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BERKELEY CENTER
FOR HEALTH TECHNOLOGY

Pharmaceutical Reference Pricing in Health Insurance

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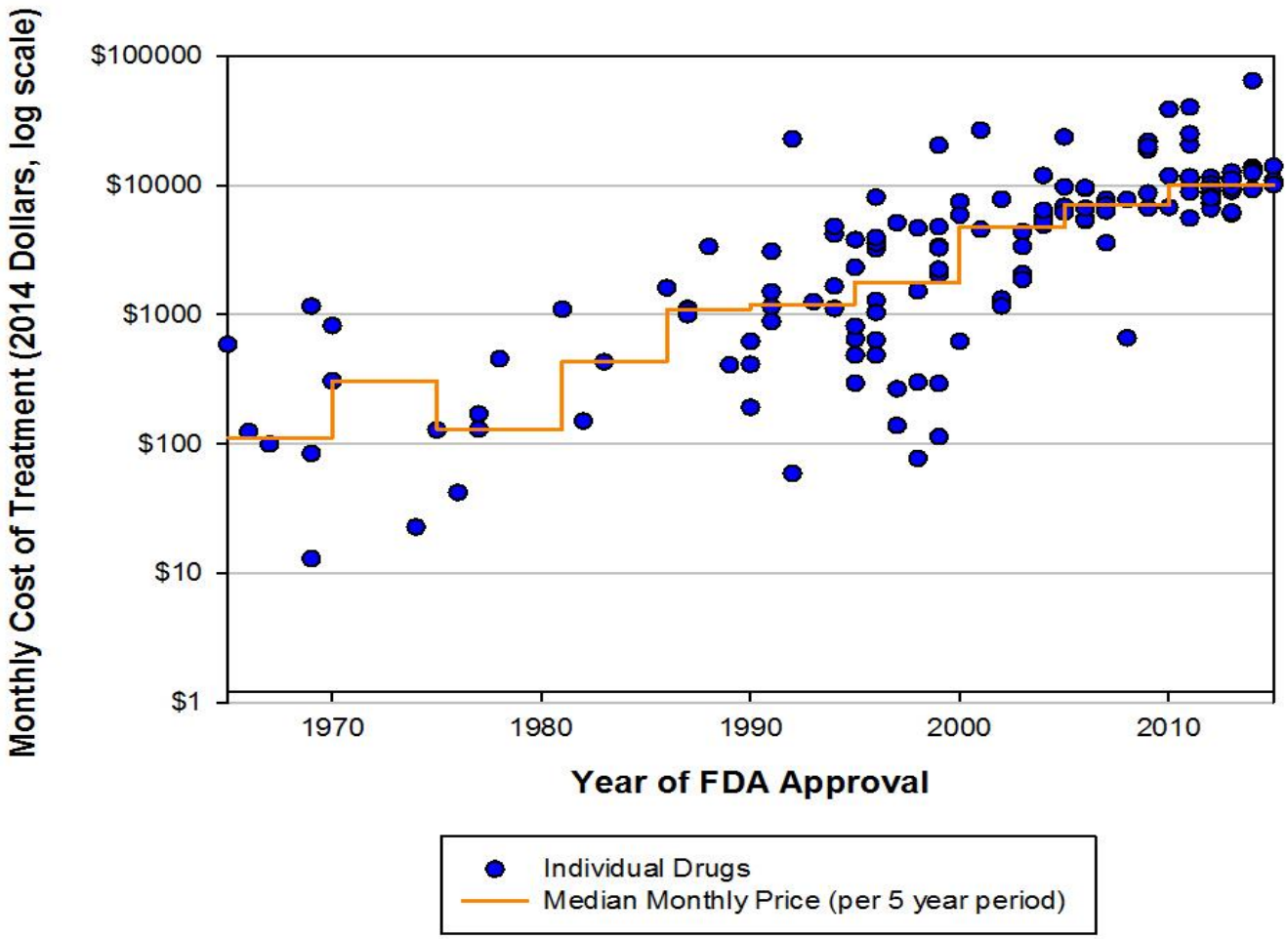
Price Variation in Health Care

- In most sectors, variation in price is due to variation in quality, convenience, performance
- In health care, variation in price also is due to factors on the supply side:
  - Manufacturers: patent protection
  - Providers: market consolidation
- The variation in price is permitted by factors on the demand side
  - Consumers lack incentive to shop, as someone else is paying (insurer, employer)
  - Consumers lack information on prices and quality at the time of making choices

Monthly and Median Costs of Cancer Drugs at the Time of FDA Approval
1965-2015



Source: Peter B. Bach, MD, Memorial Sloan-Kettering Cancer Center

Top selling U.S. drug prices over five years

Prices rose 54 percent to 126 percent.

DRUG (COMPANY)	PRICE* Dec. 31, 2010	PRICE* Present	PRICE GROWTH
Humira (AbbVie) 40 mg/0.8 ml pre-filled syringes	$1,676.98	$3,797.10	126.4%
Enbrel (Amgen) 50 mg/ml subcutaneous sol.	$427.24	$932.16	118.2%
Copaxone (Teva) 20 mg/ml subcutaneous sol.	$3,025.04	$6,593.00	118.0%
Crestor (AstraZeneca) 10 mg tablets	$350.17	$745.41	112.9%
Abilify (Otsuka) 10 mg tablets	$454.07	$891.97	96.4%
Lantus Solostar (Sanofi SA) 100 units/ml subcutaneous sol.	$191.96	$372.76	94.2%
Advair Diskus (GlaxoSmithKline) 250/50 inhalation discs	$199.90	$334.63	67.4%
Remicade (Johnson & Johnson) 100 mg IV powder for solution	$657.87	$1,071.48	62.9%
Neulasta (Amgen) 6 mg/0.6 ml subcutaneous sol.	$3,320.00	$5,155.65	55.3%
Nexium (AstraZeneca) 10 mg oral packets	$162.55	$250.94	54.4%

* Reflects wholesale acquisition prices before volume-related rebates and other discounts. Prices are based on most commonly prescribed dose.
Source: Truven Health Analytics

S. Culp, 30/03/2016

REUTERS

Variation in Drug Prices

Drug Class	Number of Fills	Price of Lowest-Priced Drug in Class	Price of Highest Priced-Drug in Class	Difference Between Highest and Lowest Price Drug ($)	Share of Lowest Price Drug in Class (%)	Share of Highest Price Drug in Class (%)
HMG CoA Reductase Inhibitors	11,701	$12.3	$447.2	$434.9	0.3%	0.0%
Thyroid Hormones	8,386	$5.3	$33.4	$28.1	0.3%	0.1%
Selective Serotonin Reuptake Inhibitors (SSRIs)	7,287	$10.3	$201.0	$190.7	10.2%	0.1%
ACE Inhibitors	6,601	$5.9	$50.4	$44.5	2.0%	0.1%
Beta Blockers Cardio-Selective	5,490	$6.1	$78.0	$71.9	6.1%	3.9%
Proton Pump Inhibitors	5,345	$25.7	$296.1	$270.4	28.7%	0.5%
Biguanides	4,185	$11.8	$525.2	$513.4	41.0%	0.8%
Hydrocodone Combinations	4,073	$27.8	$297.4	$269.6	7.7%	1.4%
Nonsteroidal Anti-inflammatory Agents (NSAIDs)	4,021	$9.9	$521.0	$511.1	12.3%	0.1%
Calcium Channel Blockers	3,864	$14.6	$221.8	$207.2	3.2%	0.4%
Angiotensin II Receptor Antagonists	3,497	$11.5	$166.6	$155.1	8.6%	0.4%
Benzodiazepines	3,286	$3.0	$15.1	$12.1	0.1%	7.8%
Anticonvulsants - Misc.	3,224	$17.9	$292.2	$274.3	0.2%	0.5%
Nasal Steroids	2,952	$34.0	$422.1	$388.1	60.8%	0.3%
Thiazides and Thiazide-Like Diuretics	2,647	$4.1	$69.4	$65.3	0.3%	0.2%
Serotonin-Norepinephrine Reuptake Inhibitors (SNRIs)	2,644	$41.5	$299.7	$258.2	17.7%	2.6%
Beta Adrenergics	2,379	$8.0	$489.4	$481.3	0.2%	0.0%
Non-Benzodiazepine - GABA-Receptor Modulators	2,233	$34.3	$221.4	$187.1	12.6%	0.1%
Human Insulin	2,070	$108.9	$323.2	$214.3	2.8%	16.0%
Angiotensin II Receptor Antag & Thiazide/Thiazide-Like	1,987	$16.0	$139.5	$123.5	14.0%	6.2%
Antidepressants - Misc.	1,896	$28.0	$97.4	$69.4	2.5%	37.1%

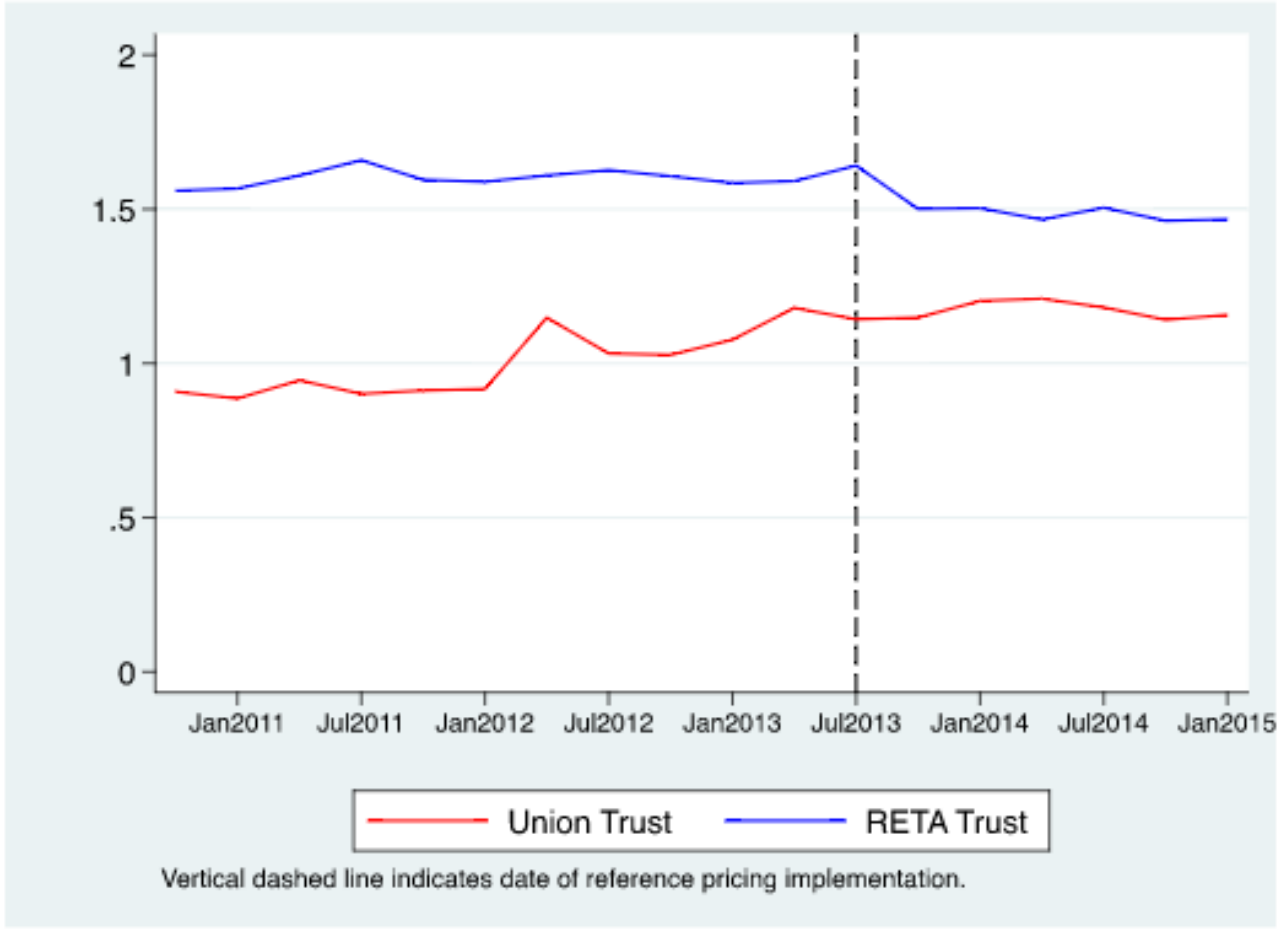
What is Reference Pricing?

- Sponsor (employer, insurer) establishes a ***maximum contribution*** (reference price) it will make towards paying for a particular service or product
  - This limit is set at some point along the observed price range (e.g., minimum, median)
  - Patient must *pay the full difference* between this limit and the actual price charged
  - Patient may reduce cost sharing by switching to low-priced product or provider
- Patient chooses his/her cost sharing by choosing his/her product or provider
  - Patient has good coverage for low priced options but ***full responsibility for choice***

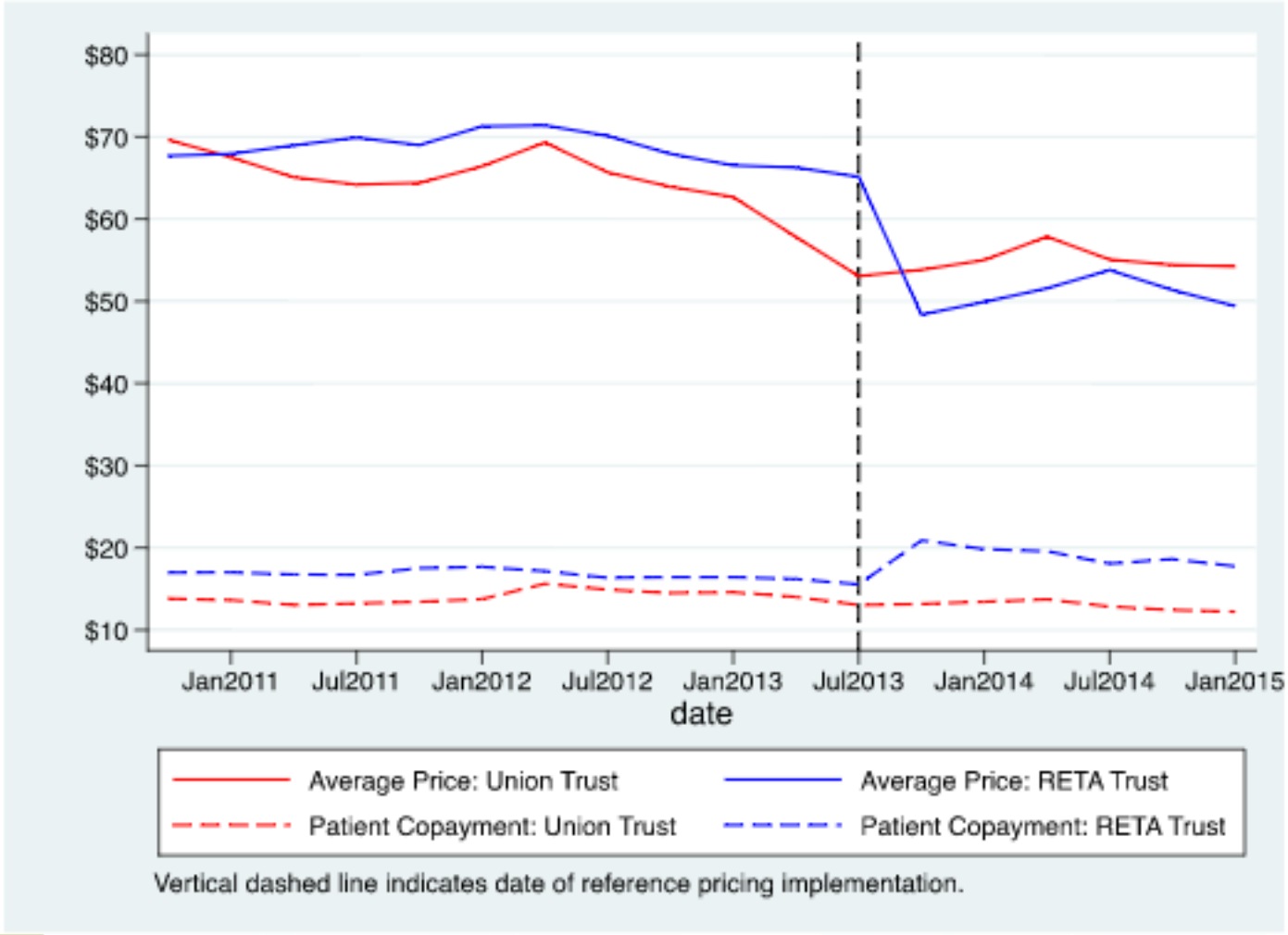
Data and Methods

- Drug claims from July 2010 to December 2014 were obtained from RETA Trust (N=573,456) and from comparison labor union trust (N=549,285)
- RETA Trust implemented reference pricing July 2013
- Difference-in-difference multivariable regressions
- Compare change in drug choice and price paid for RETA, before and after implementation, with changes (if any) over same period for comparison group
- Endpoints:
  - Rate of utilization: prescriptions per employee
  - Probability that the patient selects the low-price drug within its therapeutic class
  - Average price paid per prescription

Reference Pricing: No Effect on Rate of Drug Utilization

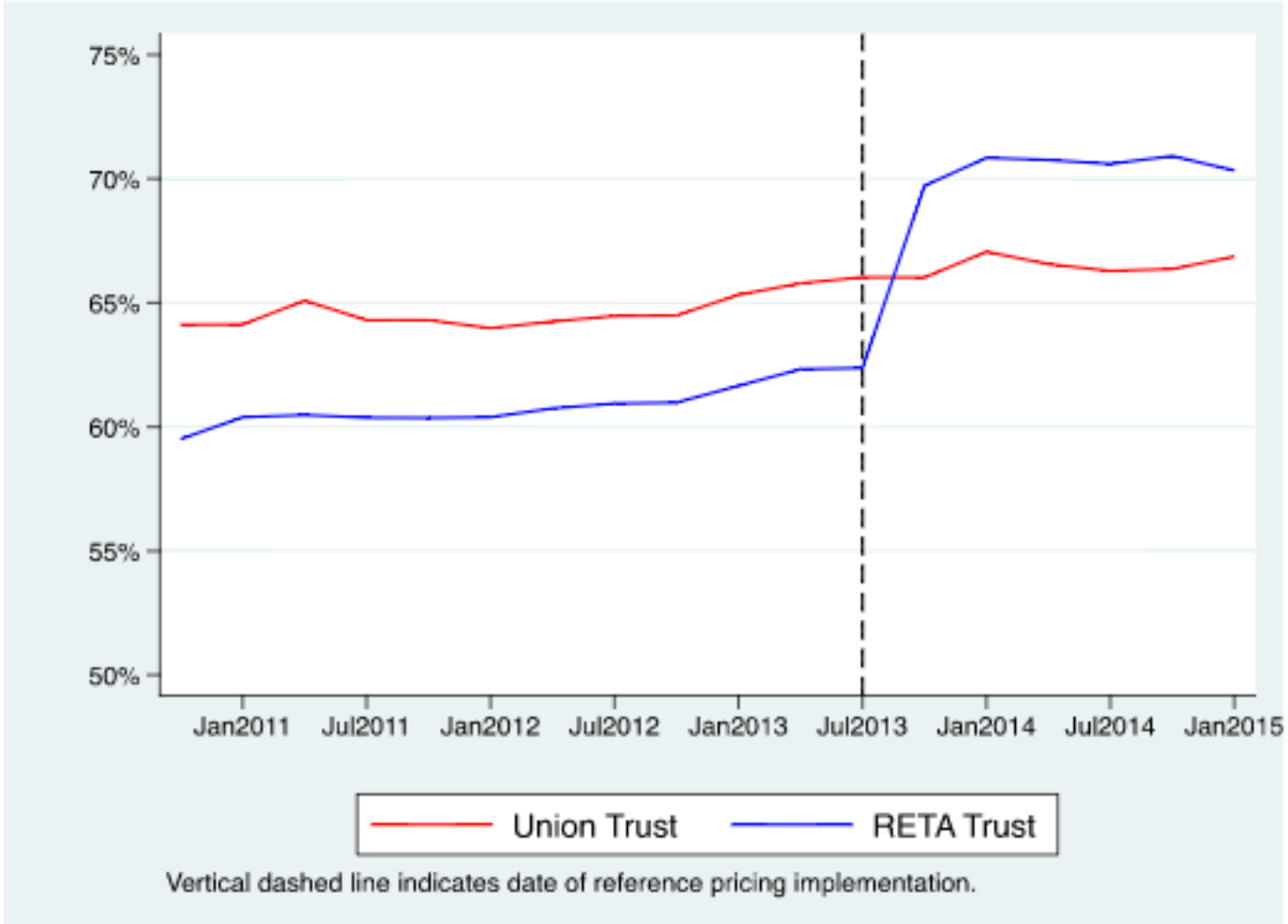


Reference Pricing Reduces Prices Paid and Increases Consumer Cost Sharing



Vertical dashed line indicates date of reference pricing implementation.

Reference Pricing Increases Share of Low-Price Drug with Classes



Vertical dashed line indicates date of reference pricing implementation.

Multivariable Analyses: Impact on Drug Choices, Prices, Copayments

- The Figures present unadjusted trends in use, choice, prices, and cost sharing but impact should be assessed after adjusting for market and demographic changes
- Multivariable (difference-in-difference) analyses indicate that reference pricing was associated with:

- 11.3% growth in probability that a RETA patient selects the low-priced drug within its class
- 13.9% reduction in average price paid
- 5.2% increase in employee cost sharing

Multivariable Analyses: Impact on Employer and Employee Spending

- RETA paid for 144,520 prescriptions in the 18 months after implementation of reference pricing.
- The reduction in prices due to reference pricing led to savings for the Trust of $1.34 Million
- The increase in cost sharing due to reference pricing led to increased employee spending of $0.12 Million

Reference Pricing in Context

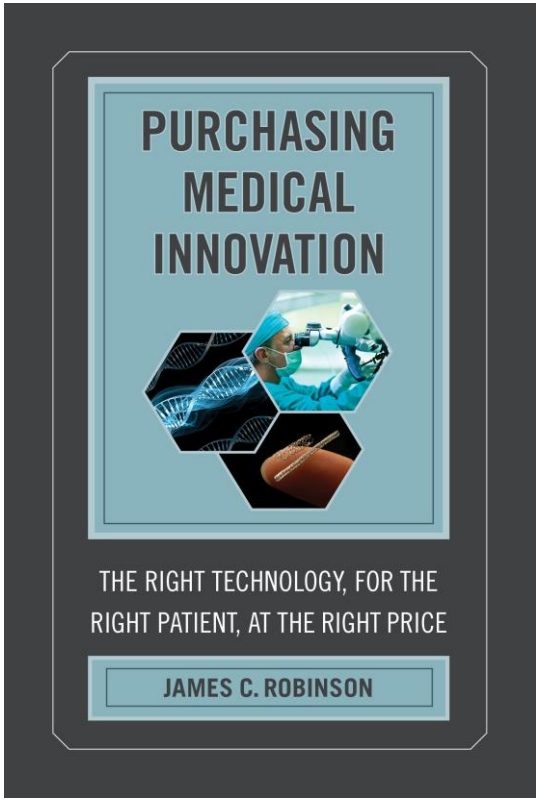
- Reference pricing has been applied non-drug services in the US (e.g., surgery, diagnostic procedures, lab tests)
- It has been applied to drugs in many nations outside the US (e.g., Canada, Europe)
- These applications have been subjected to numerous studies
- In every case, reference pricing has been associated with significant reductions in prices and spending

Impact of Reference Pricing on Consumer Choices, Prices Paid, and Potential Spending Reductions for Commercially Insured Individuals

	Percentage point increase in use of low-price facilities	Percent reduction in price paid per procedure or test	Total spending by commercially insured individuals in the US ($Billion)	Potential spending reduction from reference pricing ($Billion)
Joint replacement	14.2	19.8	17.09	3.38
Arthroscopy of the knee	14.3	17.6	5.70	1.00
Arthroscopy of the shoulder	9.9	17.0	3.80	0.65
Cataract removal	8.6	17.9	1.90	0.34
Colonoscopy	17.6	21.0	11.39	2.39
Laboratory tests	18.6	32.0	23.73	7.59
Imaging: CT scans	9.0	12.5	17.09	2.14
Imaging: MRI procedures	16.0	10.5	19.93	2.09
Total	NA	NA	100.62	19.59

Can Reference Pricing Be Applied to Specialty Drugs?

- Much of the price increases and variability have been for specialty drugs, which are more complex and expensive than traditional medications
- In order to apply reference pricing to these drugs, they would need to be grouped by therapeutic class (drugs with similar effects), which is more complex scientifically than for traditional drugs
- The drug innovation pipeline is producing large numbers of therapeutic equivalents, including me-too brands, generics, and biosimilars
- Examples: Rheumatoid arthritis, multiple sclerosis, some cancers, Hepatitis C
- This is the frontier for reference pricing, and for all forms of drug assessment, purchasing, and appropriate use



"Geez Louise—I left the price tag on."