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Medical Expenditures Are Likely “Worth It.” But Can We Measure How Much They Are Worth?

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It is common for scholars and media outlets to report that medical care expenditures have grown as a share of gross domestic product. [That](#)

share recently reached 17.9 percent, having grown from 13.2 percent two decades ago. Without context, these numbers suggest an aura of excess, in which patients are paying more for the same medical care goods and services. Bolstering this view is a substantial body of evidence that there are inefficiencies in medical care spending, resulting from [administrative costs](#) and [overuse/underuse of medical care](#) (for example, duplicate testing).

Juxtaposed against this perception of inefficiencies is considerable evidence that medical care has seen [significant technological change](#) that has led to [improved health outcomes](#). Over the past two decades, we have observed expanded use of [antihypertension drugs leading to fewer acute heart conditions](#), [innovative HIV/AIDS drugs leading to gains in life expectancy](#), and [new rheumatoid arthritis drugs improving quality of life](#). As health expenditures have grown over the past two decades, US [life expectancy has increased by 2.5 years](#), with medical care likely playing an important role. To emphasize the importance of weighing both expenditure and innovation, health economists, such as David Cutler, often pose the question of whether you would rather have the medical care prices and technology of 2018 or the medical care prices and technology from decades ago. This question highlights the notion that most people are unwilling to give up access to technologically advanced treatments and medical knowledge. In this sense, medical expenditures may be viewed as “worth it.” The harder question is, how much are they worth?

To determine whether changes in medical care treatments are valuable, inefficient, or somewhere in between requires weighing the changing costs of medical care with the associated benefits from improved treatments (in other words, quality of treatment). If quality does not change, then this assessment is straightforward and focuses only on the price of treatment. If quality does change, then some type of

“quality adjustment” must be applied to account for consumers getting more benefits out of the goods and services they are purchasing.

In fact, when measuring the growth of the economy, analysts already adjust many sectors for quality change. For example, the quality adjustment for computers accounts for improvements in their components (for example, processor speed, memory, and screen quality). As quality of the product improves, consumers are getting more computing power per dollar of spending than is reflected by the price of the computer alone, so that the quality-adjusted price is lower than observed price of a computer in the store. This lower quality-adjusted price reflects the idea that consumers spending the same amount of money on a computer in 2018 as they did in 1998 are getting much more computing power from their purchase. (In fact, official data from the [Bureau of Labor Statistics](#) [series ID CUUR0000SEEE01 and CUUS0000SEEE01] suggest individuals are getting about 20 times the computing power per dollar spent in 2018 relative to 1998.)

Currently, official statistics of the medical care sector only measure the number of goods and services consumed (for example, visits and prescriptions) and associated prices, while neglecting much of the quality changes of medical care treatments. [Experts agree that factoring in the quality of treatment would lead to lower quality-adjusted price growth](#), indicating that consumers are getting more per dollar spent in this sector than current official estimates. A complete understanding of the growth trends in the medical care sector, as well as our overall economy, hinges on properly accounting for quality alongside costs.

Innovation, Inefficiency, And Quality Adjustment To Medical Care

A recent *Health Affairs* paper, by Inmaculada Hernandez and colleagues demonstrates the importance of pinning down this measurement problem. Their research investigates whether drug price growth is driven by existing drugs or the introduction of new drugs. For specialty drugs, they find that new drugs are a major driver of expenditure growth. If these new drugs are not higher quality than previous alternatives, then introducing a new drug clearly increases costs without providing any additional benefit to patients. On the other hand, if the new product leads to large improvements in health, presumably a reason for the drug's development, then we should be factoring in this additional benefit in our economic statistics. The 2013 entry of [Sovaldi, the most expensive drug for Medicare Part D in 2014](#), for the treatment of hepatitis C is an exemplary illustration of a highly expensive but also a highly innovative drug entering the market and improving health outcomes. However, the health improvements from this new drug are not currently accounted for in official measures, an issue coined the "new good" problem by economists. Instead, official measures of price growth use only existing drugs in the market.

For brand-name drugs, the researchers find that rising costs are primarily driven by existing drugs, a strong indication of inflation. However, this cost increase could reflect improved treatment quality (discoveries of effectiveness or new applications of existing drugs). Even in this instance, quality measurement offers clarity on the true value of consumer expenditures.

On the other hand, overuse of words such as "quality" and "innovation" can minimize the importance of rooting out inefficient treatments. When patients receive duplicate tests, this inefficiency raises the cost of treatment without benefiting consumers. Similarly, if an expensive new drug is used instead of a cheaper alternative of equal quality, this inefficiency also raises the cost of treatment without benefiting

consumers and lowers the value per dollar spent on treatment. Ideally, an improved measure of the medical care sector would reward improved treatment outcomes and penalize costly inefficient treatments.

So, What Is The Bang For The Buck?

In a paper in the same issue of *Health Affairs*, [David Wamble and colleagues](#) correctly note that overemphasis on cost may lead researchers to neglect the value of the benefits received from new technologies. With this in mind, the authors tackle issues closely related to quality adjustments when they ask the question: “[What’s Been the Bang for the Buck?](#)” The researchers weigh health expenditure against a measure of health outcomes by condition. The health outcome measure is disability-adjusted life-years (DALYs), a score of mortality and morbidity.

Examining a 20-year range of spending and outcomes, they found that for six of the seven conditions studied, those afflicted achieved a greater monetized health outcome than they spent to treat the disease. If these health improvements are, in fact, related to improvements in medical treatments, this indicates that the amount of value or output produced by this sector has increased faster than may be indicated by looking at the price of treatment alone.

illuminating Quality Adjustments Begins With Understanding Why It Is In The Dark

Although Wamble and colleagues nudge measurement in the medical care sector in the right direction by considering changes in innovation

and quality alongside cost, they are bound by limitations that afflict all researchers in this area:

1. *Attributing quality to treatments*: DALYs used by Wamble and colleagues are an imperfect measure of quality because they contain information on changes in health due to both medical and non-medical factors. That is, DALYs cannot distinguish between people living longer due to medical intervention as opposed to, for example, adopting a healthier lifestyle. This is one of the greatest challenges of this literature and is not unique to the DALY measure used by Wamble and colleagues. There are many determinants of health that are unrelated to medical care (for example, environmental exposures and genetics), blurring the link between medical care services and health outcomes.

One method to align medical intervention to health outcomes is to focus research on the treatment of acute and high-mortality conditions (such as heart attacks) because those medical treatments can more easily be tied to health outcomes. Of course, a major limitation of this method is that it only applies to the treatment of acute and high-mortality conditions, even though 90 percent of medical care expenditures are devoted to chronic conditions. Another promising idea in this area is to use “disease-based” models (such as the IMPACT model cited by Wamble and colleagues) that use information from clinical evidence to bridge the gap between medical care services and health outcomes. However, to date, this has only applied to cardiovascular conditions. Therefore, the field needs more research to connect condition-specific expenditures to their associated health outcomes and for that connection to be made available for more

than just a few or acute diseases.

2. *Controlling for severity.* Changes in the diagnosis and treatment rate across conditions may be accompanied by changes in the severity of conditions detected. For example, [the rate of people being treated for conditions such as diabetes, hypertension, and high cholesterol has increased](#) greatly relative to the clinical prevalence for these conditions. If medical interventions detect and treat more low-severity cases over time, then severity per-case-observed decreases. Future work on value will need to consider how to better control for changes in condition severity as treated prevalence increases due to improved detection of low-severity cases.
3. *Variability in expenditure measurement.* The Medical Expenditure Panel Survey (MEPS) data used by Wamble and colleagues tend to have small sample sizes, leading to volatile estimates in medical care spending. For example, the data used by these authors contain just 19 individuals with HIV/AIDS, 22 individuals with lung cancer, and 48 individuals with breast cancer. This is one area where blended data from the Bureau of Economic Analysis' (BEA's) [Health Care Satellite Account \(HCSA\)](#) may bridge the limitation of measurement variability in the future. The HCSA combines MEPS with large claims databases from Medicare and the private sector to produce more stable estimates of spending by disease. [Joseph L. Dieleman and coauthors have also made complementary advancements in this area.](#)
4. *Comorbidities, expenditures, and outcomes:* Wamble and colleagues focus on expenditures and outcomes associated with individual conditions, but it is common for individuals to have

multiple conditions. It is challenging to allocate expenditures across conditions, especially for inter-related conditions such as diabetes and ischemic heart disease. Similar complications arise for outcomes. What condition did an individual die from if multiple conditions contribute to death?

5. *Limited number of conditions*: Wamble and colleagues, as well as other researchers in this area, examine a handful of diseases. However, given the wide range of other costly and prevalent diseases that afflict the US population, it will be important for future work to consider health expenditure and quality adjustment for the full range of possible conditions. The BEA's experimental HCSA partially mitigates this limitation by producing annual estimates of output in the medical care sector for 260 broad diseases. An additional benefit of this experimental account is that it measures output by disease (for example, cost of diabetes) instead of the typical inputs into treatment (for example, cost of hospital visits), which is the approach taken in the official spending estimates from the BEA. Importantly though, given the aforementioned challenges to quality adjustments, the HCSA currently lacks a quality adjustment for new innovations that improve treatment outcomes.

Despite the limitations, the authors of these recent papers are not alone in the dark. Unique features of the medical care sector complicate quality adjustment for all researchers in this area. In addition to the factors above, the substantial involvement of third-party payers in medical care means that consumers typically do not face the full cost of treatment. Therefore, it is difficult for researchers at the statistical agencies, such as the Bureau of Labor Statistics and the BEA, to apply standard statistical methods that account for product attributes to

control for quality, which work well for high-tech electronic goods such as computers.

Ultimately, more important than critiquing these papers is encouraging more research like them to improve measurement in the medical care sector. Future attempts to quality adjust the medical care sector will need to develop better methods to connect expenditure to outcomes for acute and chronic diseases, use stable data and sample sizes, and overcome some of the fundamental gaps in medical care consumer data. These efforts are essential for understanding the trends in the medical care sector and our economy more broadly.

Authors' Note

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Ted Doolittle -- Connecticut S • 18 days ago

Yes, healthcare is good. Yes, paying for good health is "worth it."

But given that all other advanced economies are providing at least the same or more likely better quality care than the U.S., and are doing it for half the price or better, no that is not a good deal.

The most significant waste in our system is located not in overuse, but in overpricing.

1 ^ | v • Reply • Share ›

Robert Bowman • 13 days ago

This article is devoid of discussion of the real determinants of outcomes. The alternative and most likely explanation other than high tech success is that longevity and other improvements are almost entirely about better populations dating back to better social determinants, child well being, etc.

In this line of thinking, the US still does too little, too late, and for too little in benefit. Health care, prison, and military spending twice that of other nation has completely eroded investments in the US people (State of Massachusetts Budget and other examples) at the federal, state, local, employer, family, and individual level. This includes child development, public health, economic development, housing, and more. This has forced an Era of Cost Cutting that continues to impact spending in basic areas such as generalist and general specialty services where most Americans most need care. The designs have also compromised the distribution and number of health care team members important for basic health access.

And now we have people who promote social determinants as important. They are, but for decades we have been cutting the investments in people in such great magnitude that little impact can be seen from more investments, too little, and too late involving social determinants in health care.

^ | v • Reply • Share ›

Janet • 13 days ago

We have a sick care system. We should be working on behalf of the public's health and do more upstream thinking. Preventing disease is far less expensive than medical care, but the medical establishment does not want to see that. I would say that the cost of care in this country is not worth it

would say that the cost of care in this country is not worth it, given that our system costs so much more, and yet, are health status is at the bottom. It would seem to me to be obvious that this is a very poor return on investment. Plus a country where groups like, Remote Area Medical, are the only source of health care for poor, uninsured rural residents, should be very ashamed.

^ | v • Reply • Share ›

Marvin Zinn • 13 days ago

Yes, determining amount of worth is essential, but

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