



# *Alternative Price Indexes for Health Care Spending*

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# *Our research on price indexes for health spending is part of a broader initiative.*

- Goal: to improve measures of health care in the national economic accounts (GDP)
- How we would do that: by expanding practice of converting data by industry (spending for hospital care) to spending on products (treatment of heart disease), as now done for retail sales, for example
- State of the work: exploratory, assessing what data can be brought to bear, no schedule established for implementation
- Other collaborative work envisioned: CMS expertise on health sector; expansion of NAPCS product classification to diseases; new BLS price indexes by disease

# *Focus today:* *implications for real health care spending.*

- Explain why redefining the “product” has potential implications for measures of real health care services.
- Describe our research into the numerical importance of this issue.
- Outline plans for future work.



# *Starting point for price deflator: defining the “good” properly.*

- “Output” of medical care as the “treatment of disease,” not the individual treatments
- This requires a different kind of price deflator
- Previous case studies suggest that measured price growth may be very different with redefinition of product:
  - Psychiatric conditions (Berndt et. al.)
  - Heart attacks (Cutler and McClellan)
  - Cataract (Shapiro, Shapiro, and Wilcox)
  - 40 conditions in four cities (Bradley et. al.)
- Two National Academies panels have recommended that statistical agencies construct price indexes on this basis, even if one cannot account for changes in outcomes of care (i.e., quality)

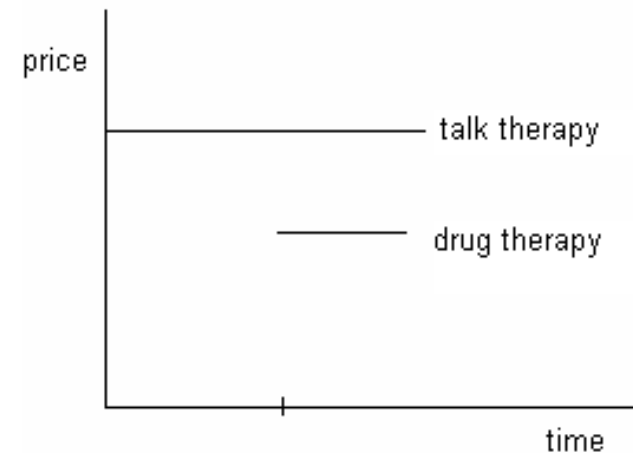
# Why is it important to define the “good” as the treatment of a homogeneous medical condition?

Example:

- drug therapy introduced
- no price change for either treatment
- number of patients the same

Problem:

- As consumers switch to drug therapy, nominal expenditures fall
- Usual price index shows no price change  
Real expenditures fall even if quantities did not



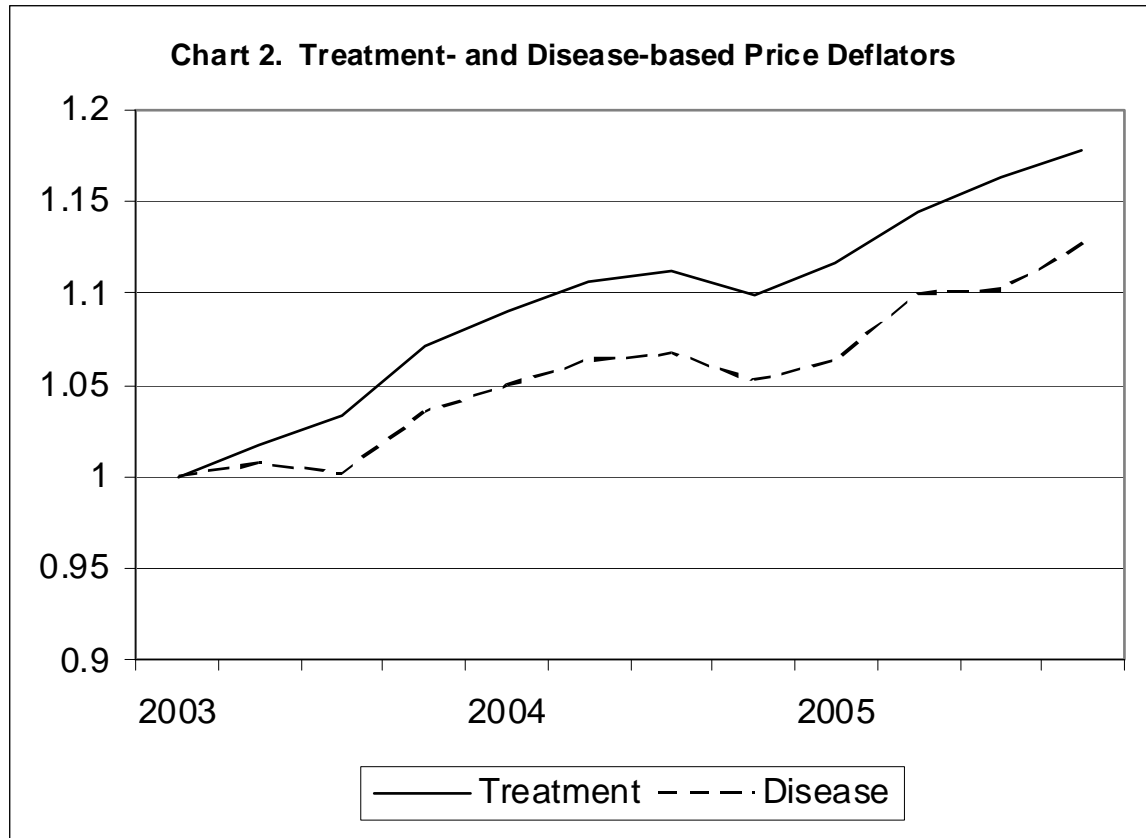
Solution:

- redefine the “good” as the “treatment of depression” and the price as

$$P_{\text{depression},t} = \frac{\text{expenditures on all types of treatments}}{\text{number of patients treated}}$$

- Note: This is really just a reincarnation of the “Reinsdorf” problem.

# Preliminary findings support results based on case studies.



Source: Aizcorbe and Nestoriak (2008)

Features of index:

- Constructed using large claims database for HMO patients.
- Price = revenue from all sources
- Price is defined as price per patient treated for a homogeneous condition
- Dollars are allocated to conditions using "episode groupers"
- "Treatments" are identified using "place of service" variable.

# *Disease-based index implies faster growth in services.*

## Decomposition of Growth in Health Care Cost

	Price Change	Growth in Services	Growth in Costs
	(1)	(2)	(1)(2)
Index Levels (2003:1=1.00)			
Preferred Index	1.13	1.16	1.31
Treatment Index	1.18	1.11	1.31
Volume Measure	1.12	1.17	1.31
Compound Annual Growth Rates			
Preferred Index	4.4%	5.6%	10.3%
Treatment Index	6.1%	3.9%	10.3%
Volume Measure	4.1%	6.0%	10.3%



# The differences are pervasive.

**Table 1. Comparison of Disease-Based Price Indexes  
With Treatment-Based Price Indexes**

Disease category	Share of total costs (percent)	Average annual growth rates, 2003:1–2005:IV (percent)		Difference
		Disease- based index	Treat- ment- based index	
Orthopedics and rheumatology .....	16.0	11.8	18.0	–6.2
Cardiology .....	10.6	1.7	17.5	–15.7
Gastroenterology .....	8.5	16.3	21.6	–5.2
Otolaryngology .....	8.3	9.2	14.8	–5.6
Gynecology .....	7.4	11.2	21.0	–9.8
Endocrinology .....	6.2	11.8	14.9	–3.1
Neurology .....	5.9	15.4	21.3	–5.9
Psychiatry .....	5.4	3.1	8.0	–4.9
Pulmonology .....	5.3	16.3	18.9	–2.6
Obstetrics .....	5.1	19.1	16.1	3.0
Dermatology .....	4.5	16.4	19.3	–3.0
Hepatology .....	3.3	9.4	11.6	–2.3
Urology .....	3.1	7.0	15.8	–8.8
Neonatology .....	2.9	30.8	28.7	2.2
Hematology .....	2.7	18.8	22.2	–3.5
Ophthalmology .....	1.9	8.4	10.8	–2.4
Nephrology .....	1.2	3.6	10.2	–6.6
Infectious diseases .....	1.0	37.3	32.9	4.3
Chemical dependency .....	0.7	18.3	12.3	6.0

For example, the cost of treating orthopedic conditions rose, on average, 12 percent from 2003:1 to 2005:4, while the costs of the underlying treatments rose 18 percent.

Conclusion: viewing the bundle of treatments as the “good” implies slower increases in price (and faster increases in quantity).

Health economists view these differences as productivity.

Caveat: these indexes do not account for changes in “quality” of treatment.



# Specific Examples are consistent with anecdotal evidence.

Major Disease Category	Difference	Hospital			Office Visits	Prescription Drugs	Lab	Ambulatory		
		Inpatient	Outpatient	Emergency				Home Care	Centers	Other
Use of Ambulatory Surgical Centers:										
Gastroenterology	-5.2	-1.3	-2.7	-0.1	-2.0	-0.5	0.2	0.0	0.7	0.4
Ophthalmology	-2.4	-0.1	-2.1	-0.1	-0.6	-0.5	0.0	0.3	0.8	-0.2
Use of Drugs, Home Care										
Orthopedics and Rheumatology	-6.2	-1.1	-2.8	-0.2	-1.4	-0.1	0.0	0.6	0.2	-1.5
Pulmonology	-2.6	0.7	-1.7	-0.5	-1.8	0.0	0.0	0.3	0.0	0.4
Psychiatry	-4.9	-1.0	-0.3	0.0	-5.3	2.3	0.0	0.0	0.0	-0.7

Ambulatory Surgical Centers: Small, growing fast, particularly in the treatment of gastrointestinal and eye conditions.

Home Care: There is anecdotal evidence of shifting medical equipment from hospitals to the home in the treatment of lung conditions.

Drugs: Consistent with Berndt, et. al. (1996), we find shifts from office visits to drug care.

**Reduced use of hospitals and office visits apparently generated cost savings not offset by increased use of drugs and other, lower-cost treatments.**

**Table 2. Decomposition of Cost Savings From Treatment Substitution**  
[Percentage points]

Disease category	Difference	Hospital			Office visits	Prescription drugs	Laboratory	Home care	Ambulatory surgical centers	Other
		Inpatient	Outpatient	Emergency room						
Orthopedics and rheumatology .....	-6.2	-1.1	-2.8	-0.2	-1.4	-0.1	0.0	0.6	0.2	-1.5
Cardiology .....	-15.7	-11.6	-1.6	0.1	-1.5	-0.1	0.1	0.1	-0.1	-1.0
Gastroenterology .....	-5.2	-1.3	-2.7	-0.1	-2.0	-0.5	0.2	0.0	0.7	0.4
Otolaryngology .....	-5.6	0.1	-2.6	-0.2	-2.0	-0.8	0.1	0.2	0.0	-0.3
Gynecology .....	-9.8	-3.0	-2.8	0.1	-3.0	-0.5	-0.1	0.0	-0.4	0.0
Endocrinology .....	-3.1	-2.8	-1.0	-0.1	-2.2	3.0	-0.1	0.5	-0.1	-0.4
Neurology .....	-5.9	-0.5	-1.9	-0.3	-2.9	0.5	0.0	0.0	0.0	-0.8
Psychiatry .....	-4.9	-1.0	-0.3	0.0	-5.3	2.3	0.0	0.0	0.0	-0.7
Pulmonology .....	-2.6	0.7	-1.7	-0.5	-1.8	0.0	0.0	0.3	0.0	0.4
Obstetrics .....	3.0	3.1	-0.5	0.2	0.0	-0.4	0.2	0.1	-0.1	0.3
Dermatology .....	-3.0	0.7	-1.3	-0.3	-1.7	-1.0	0.3	0.3	-0.6	0.6
Hepatology .....	-2.3	0.3	-1.6	0.2	-0.5	-1.7	0.0	0.0	0.2	0.9
Urology .....	-8.8	-3.0	-3.4	-0.2	-1.9	0.2	0.1	0.1	-0.1	-0.6
Neonatology .....	2.2	2.1	-0.1	0.0	0.6	-0.1	0.0	-0.3	0.0	0.0
Hematology .....	-3.5	-0.7	-2.3	0.0	-1.7	-0.4	0.1	0.0	0.0	1.4
Ophthalmology .....	-2.4	-0.1	-2.1	-0.1	-0.6	-0.5	0.0	0.3	0.8	-0.2
Nephrology .....	-6.6	-0.2	-5.9	0.0	-0.5	0.4	0.1	-0.2	-0.1	-0.3
Infectious diseases .....	4.3	3.4	-0.7	0.3	-0.8	1.2	0.2	0.6	0.0	0.0
Chemical dependency .....	6.0	2.4	-2.4	2.9	-2.0	3.4	0.1	0.0	0.1	1.5

This is consistent with long-run trends in the CMS data.

# *Plans for Future Research*

- Explore the usefulness of spending series for identifying drivers of cost growth.
- Monitor efforts in academia to measure outcomes of treatment.
- Examples of technical issues that we need to explore:
  - Replicate findings using representative data with more comprehensive coverage (Ralph Bradley, BLS)
  - Explore reliability of grouping algorithms for this purpose (Cutler, Rosen)