



# *Alternative Price Indexes for Health Care Spending*

*Ana Aizcorbe*  
*Council of Professional Associations on Federal Statistics*  
*Washington, DC*  
*June 5, 2009*

# *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)

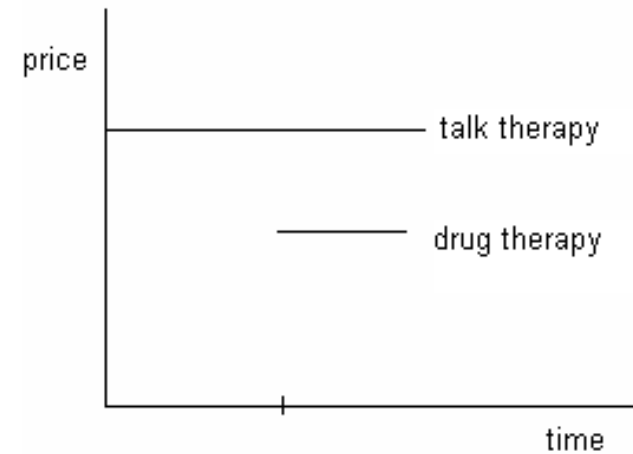
# Why is it important to define the “good” as the treatment of a homogeneous medical condition?

## 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



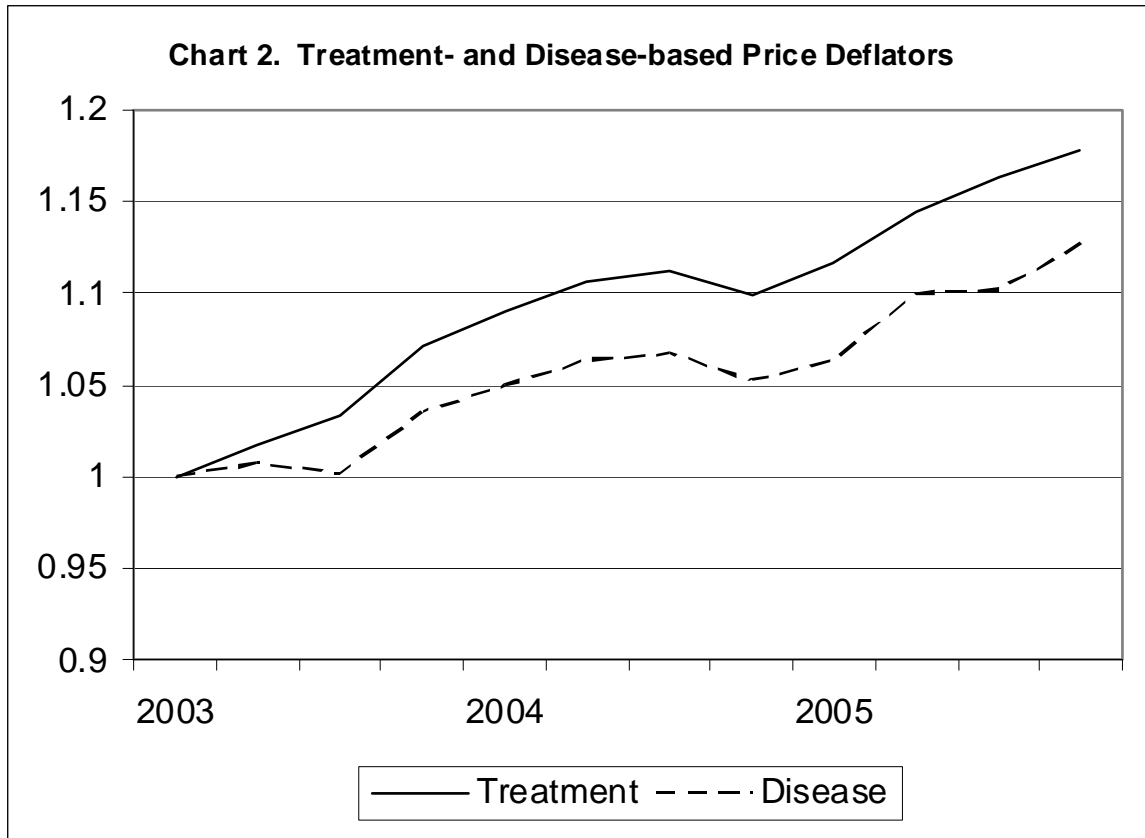
## Solution:

- 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)
<b>Index Levels (2003:1=1.00)</b>			
Preferred Index	1.13	1.16	1.31
Treatment Index	1.18	1.11	1.31
Volume Measure	1.12	1.17	1.31
<b>Compound Annual Growth Rates</b>			
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	Treatment-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)