■ **EDITORIAL**

Multiples of Median Income:
A Tool to Call out Drugs that are High Cost and Low Value

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ABSTRACT

As currently priced, many medications are harming society because they are high cost and low value, and they divert resources from interventions that could promote the health and well-being of Americans to a much greater extent. We believe that cost-effectiveness, stated as dollars per quality-adjusted life-year, is not meaningful for many Americans. By contrast, a measure indexed to household income would be far more salient. We therefore propose reporting the costs of drugs and medical devices as multiples of median income of US households. Although this simple change will leave many questions unanswered, we believe that it will contribute to ongoing efforts to increase the value of health care by bringing drug costs into perspective.

INTRODUCTION

The costs of some medications are staggering: $6.4 million per quality-adjusted life-year (QALY) for a drug that prevents recurrent myocardial infarction, canakinumab[1]; $2.7 million per QALY for a brand-name epinephrine autoinjector (EpiPen)[2]; and $300,000 per QALY for a cholesterol-lowering proprotein convertase subtilisin/kexin type 9 inhibitor.[3] How is the pharmaceutical industry (pharma) able to charge these prices when $150,000 per QALY is considered by the World Health Organization, the American College of Cardiology, the American Heart Association, and other organizations as the benchmark for the upper limit of value?[4-7]

One possible reason might be the phenomenon of anchoring described by Tversky and Kahneman.[8] Anchoring results in estimates that are influenced by where the estimator is starting. Thus, when the starting point, or anchor, is the total cost of health care (trillions or billions of US dollars), costs in the range of thousands or millions of dollars appear small and tend to be accepted.

This begs the question: If the costs of drugs were anchored with a different metric, might that generate more concern about their low value? Emanuel[9] proposes using the average lifetime earnings standard. Although we believe that this benchmark could be useful, we are concerned that it cannot call out the low value of individual drugs, and average lifetime earnings is not an easily calculated statistic. We therefore propose another metric for evaluating the cost-effectiveness of drugs.

PROPOSED METRIC

We believe that most individuals would be better able to relate to drug prices in terms of their household income, a figure they calculate at least once a year at tax time and probably think about frequently when they pay their monthly bills. An anchor in the range of $60,000 would result in a much lower cost-effectiveness threshold than an anchor in the millions, billions, or trillions of dollars. Therefore, we propose reporting the cost-effectiveness of drugs in terms of multiples of median income (MMIs) per QALY. To calculate MMIs per QALY, the user would simply divide the dollar cost of a drug per QALY by the median household income of Americans ($61,372 in 2017[10]). We think the public would be more engaged if the costs per QALY of the 3 drugs listed in the Introduction were reported as, respectively, 104 MMIs, 45 MMIs, and 5.5 MMIs. Perhaps, for example, the impact might be greater if we observed that 45 US families of median income would need to turn over all their earnings for a year and live on the street to increase a life by 1 year with EpiPens at the current price. Might it be more impactful to say that 45 years of earnings of a median-income US family are required to buy 1 year of life with an EpiPen?

The high prices of drugs are causing economic hardship for many Americans while the health of the nation deteriorates relative to that of other developed nations.[11,12] Spending for clinical care at the current level is diverting resources from future generations and from individuals who have little or no voice in setting health and social policies—infants, children, and disenfranchised members of society. Services that they are not receiving because of high health care costs include public health, mental health, education, housing, human services, local aid, and public safety.[13]

The lack of highly cost-effective interventions is not the reason that low-value, high-cost drugs are being used to treat Americans' ailments. There are plenty of highly cost-effective interventions that could be implemented with the money spent on drugs. Among these are early childhood education for children of low-income families, a service that generates a return on investment greater than 10%.[14] The Housing First approach to reducing homelessness costs only a fraction of an MMI per QALY, and housing a homeless US veteran for a year costs only 0.27 MMIs.[15,16] Deploying community health workers to prevent cardiovascular disease or type 2 diabetes costs less than $18,000 (0.29 MMIs) per QALY.[17] Using community health workers to improve the management of type 2 diabetes costs about $36,000 (0.58 MMIs) per QALY.[17] These are only a few examples from a long list.

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But even if our proposed metric does capture the attention of policy makers and the public, increasing the value from drugs by reducing their prices will not be easy. Society will also continue to face ethical decisions about who will get the drugs they need.

EXPECT PUSHBACK AND MANIPULATION FROM THE PHARMACEUTICAL INDUSTRY

Pharma can be expected to vigorously oppose adoption of this metric because it will reduce profits. Pharma can be expected to not only lobby lawmakers intensively but also to promote high-price, low-value drugs by manipulating Americans' sense of obligation for one another and their unwillingness to let someone suffer or die because s/he lacks a drug.[9] We consider that the current debate over the high cost of insulin—during which reducing the wholesale cost is rarely proposed—is *prima facie* evidence that our assertion is true.

Pharma has experienced many advantages during the past 75 years. The US taxpayer has financed basic science development through agencies such as the National Institutes of Health, and Congress has prohibited the Centers for Medicare and Medicaid Services from negotiating drug prices. Letting pharma set its own prices and advertise directly to consumers, along with the fact or sense that drugs are necessary, has made the industry recession-proof. Even during the Great Recession, the average annual pharma profit margin stayed in the range of 15% or more.[18] When profit margins are criticized as excessive, one retort from the industry is that profits of this level are required to attract investors for new drug discovery. Although it is indisputable that development of very expensive drugs and devices in this manner is good for investors, it is far less clear that it is good value for Americans now and in the future.

ETHICAL DILEMMAS ARE INEVITABLE

Unfortunately, even if MMIs engage the public and the cost of all drugs are reduced to 3 MMIs per QALY, ethical dilemmas will persist. In his 1974 classic, *Who Shall Live?,* Victor Fuchs[19] clearly described the American dilemma: The country simply does not have the resources to give every individual every therapy that might prolong his/her life or make it better. Choices must be made. Although it can be argued that the cost of treating rare, but very expensive, conditions (eg, cystic fibrosis, muscular dystrophy) can be amortized across the entire population, rare conditions as a class cease to be rare when a large proportion of the population has 1 or more of them: 60% of Americans have at least 1 chronic condition, and 42% have multiple chronic conditions.[20]

Because of the dilemma identified by Fuchs, there will always be questions that must be answered implicitly if not explicitly: How should society balance its investments in expensive treatments of conditions that affect racial and ethnic minorities against investments in less-expensive treatments that address the needs of a much larger segment of the population? Think about sickle cell disease and Tay-Sachs disease. How should society balance the needs of the young against the wants of the aged population? Will it simply be that the loudest voice or the deepest pocket wins? Other states and the entire country have much to learn from what the state of Oregon experienced as it prioritized conditions by burden and treatments by value.[21]

CONCLUSION

High-cost, low-value drugs are diverting resources from cost-effective interventions that could promote the health and well-being of Americans to a much greater extent. Because cost-effectiveness, stated as dollars per QALY, has not captured the attention of American policymakers and the American public, we propose reporting the costs of medications as MMIs of US households. If this metric achieves its goal with determining the cost-effectiveness of drugs, it could be applied to the cost of medical devices and other health services. Even if this new tool is successful in engaging stakeholders, many questions will remain unanswered. However, we hope that the proposed metric might place the high costs of drugs in a new perspective and thereby contribute to ongoing efforts to increase the value of health care. ❖

How to Cite this Article

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Prescription

But know also, man has an inborn craving for medicine. Generations of heroic dosing have given his tissues such a thirst … for drugs. As I once before remarked, the desire to take medicine is one feature which distinguishes man, the animal, from his fellow creatures. It is really one of the most serious difficulties with which we have to contend. Even in minor ailments, which would yield to dieting or to simple home remedies, the doctor's visit is not thought to be complete without the prescription.

— William Osler, MD, 1849-1919, physician, pathologist, teacher, diagnostician, bibliophile, historian, classicist, essayist, conservationalist, organizer, manager, and author