.

Understanding Provider Behavior



Provider Ownership- Pathology

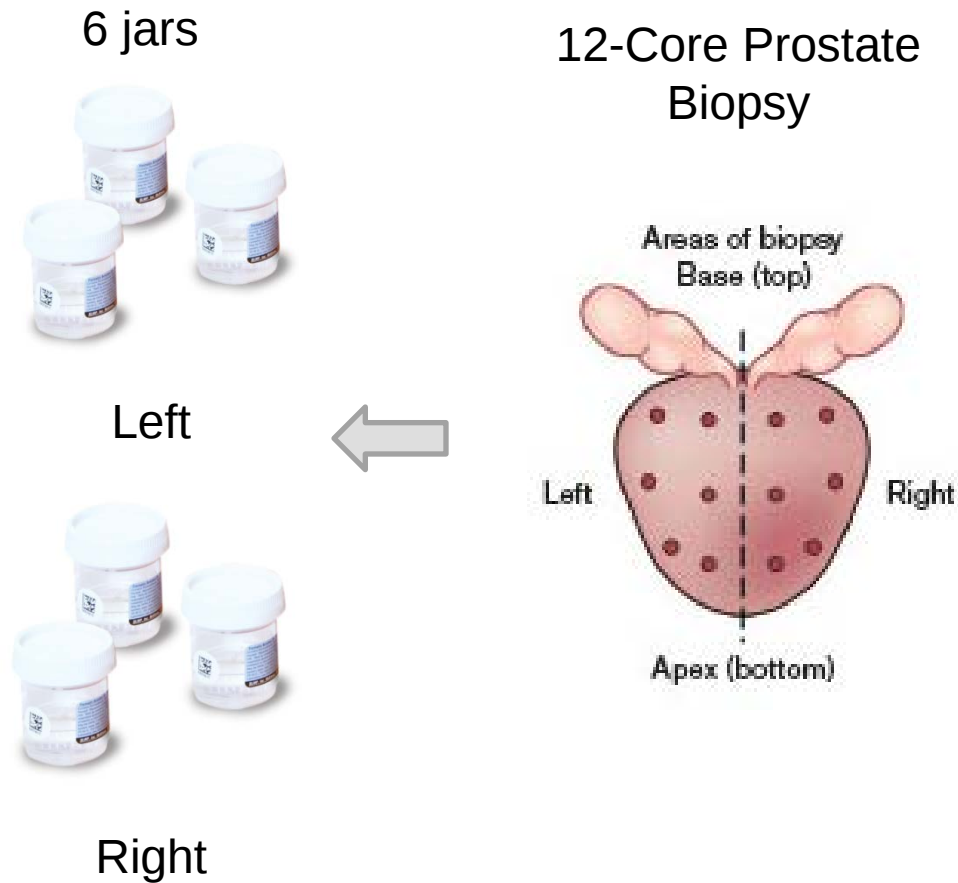
PROSTATE CANCER

By Jean M. Mitchell

Urologists' Self-Referral For Pathology Of Biopsy Specimens Linked To Increased Use And Lower Prostate Cancer Detection

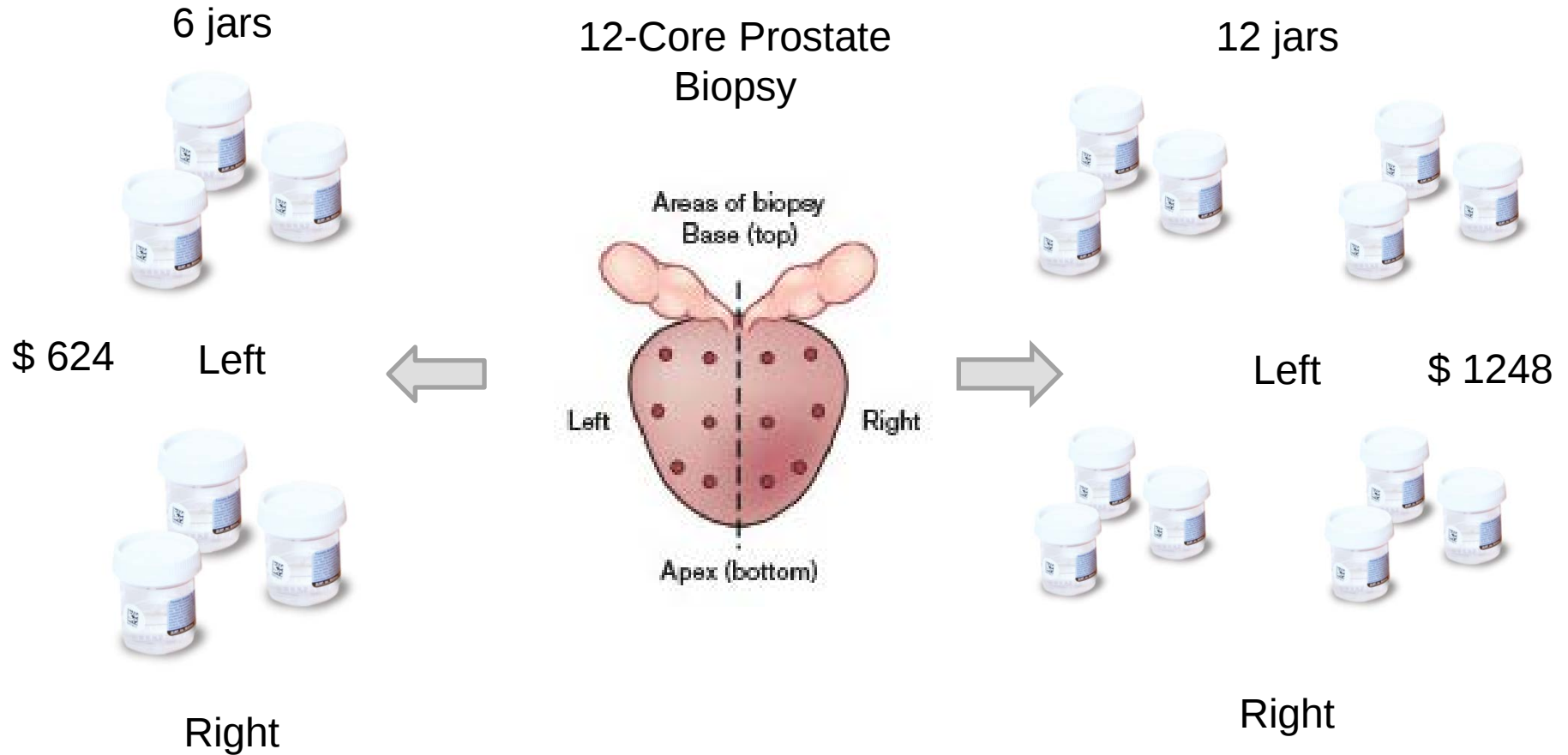
Mitchell J. Health Affairs, 2012.

Provider Ownership- Pathology



Mitchell J. Health Affairs, 2012.

Provider Ownership- Pathology

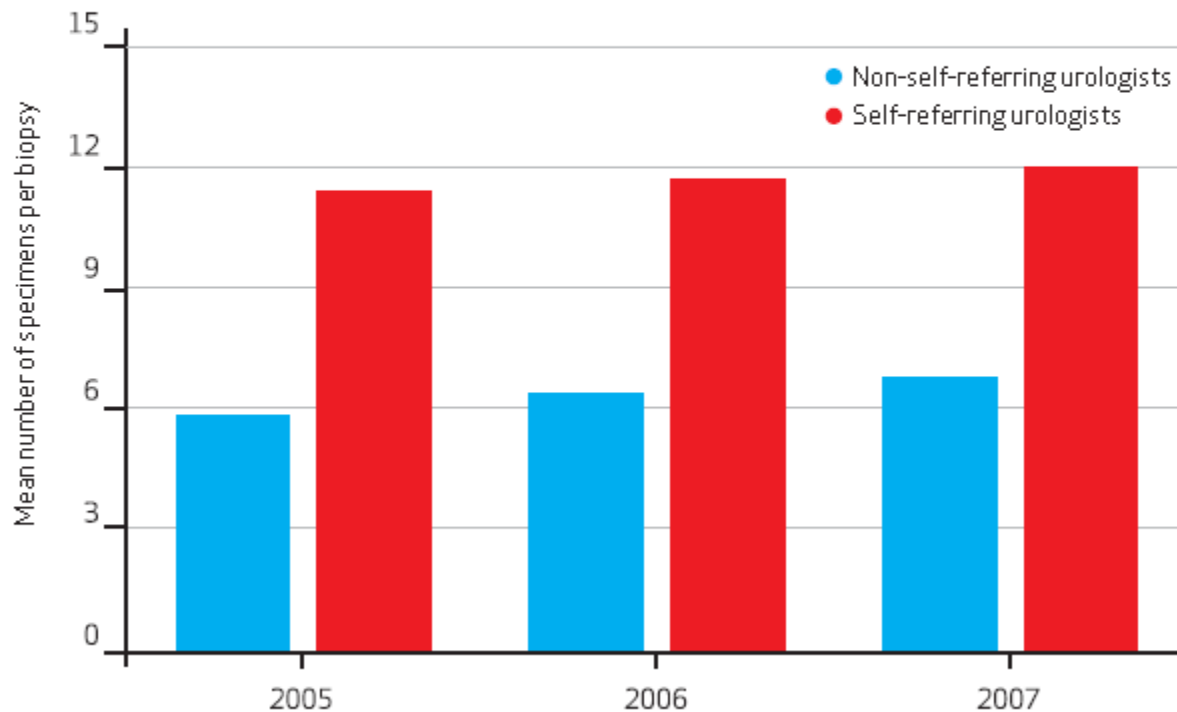


Mitchell J. Health Affairs, 2012.

Provider Ownership- Pathology

EXHIBIT 1

Mean Number Of Pathology Specimens (Jars) Per Prostate Biopsy, By Urologist Self-Referral Status, 2005-07

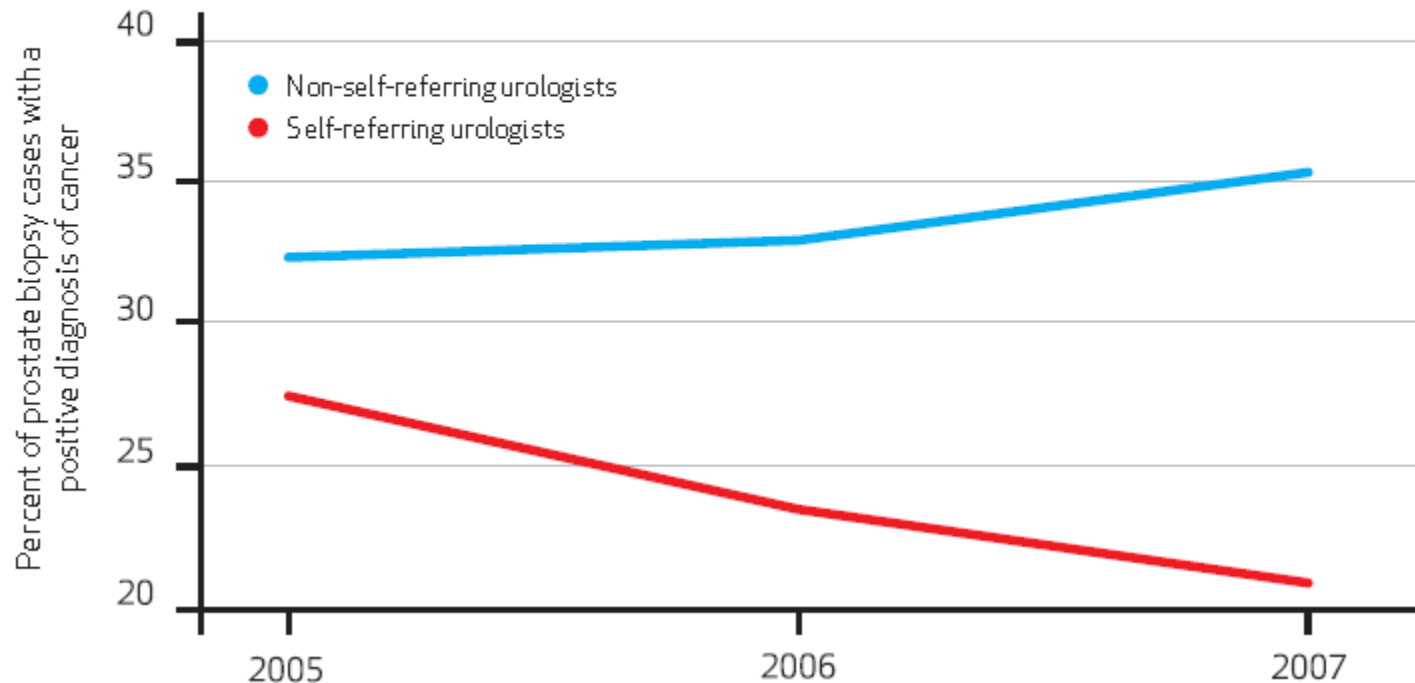


Mitchell J. Health Affairs, 2012.

Provider Ownership- Pathology

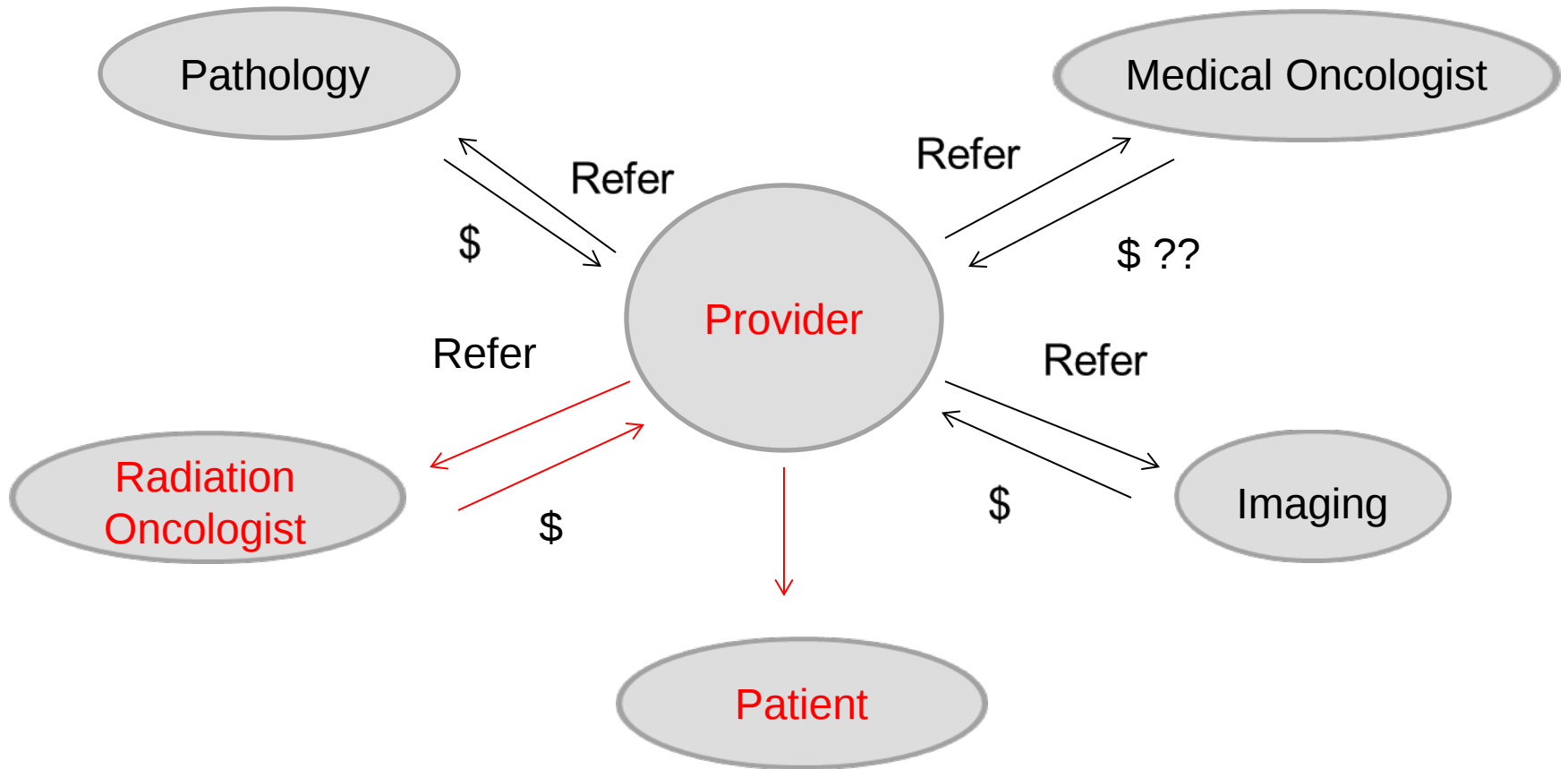
EXHIBIT 4

Percentage Of Biopsies With A Positive Diagnosis Of Prostate Cancer, By Urologist Self-Referral Status



Mitchell J. Health Affairs, 2012.

Understanding Provider Behavior



Provider Ownership-Radiotherapy

THE NEW ENGLAND JOURNAL OF MEDICINE

SPECIAL ARTICLE

Urologists' Use of Intensity-Modulated Radiation Therapy for Prostate Cancer

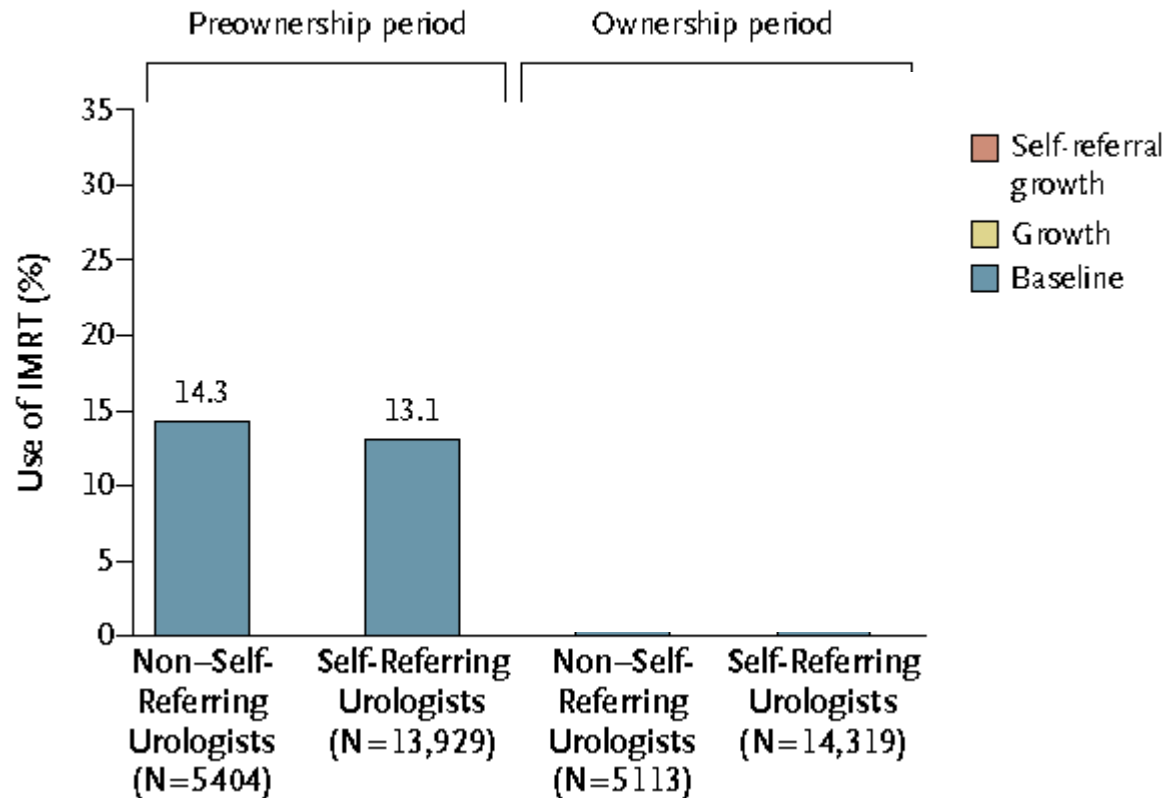
Jean M. Mitchell, Ph.D.

- Association provider ownership and utilization of IMRT
- Medicare claims 2005-2010.
- 35 self-referring vs. 35 non-self-referring vs. 11 non-self-referring National Comprehensive Cancer Network (NCCN) urology groups
- Utilization of IMRT compared before and during ownership

Mitchell JM. NEJM, 2013.

Provider Ownership

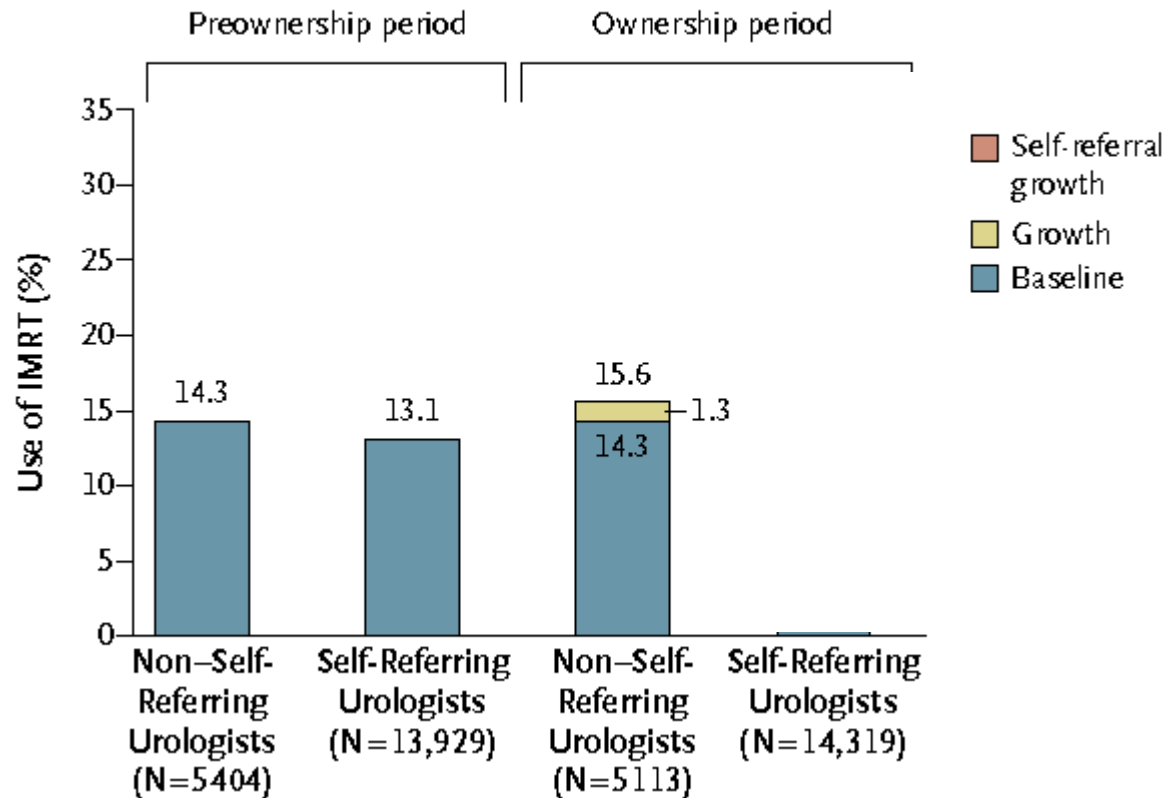
A Self-Referring Urologists in Private Practice versus Non-Self-Referring Urologists in Private Practice



Mitchell JM. NEJM, 2013.

Provider Ownership

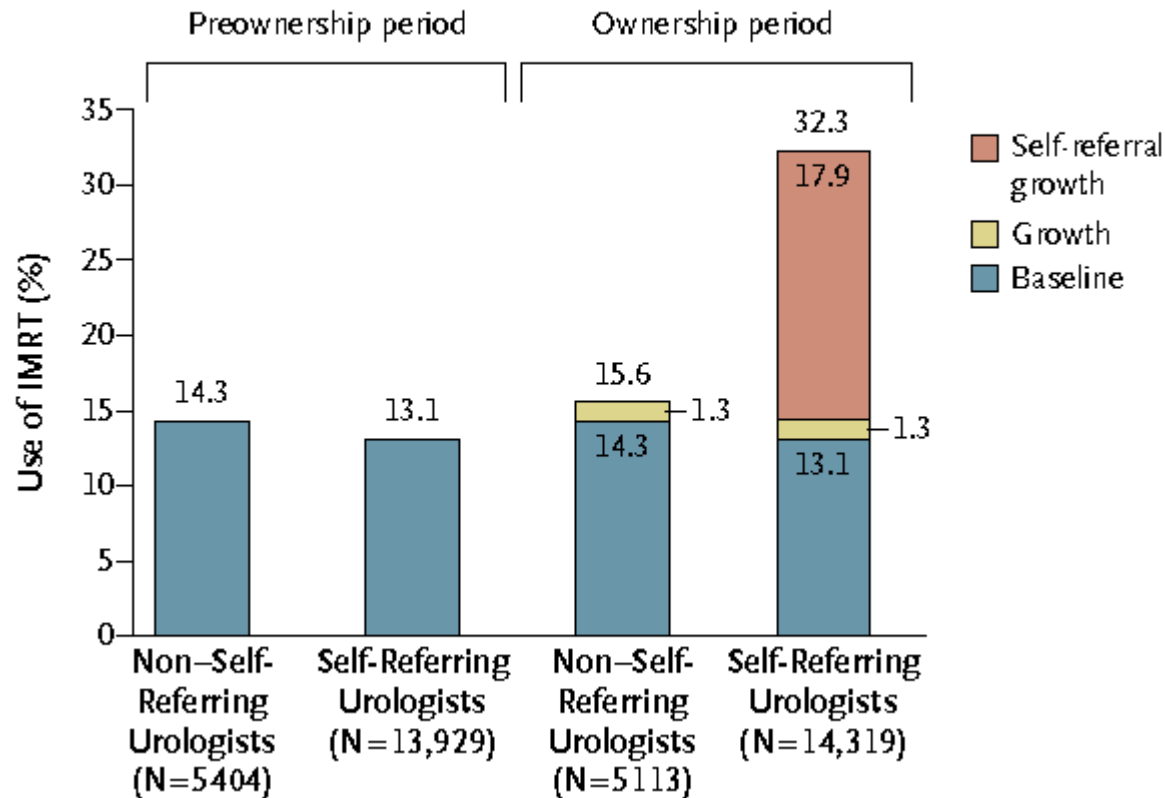
A Self-Referring Urologists in Private Practice versus Non-Self-Referring Urologists in Private Practice



Mitchell JM. NEJM, 2013.

Provider Ownership

A Self-Referring Urologists in Private Practice versus Non-Self-Referring Urologists in Private Practice



Mitchell JM. NEJM, 2013.

Provider Ownership

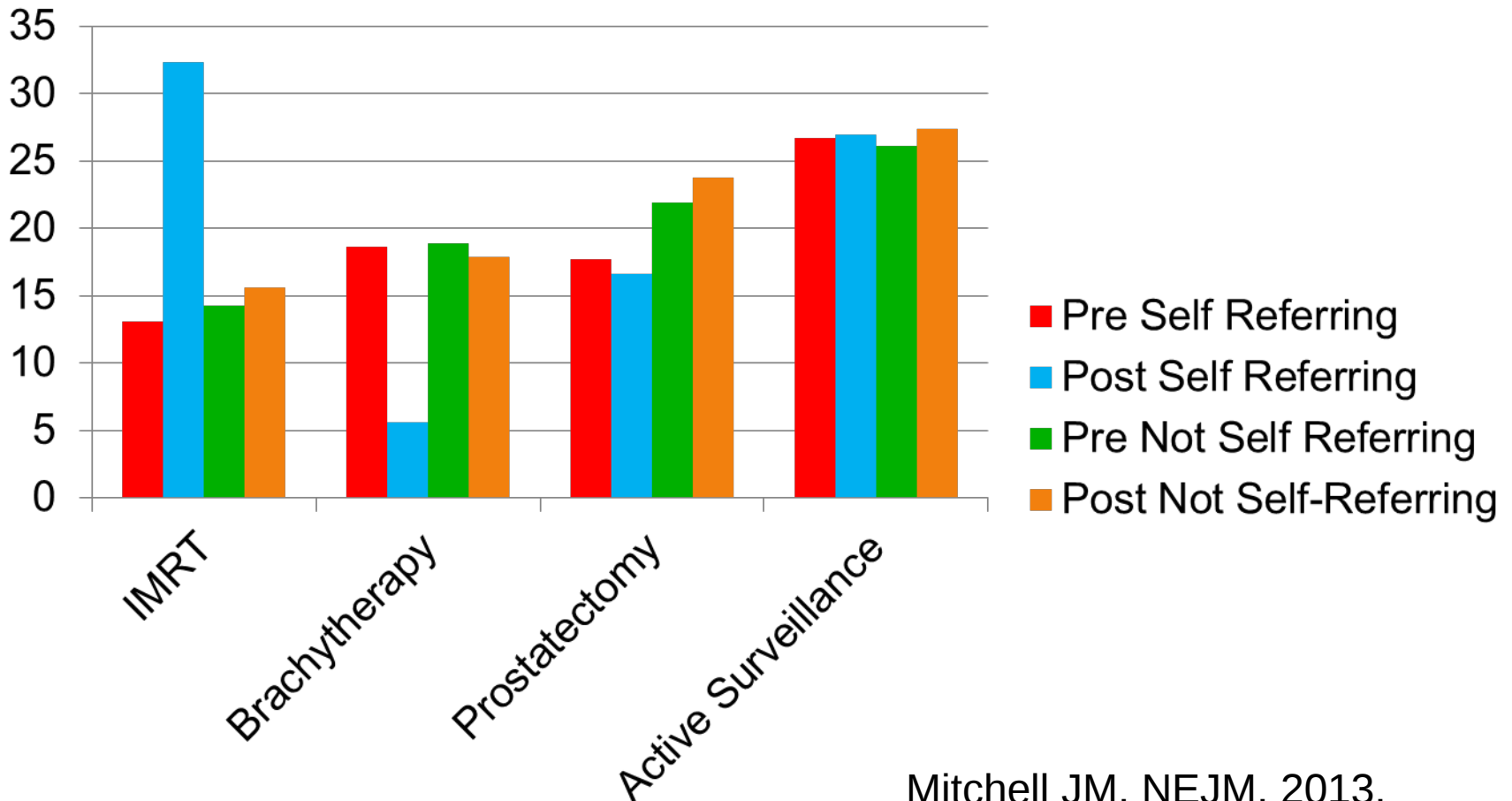
Table 2. Treatment Provided for Men with Newly Diagnosed, Nonmetastatic Prostate Cancer in the 35 Matched Groups of Self-Referring and Non-Self-Referring Urologists in Private Practice, According to Self-Referral Status and Ownership Period.*

Treatment	Self-Referring Urologists in Private Practice				Non-Self-Referring Urologists in Private Practice			
	Preownership Period (N=13,929)	Ownership Period (N=14,319)	Change	P Value	Preownership Period (N=5404)	Ownership Period (N=5113)	Change	P Value
IMRT delivery by self-referring group (%)	13.1	32.3	19.2	<0.001	—	—	—	—
IMRT delivery by other provider (%)	—	6.3	—	—	14.3	15.6	1.3	0.05
Brachytherapy (%)	18.6	5.6	-13.0	<0.001	18.9	17.9	-1.0	0.19
Prostatectomy (%)	17.7	16.6	-1.1	0.01	21.9	23.8	1.9	0.02
Androgen-deprivation therapy (%)	16.5	8.4	-8.1	<0.001	15.6	11.4	-4.2	<0.001
Active surveillance (%)	26.7	27.0	0.3	0.65	26.1	27.4	1.3	0.12
Other procedure (%)	7.3	3.9	-3.4	<0.001	3.2	3.9	0.7	0.05
Time from diagnosis to treatment (days)	79.8±37.9	76.0±32.6	-3.8	<0.001	78.8±38.1	78.0±36.2	-0.8	0.50

* Plus-minus values are means ±SD. For percentage data, change is shown in percentage points. Beneficiaries who underwent prostatectomy or brachytherapy may also have received adjuvant radiation therapy (external-beam radiation therapy or IMRT), but the definitive treatment was either brachytherapy or prostatectomy.

Provider Ownership

Treatments According to Self-Referring Status and Ownership Period



Mitchell JM. NEJM, 2013.

Provider Ownership

Table 4. Linear Probability and Logistic-Regression Difference-in-Differences Estimates Predicting Receipt of IMRT for the Comparison of Self-Referring Urologists in Private Practice with Non-Self-Referring Urologists in Private Practice.*

Estimate	Beneficiary Treated by Self-Referring Urologist during Ownership Period	P Value
Linear probability marginal effect	16.4 percentage points	<0.001
Logistic-regression marginal effect	16.9 percentage points	<0.001
Logistic-regression odds ratio (95% CI)	2.79 (2.53–3.08)	<0.001

* The sample of 38,765 patients included all beneficiaries treated by physicians in private practice from 35 self-referring urology groups that began billing Medicare for IMRT at some point during the period from January 1, 2005, through January 15, 2010, and those treated by physicians in private practice from 35 matched non-self-referring urology groups that did not bill Medicare for IMRT. All regression models included the age of the beneficiary at the time of the cancer diagnosis, indicator variables to distinguish year of diagnosis, indicator variables to identify the presence or absence of specific coexisting conditions, and indicator variables to control for the urology group that treated each beneficiary. CI denotes confidence interval.

Mitchell JM. NEJM, 2013.

Provider Ownership-Conclusions

- Referral by urologists to IMRT services in which they have a financial interest is associated with increased use of IMRT
- Limitations include:
 - Tumor characteristics and risk stratification
 - Physician characteristics
 - Perceptions of profitability
 - Radiotherapy commonly being utilized as preferred treatment

Mitchell JM. NEJM, 2013.

Provider Ownership-Radiotherapy



Comparative Effectiveness Research on Cancer in Texas (CERCIT) is a statewide resource for outcomes and comparative effectiveness research funded by [The Cancer Prevention Research Institute of Texas \(CPRIT\)](#), RP101207

Project PI: Karen Hoffman, MD, MPH, MS

Provider Ownership-Methodology

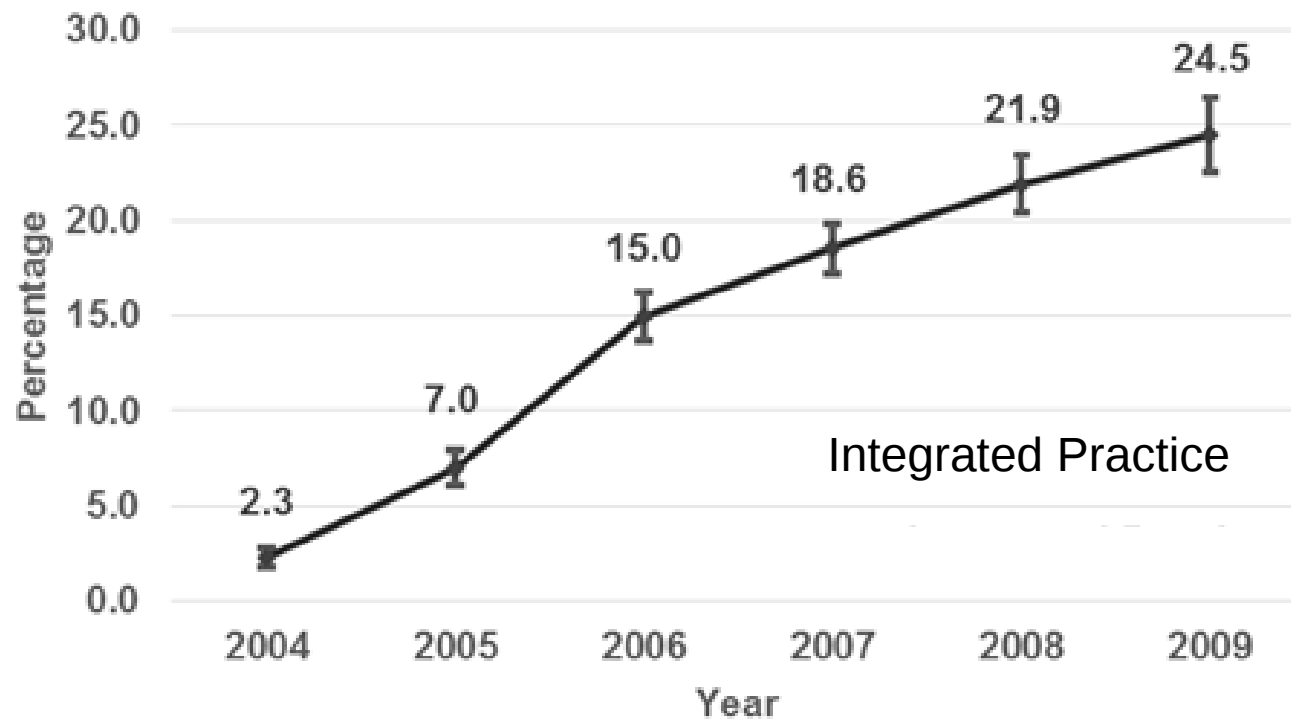
- Data source
 - Linked Texas Cancer Registry-Medicare data
 - 2004-2009
 - 17,982 men with non-metastatic prostate cancer
- Diagnosing urologist determined using claims
- A total of 13 integrated urology practices identified via prior survey (Jhaveri PM et al, IJROBP 2012).

Provider Ownership-Methodology

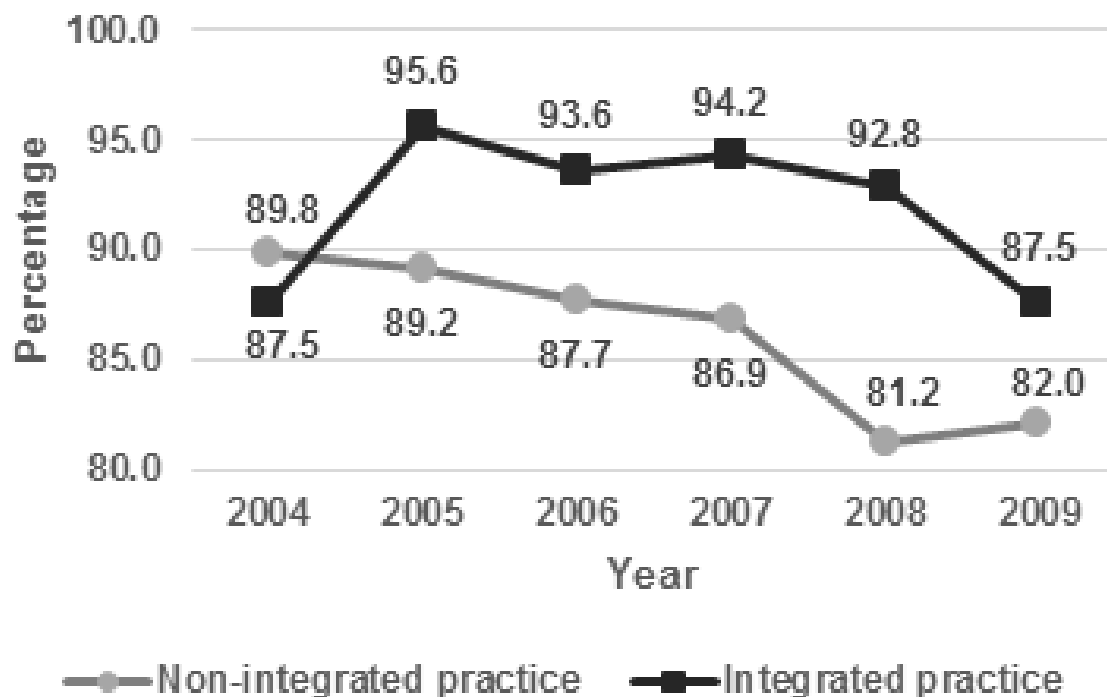
- Primary objective
 - Determine how urologist ownership interest influence decision to treat or not treat prostate cancer
 - Determine if this varied by patient risk group

Provider Ownership

Trend of Patients in Integrated Practices (Trend Test $P < 0.001$)

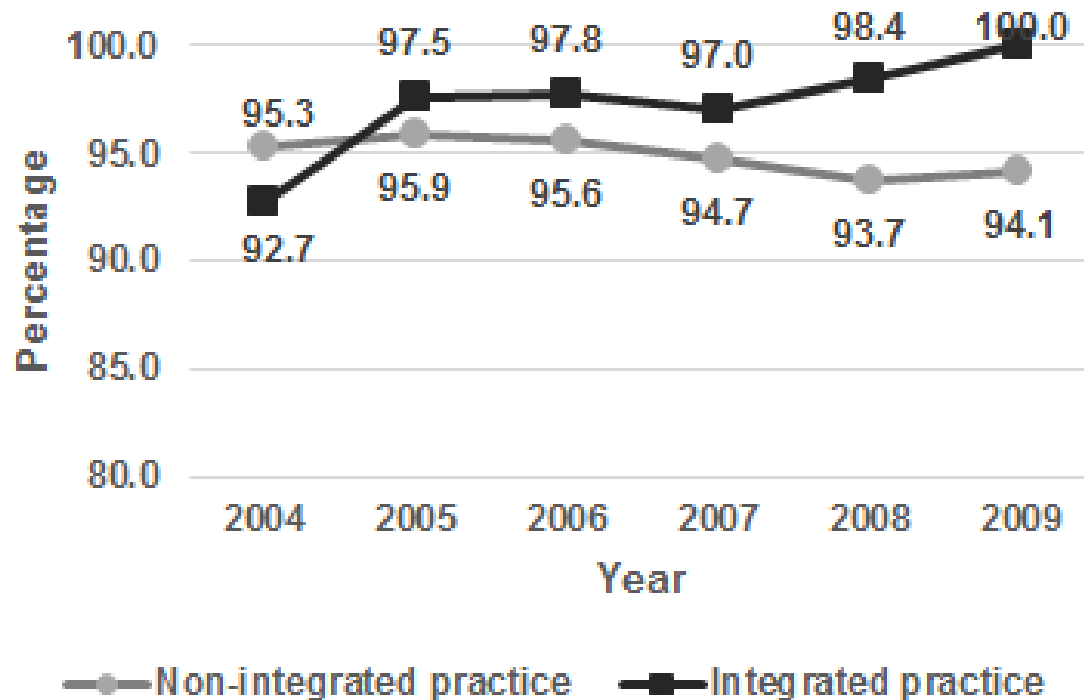


Utilization of Treatment in Favorable Risk Patients



- Increased utilization of treatment (OR 1.89: 95% CI, 1.33-2.69, $p < 0.001$) with IMRT more commonly used (OR 1.45: 95% CI, 1.15-1.84, $p = 0.002$) among integrated practice for favorable risk patients

Utilization of Treatment in Unfavorable Risk Patients



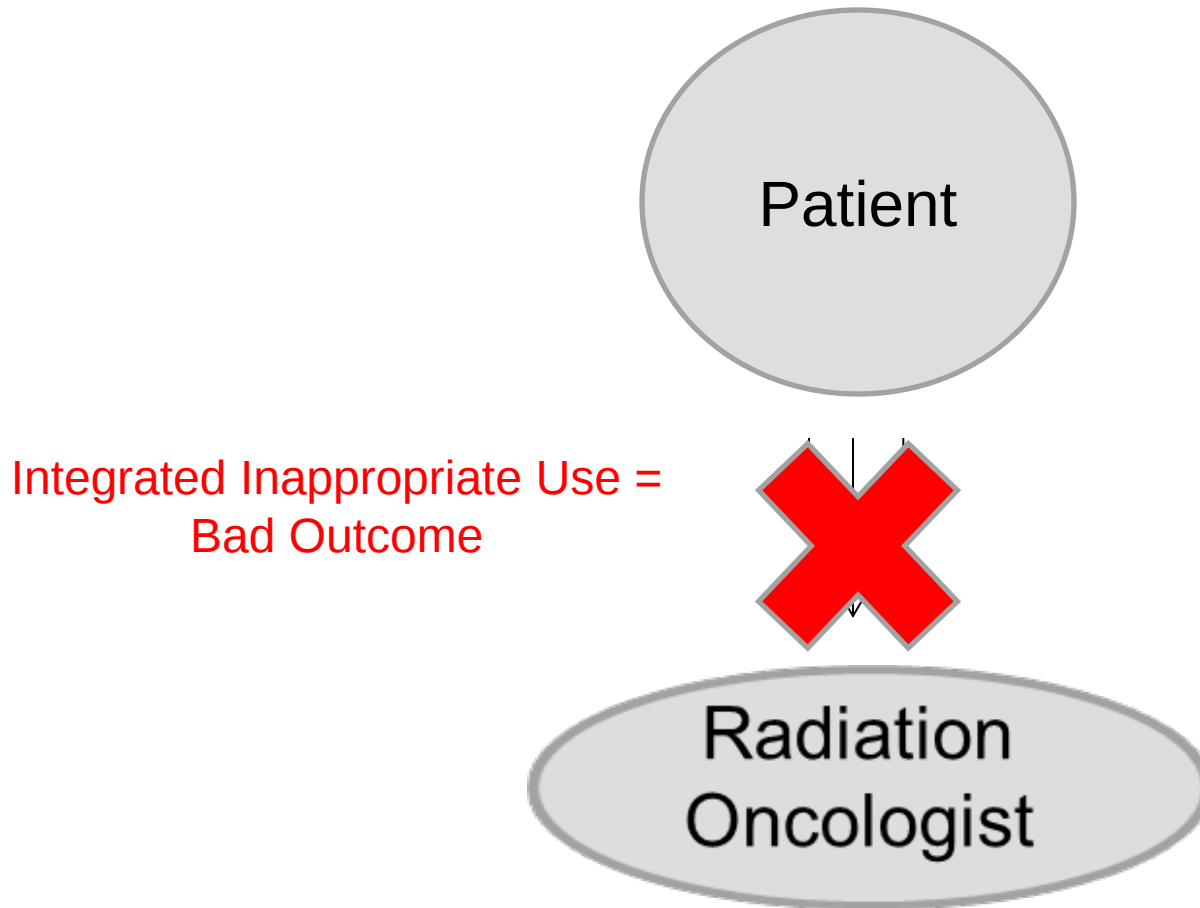
- Increased utilization of treatment (OR 2.07: 95% CI, 1.32-2.07, $p=0.002$) with IMRT more commonly used (OR 1.53: 95% CI, 1.24-1.88, $p<0.001$) among integrated practice for unfavorable risk patients

Overall Summary: Provider Ownership

- Prior research have shown varying practice patterns according to provider ownership
- Radiotherapy and in particular IMRT are being increasingly utilized in urology for the treatment of prostate cancer
- Prior research have demonstrated increased utilization of IMRT for treatment of prostate cancer according to self referral practice patterns
- Provider ownership may result in varying utilization patterns of IMRT for treatment of prostate cancer independent of tumor biology

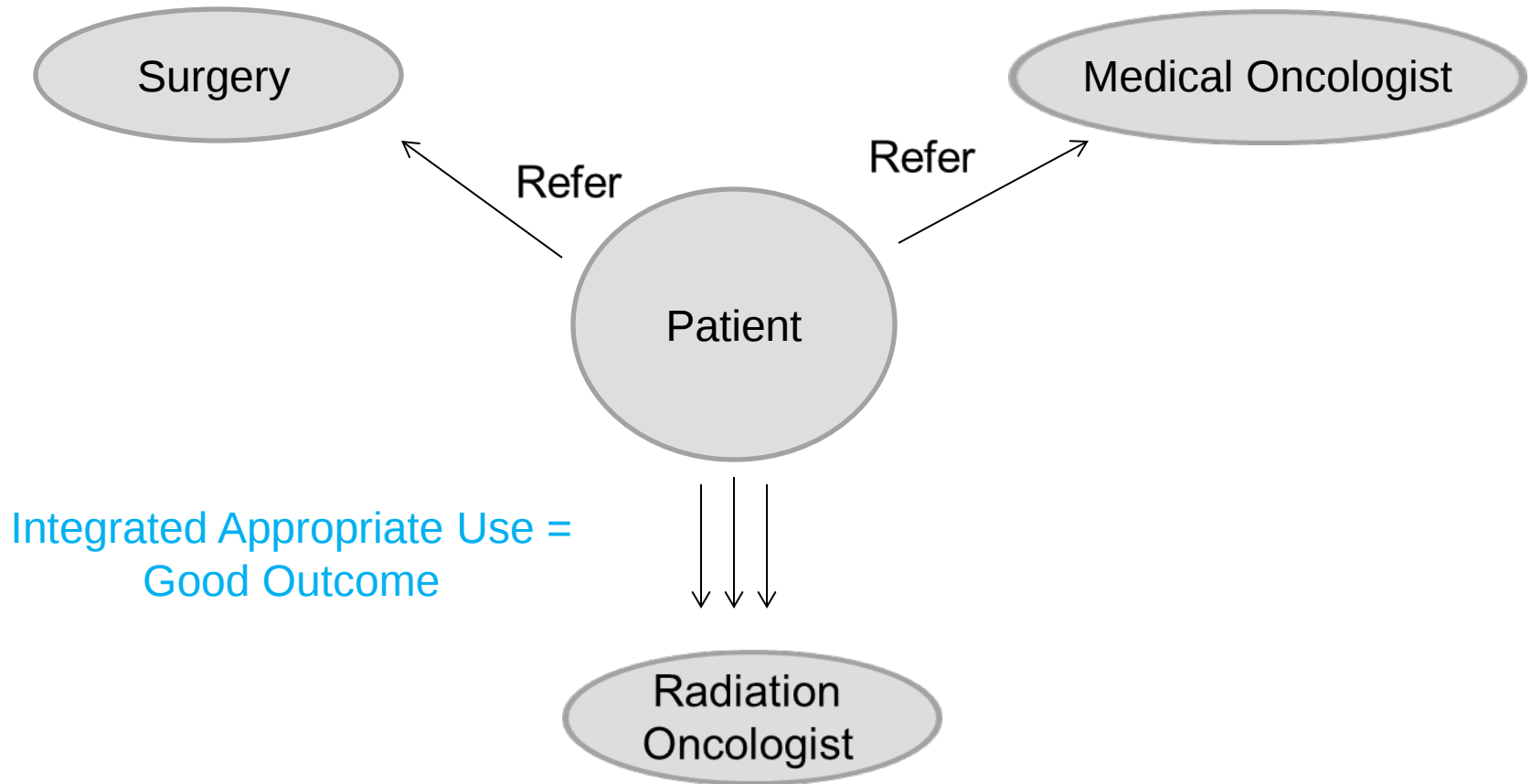
Understanding Provider Behavior

Favorable Risk Prostate Cancer

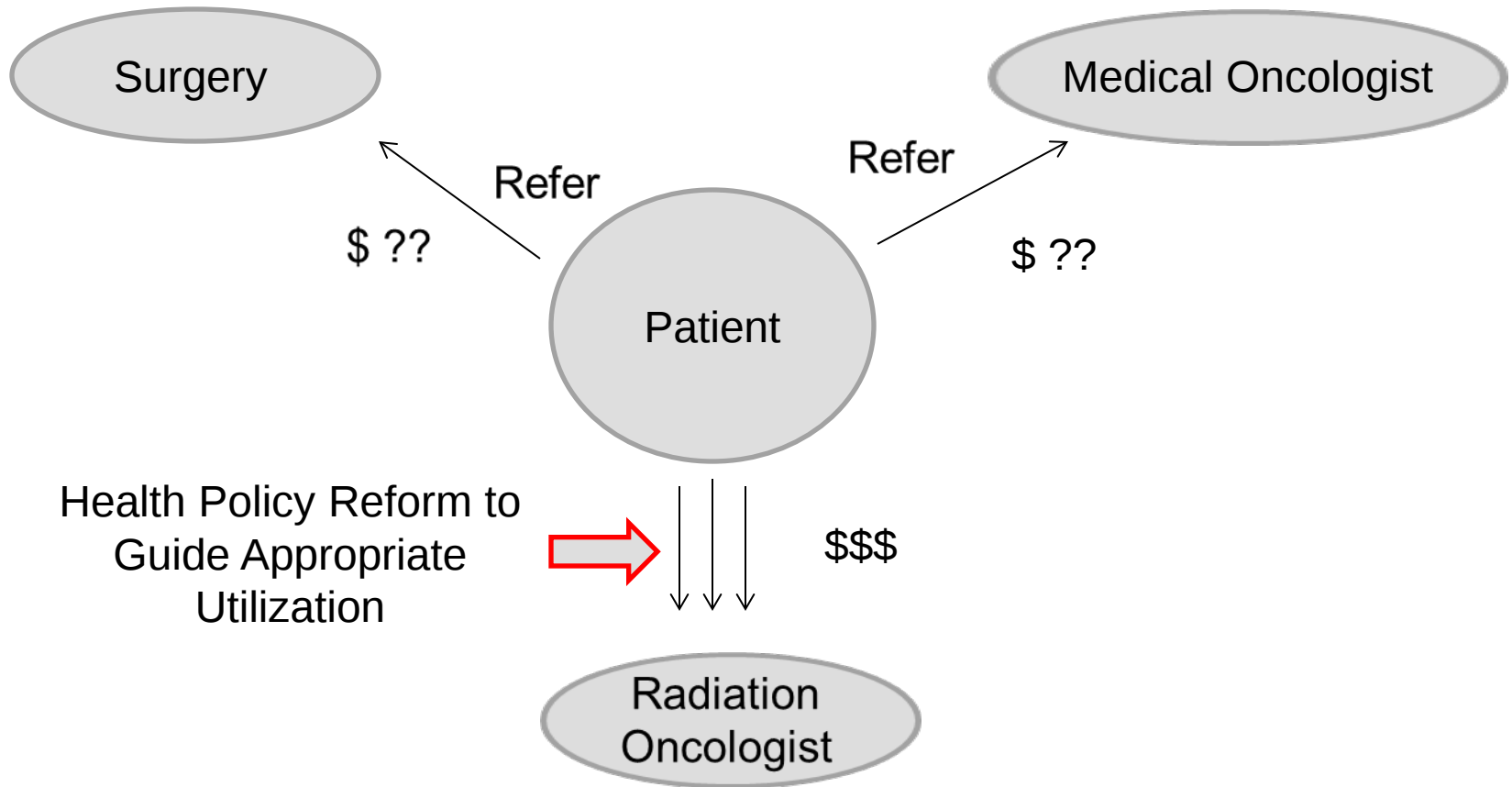


Understanding Provider Behavior

Unfavorable Risk Prostate Cancer



Understanding Provider Behavior



Acknowledgements

Radiation Oncology

- Karen E. Hoffman, MD
- Benjamin D. Smith, MD

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- Sharon H. Giordano, MD (Chair)
- Jinhai Huo, PhD

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- Xifeng Wu, MD PhD (Chair)

Urology

- Colin PN Dinney, MD (Chair)
- Ashish M. Kamat, MD (Program Director)