Optimizing Adoption and De-Adoption to Achieve High-Value Cancer Care

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Institute of Medicine
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Justin E. Bekelman, MD
Associate Professor, Radiation Oncology and Medical Ethics & Health Policy
Faculty, Center for Health Incentives and Behavioral Economics (CHIBE)

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4 approaches

1. Delivery system innovation
2. Provider cost sharing
3. Price transparency
4. Evidence generation

**Collaborative discussions with Scott Halpern, MD, PhD, Andrew Epstein, PhD, and Ezekiel Emanuel, MD, PhD, all at the University of Pennsylvania*

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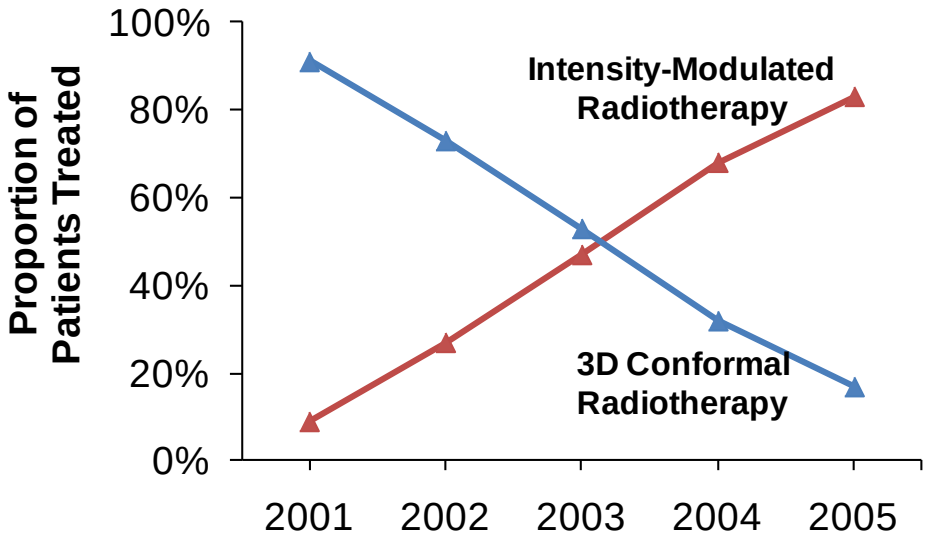
Rating the approaches

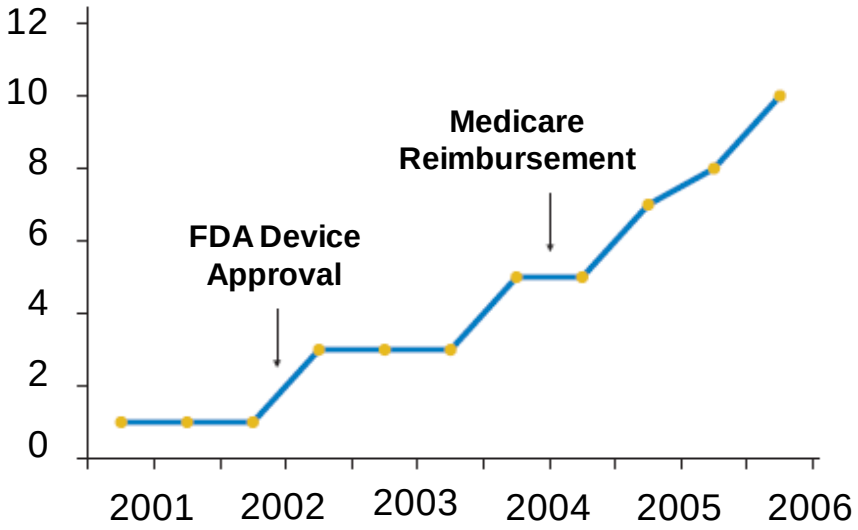
1. Potential and feasibility
2. Effectiveness
3. Harm

Adoption of Advanced Radiotherapy Technology: **Rapid**

Substitution of IMRT for 3DCRT In Prostate Cancer



Adoption of Brachytherapy In Breast Cancer



Source: SEER-Medicare analyses: Yeboa DN (2009); Smith GL (2010), Nyugen P (2011)

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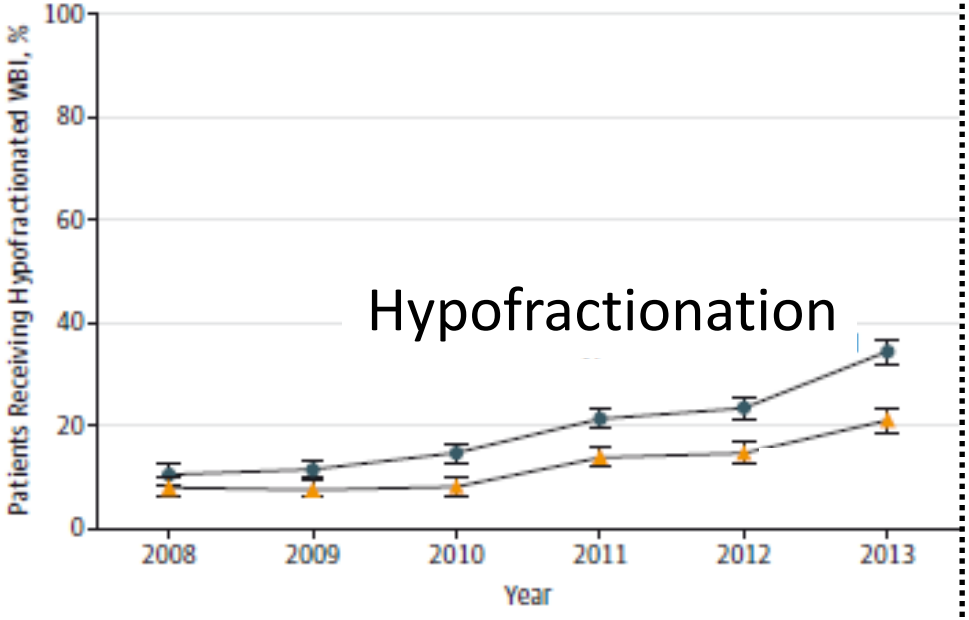
De-adoption of Extended Fractionation: **Slow**

Conventional vs. Hypofractionated Whole Breast Irradiation



Single vs. Multi Fraction Treatment for Bone Mets

No. of Radiotherapy Fractions	Medicare Beneficiaries, No. (%) [95% CI]
1	101 (3.3) [2.7-3.9]
2-5	395 (13.0) [11.8-14.1]
6-10	1020 (33.4) [31.8-35.1]
11-20	1177 (38.6) [36.9-40.2]
>20	357 (11.7) [10.6-12.8]

Source: JAMA, 2014; JAMA, 2013

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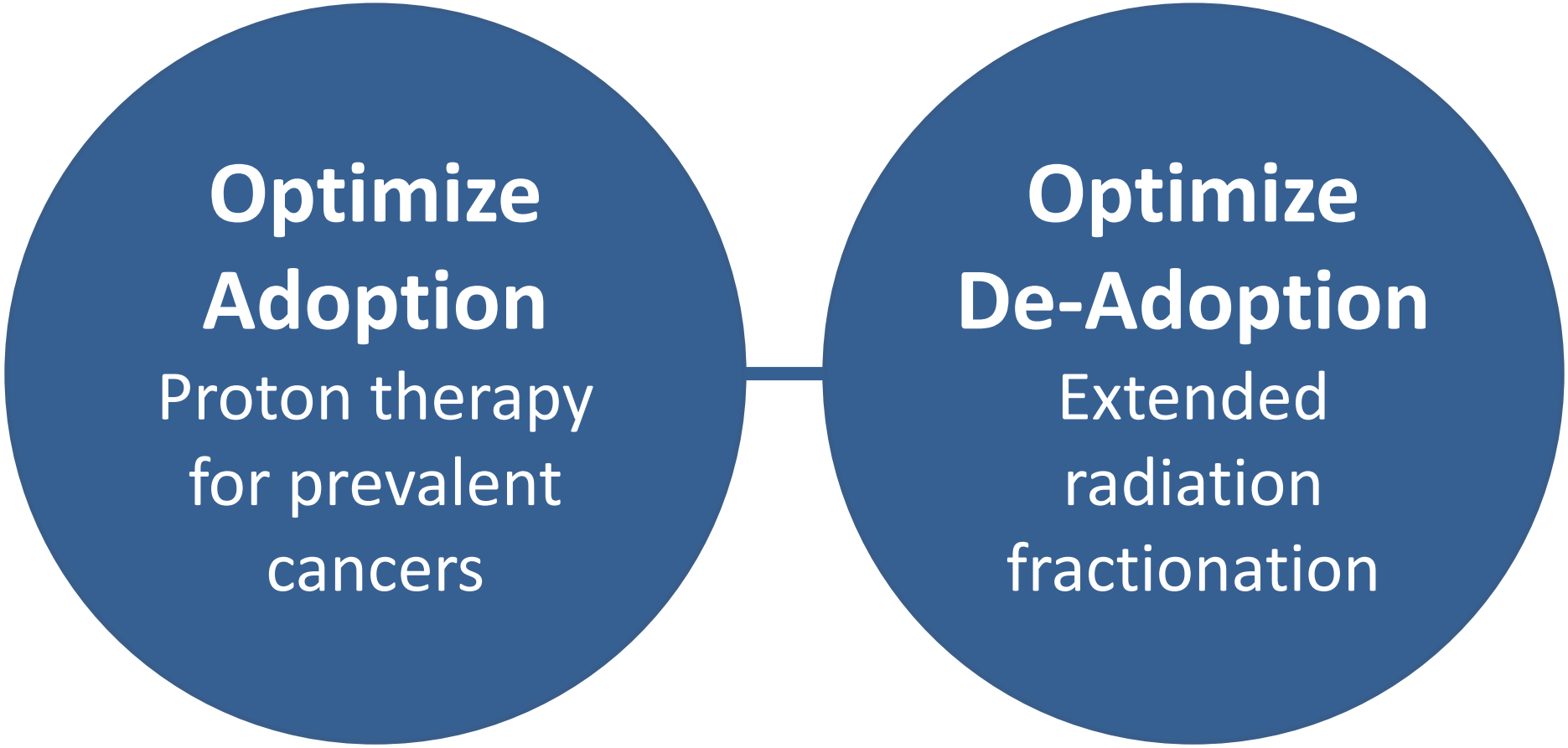

“Slow down”

“Speed up”

Pace driven by evidence of value

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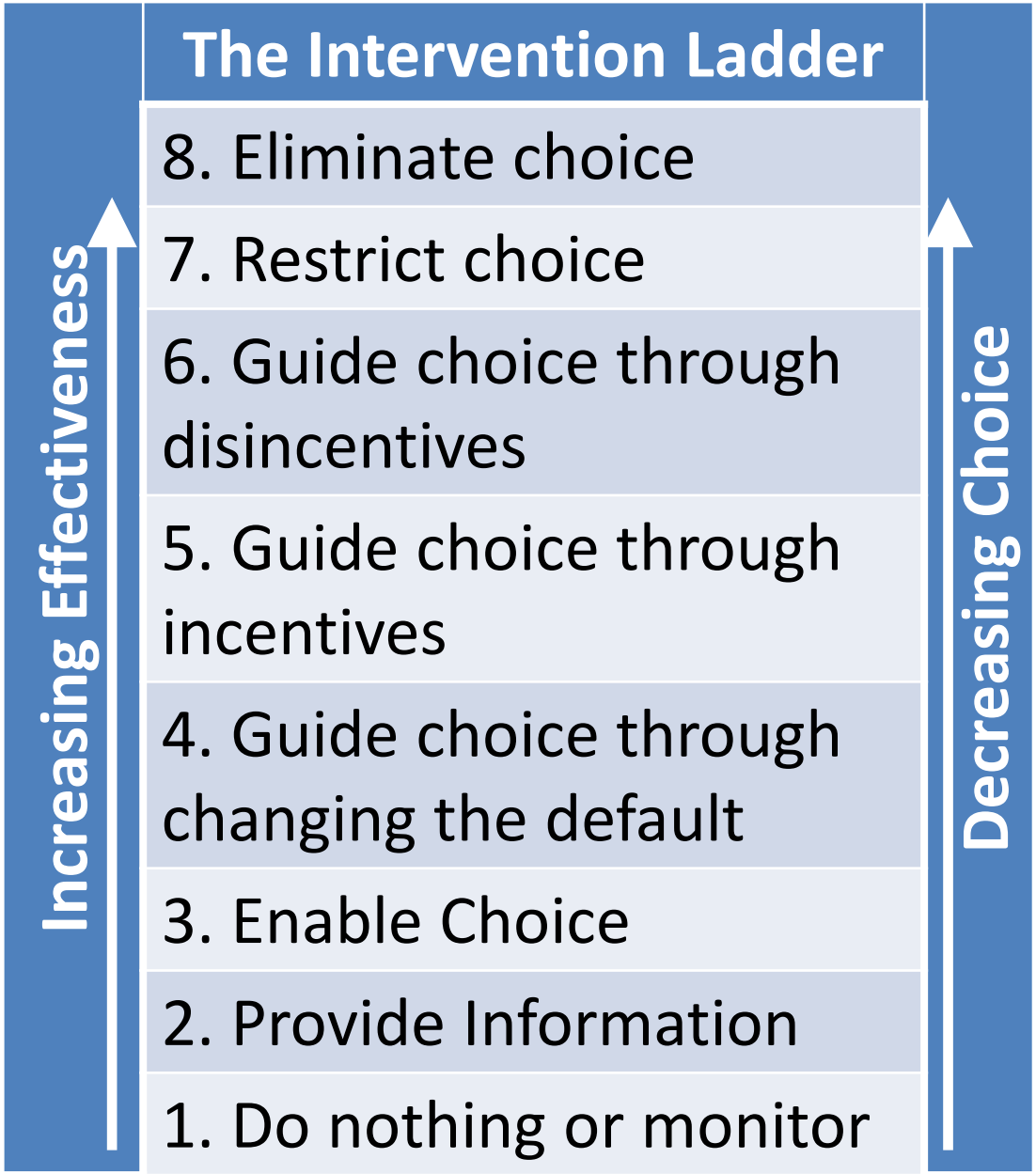

Source: "The Intervention Ladder." Nuffield Council on Bioethics. Public Health: Ethical Issues. 2007. Cambridge Publishers. p. 41

The Intervention Ladder	De-adoption of extended fractionation
8. Eliminate choice	Coverage policy “heavy”
7. Restrict choice	Coverage policy “light”
6. Guide choice through disincentives	Utilization management
5. Guide choice through incentives	Quality incentives, P4P
4. Guide choice through changing the default	Default prescriptions for radiation
3. Enable Choice	**Price Transparency, Dec. Support**
2. Provide Information	**Choosing Wisely, Dec. Support**
1. Do nothing or monitor	

Increasing Effectiveness

Decreasing Choice

Source: “The Intervention Ladder.” Nuffield Council on Bioethics. Public Health: Ethical Issues. 2007. Cambridge Publishers. p. 41

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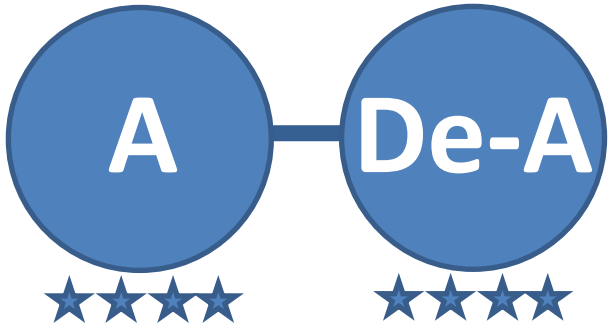
Rating of approaches



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CMS Oncology Care Model:
6 month chemotherapy episode

Base Case

1. Medical Onc. Prof. Fees	$2,000
2. Everything Else	$28,000
Total	$30,000

Source: RAND/MITRE

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6 month chemotherapy episode

	Base Case	CMS Incentive
1. Medical Onc. Prof. Fees	$2,000	$1,000 (+50%)
2. Everything Else	$28,000	
Total	$30,000	$31,000 (+3.3%)

Source: RAND/MITRE

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6 month chemotherapy episode

	Base Case	CMS Incentive	CMS Savings
1. Medical Onc. Prof. Fees	$2,000	$1,000 (+50%)	
2. Everything Else	$28,000		$1,240 (-4.4%)
Total	$30,000	$31,000 (+3.3%)	$29,760 (- 4.0%)

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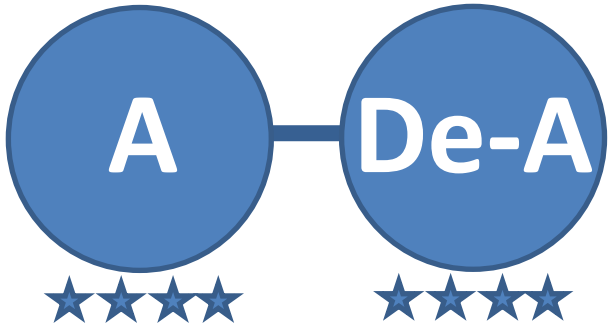
Potential effects of risk sharing in radiation oncology

	De-Adoption	Adoption
Radiation-related costs	Accelerate de-adoption	Nudge innovation toward lower risk, less costly products
	Unintended consequences - Cherry picking - Induced demand - Stinting	Pricing inefficiencies across modalities
Total costs	Limited application	Limited application

Source: IJROBP, 2014

Rating of approaches



1. Delivery system innovation ★★★★ ★★★★
2. Provider risk sharing ★★ ★★★
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Source: CASTLIGHT

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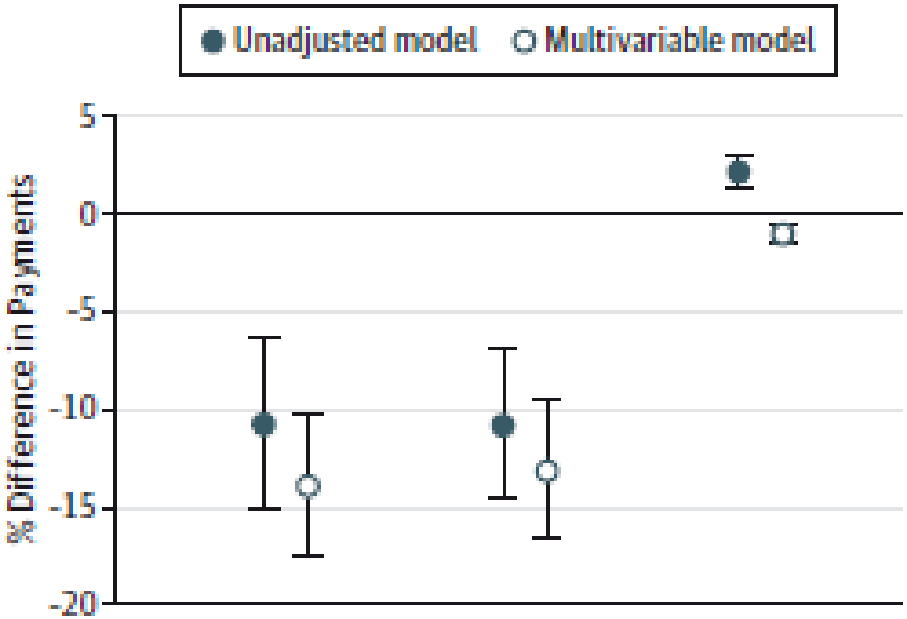
Price Transparency

Figure. Difference in Payments Between Searchers and Nonsearchers



Source: Whaley, C et. al JAMA, 2014

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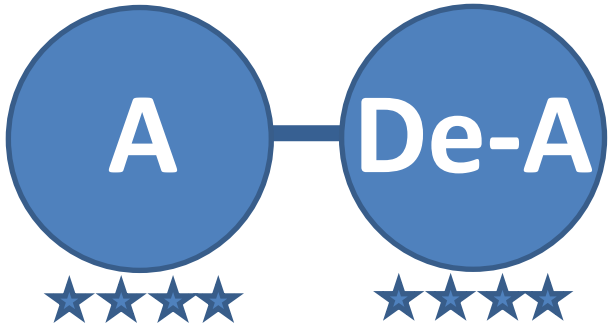
Rating of approaches



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2. Provider risk sharing ★★ ★★★
3. Price transparency ★★ ★★★★
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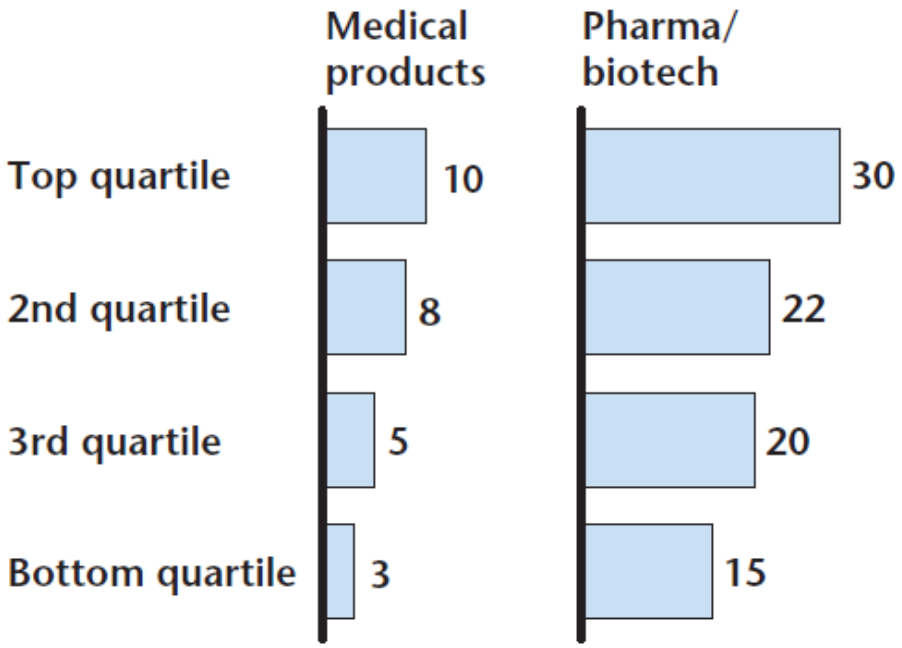
Proton Therapy: Adoption ahead of CER

	Prostate	Breast	Lung
Randomized trial (RCT)	• PARTIQOL RCT	• RADCOMP Pragmatic RCT	• RTOG 1308 RCT
Sponsor	NATIONAL CANCER INSTITUTE; MGH 1811	pcori	NATIONAL CANCER INSTITUTE; NRG ONCOLOGY Advancing Research. Improving Lives.™
Primary endpoint	• Patient reported bowel fxn	• Major CV events and relapse	• Survival
Patient-centric?	• ++++	• ++++	• ++++
Payer-centric?	• +++	• ++++	• +++++
Timeline	• > 5 years	• > 10 years	• > 5 years

Opportunity for Radiation Device Industry to Invest in Evidence Generation

R&D Spend of Leading Companies as Proportion of Sales



	Medical products	Pharma/ biotech
Average:	7.0%	21.3%
Median:	5.8%	20.1%

Varian:	6-7%
Elekta:	8-9%
IBA:	10-11%
Accuray:	15-22%

Source: Lin J (2010); Businesswire (2012); ycharts.com (2012)

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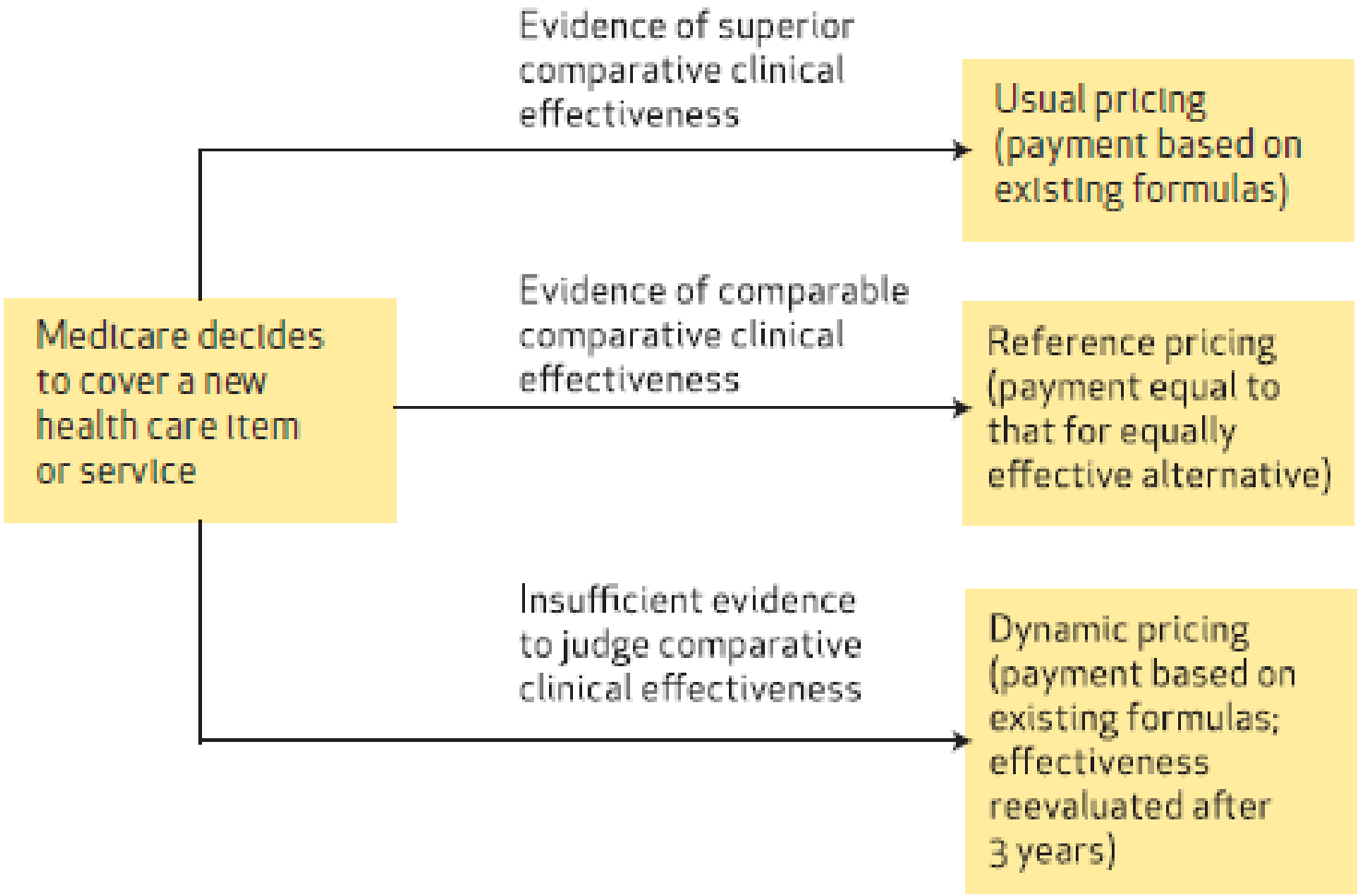
Dynamic Pricing: Link Evidence Generation and Payment



Source: Bach, Health Affairs, 2010; Bekelman, JCO, 2014

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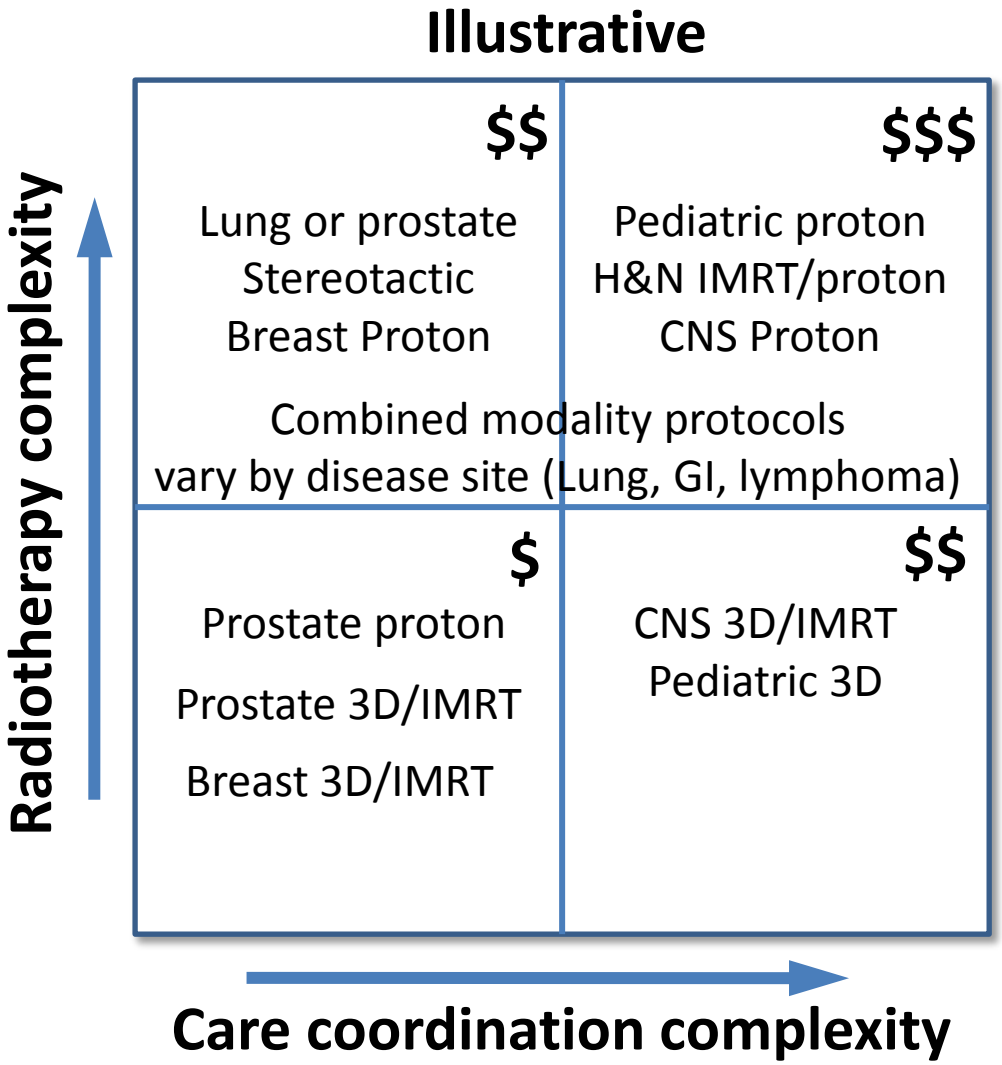
Extension: Indication-Specific Pricing



+Evidence of value required

Acknowledgment: Bach, JAMA, 2014

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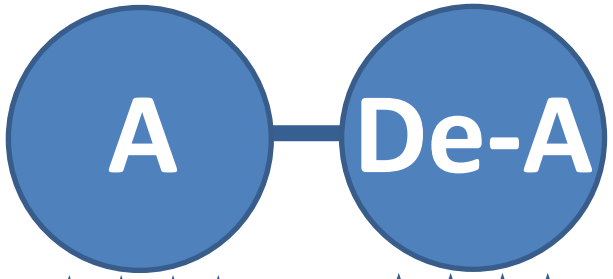
Rating of approaches



1. Delivery system innovation ★★★★ ★★★★
2. Provider risk sharing ★★ ★★★
3. Price transparency ★★ ★★★★
4. Evidence generation ★★★ ★
   ….Linked to Reimbursement ★★★★ ★★★★

Conclusions

- Adoption and de-adoption should be based on evidence of value
  - Implications for industry, government, patients
  - Pace may depend on linkage between evidence generation and reimbursement
- Short of that, delivery-system innovation and its components hold great potential
- Innovations should be evaluated with strong experimental design, may outright fail or have heterogeneous effects, and will need to 'move up the intervention ladder'