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Why Are Cancer Drugs So Expensive in the United States, and What Are the Solutions?

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Abstract

High cancer drug prices are a worsening trend in cancer care and are affecting patient care and our health care system. In the United States, the average price of cancer drugs for about a year of therapy increased from $5000 to $10,000 before 2000 to more than $100,000 by 2012, while the average household income has decreased by about 8% in the past decade. Further, although 85% of cancer basic research is funded through taxpayers' money, Americans with cancer pay 50% to 100% more for the same patented drug than patients in other countries. Bound by the Hippocratic Oath, oncologists have a moral obligation to advocate for affordable cancer drugs. In this article, we discuss the high cost of cancer drugs, the reasons for these high prices, the implications for patients and the health care system, and potential solutions to the problem.

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Today's increasingly frequent and louder discussions about the high cost of cancer drugs have been prompted by the relentless escalation in their prices and were triggered by 2 publications. The first was an editorial by oncologists from the Memorial Sloan Kettering Cancer Center in New York City comparing 2 drugs, bevacizumab (Avastin, Genentech, Inc) and aflibercept (Zaltrap, Sanofi-Aventis US LLC) and recommending bevacizumab to the hospital formulary because it was equally effective and less expensive than aflibercept.[1] The second was an editorial by 120 experts in chronic myeloid leukemia expressing their concerns about the high prices of new cancer drugs and the continuously rising prices of older ones.[2] In the United States, the average price of cancer drugs for about a year of therapy increased from between $5000 and $10,000 before 2000 to more than $100,000 by 2012,[3] while the average household income has decreased by about 8% in the past decade.[4]

SHOULD CANCER DRUG PRICES BE DETERMINED BY MARKET FORCES OR BY FAIR PRICING?

This trend of unaffordable cancer drug prices brought into question the *justum pretium*, the "just price" (or fair price) of a cancer drug vs "what the market bears."[5,6] In a *New York Times* editorial, Paul Krugman[7] relates the story of the Middle Ages Crusades to conquer the Holy Land being considered as *Deus vult*—"God wills it!" Today, the free market (a modern god) will offer, through its forces, the best economic solution—*mercatus vult*, "the market wills it." We know today the consequences of the Crusades in lives lost and cities destroyed. The health care industry in the United States is for-profit (unlike in European and other advanced nations), which appears to result in ill consequences driven by the demands for high profits: high drug prices (including cancer drugs) and high health care costs (18% of our gross domestic product vs 5%-9% in Europe).[8,9] Despite the high level of spending, US health care outcomes are worse than those in other advanced nations.[9-13]

In a free market economy, commodities purchased by choice (eg, watches, cars, homes, clothing, dining in restaurants) can have a wide range of prices according to what the market will bear because there are no monopolies, and prices may vary widely on the basis of quality, exclusivity, cache, and the profit margin. This should not be the case with commodities like health care that involve sickness, suffering, and death. In such situations, unlike the doctrine of *mercatus vult*, the doctrine of fair price is the more humane and moral doctrine: reasonable profit for a drug that is affordable to patients and to our society.

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MORAL AND SOCIAL CORPORATE RESPONSIBILITIES OF PHARMACEUTICAL COMPANIES WHEN ESTABLISHING CANCER DRUG PRICES

George W. Merck, onetime president of the large pharmaceutical company Merck & Co. and the son of the founding family, said "Medicine is for the people. It is not for the profits."[14] Dr Rashi Fein said, "Decent people—and we are decent people—are offended by unnecessary pain and suffering; that is, by pain and suffering for which there is a treatment…."[15] These views reflected historically the mission and vision of pharmaceutical companies, whose aims were to develop treatments that help patients and produce reasonable profits and returns on investment (about 10% in the 1970s). The recent trend in high cancer drug prices represents a departure from this business model and social corporate responsibility in favor of maximizing profits regardless of the potential consequences to patients who cannot afford the drugs.

UNAFFORDABLE CANCER DRUG PRICES MAY HARM PATIENTS

With out-of-pocket expenses of 20% to 30%, the financial burden for a patient with cancer for one drug would be $20,000 to $30,000 a year, nearly half of the average annual household income in the United States (about $52,000 in 2013).[4] This financial burden is worse for seniors who rely on Medicare (average annual income per person, $23,500), and these are the individuals who are more likely to have cancers.[16] About 10% to 20% of patients may decide to compromise on their therapy or to not take it.[17,18]

SHOULD ONCOLOGISTS BE INVOLVED IN THIS DISCUSSION?

Physicians are bound by the Hippocratic Oath, which emphasizes 2 important tenets: protecting patients from harm and injustice both at the personal and social level. High drug prices make them unaffordable and inaccessible, thus causing harm to patients and injustice when differential therapies are applied on the basis of affordability. Oncologists thus have a moral obligation to advocate for affordable cancer drugs.

JUSTIFICATIONS FOR HIGH CANCER DRUG PRICES—ARE THE REASONS OFFERED VALID?

Pharmaceutical companies and their spokespersons routinely justify high prices with 4 arguments: (1) high cost of research and drug development, (2) comparative benefits to patients, (3) *mercatus vult*—market forces will settle prices to reasonable levels, and (4) controlling prices stifles innovation. We believe that none of the 4 reasons, offered after every protest about the announced shocking price of a new cancer drug, are convincing or ethically justifiable.

First, an objective evaluation of research costs shows them to be as low as 10% of the cited more than $1 billion figure.[19,20] Andrew Witty, the chief executive officer (CEO) of GlaxoSmithKline, stated in 2013 that the $1 billion cost is "one of the great myths of the industry."[21] Second, a cost-benefit analysis reveals no correlation between price and benefits when measured by objective criteria such as survival or quality of life.[22] One drug may prolong life by years and another by days, yet both carry similar price tags.

Third, in a market with few players (pharmaceutical companies), an apparent oligopoly of pricing has been established. This oligopoly has been detailed in analyses by 2 economic experts, Joseph E. Stiglitz (recipient of the Nobel Memorial Prize in Economic Science in 2001)[23] and F. M. Scherer.[24] Even though there may be 5 to 8 cancer drugs approved for similar cancer indications, competition is almost never based on price. Oligopolistic firms refrain from price competition (without explicit price-fixing agreements), virtually producing an equilibrium equivalent to monopolistic agreements.[24] Further, in many instances, patients may need to be treated with each of the approved drugs sequentially because many cancers are still incurable and each drug stops working after a period of time.

Fourth, innovation in cancer research is not stifled by curbing profits and by increasing affordability. It is the result of creative minds and cancer researchers driven by societal and humanistic missions. High profits are often channeled toward higher salaries and bonuses of drug companies' CEOs, not invested back into cancer research. In a *Forbes* editorial, Peter Bach[25] outlined how high drug prices

may in fact stifle innovation. Sovaldi, the new hepatitis C drug, was estimated by Pharmasset, Inc, the original company that developed it, to sell at about $34,000 for a course of treatment. This was the price of the innovation. Gilead Sciences, Inc bought Pharmasset at an 89% premium, figuring they could charge any price they wished for Sovaldi, regardless of the consequences to patients. Gilead now charges $80,000 to $160,000 for a 3- to 6-month course of the drug. The added premium price is money diverted from innovation (investing in future research) as a result of distorted market mentality. The cost of drug production for a treatment course is only $138; outside the United States (India, Egypt, Spain), the price of a course of treatment is $900.

AMERICANS PAY MORE FOR CANCER DRUGS THAN POPULATIONS ANYWHERE ELSE

The foregoing discussion brings into question the unfair burden of high drug prices paid by Americans vs the rest of the world. Although 85% of cancer basic research is funded through taxpayers' money (drug companies spend only 1.3% revenues on basic research, net of taxpayers' subsidies of company research and development costs), Americans with cancer still pay 50% to 100% more for the same patented drug than patients in other countries despite the fact that much of the research is subsidized by their tax dollars.[26,27]

FACTORS THAT PERPETUATE HIGH CANCER DRUG PRICES

Is there a clear trigger for the recent skyrocketing of cancer drug prices? Influenced by the pharmaceutical lobby, the 2003 Medicare Prescription Drug, Improvement, and Modernization Act introduced legislation that forbade Medicare from negotiating drug prices.[28] In addition, the Medicare expansion in 2006 included prescription drug benefits (Medicare Part D). This change resulted in drug companies and distributors being the only parties that decide the prices of the drugs that must be purchased by Medicare without price negotiations for all patients with cancer. This maneuver by lobbyists favored interest groups over citizens' interests and produced a financial bonanza to companies (skyrocketing profits since 2006, as well as bonuses/salaries to pharmaceutical CEOs).[29,30] Today, the health care industry is the most profitable industry in the United States, with a return on investment of close to 20%.[31] Allowing Medicare to negotiate drug prices could save about $40 billion to $80 billion each year.[32]

Established oligopolies and preventing Medicare from price negotiations are major factors causing high cancer drug prices. Other contributors include (1) strategies that delay or discourage competition by generic companies, such as "patent evergreening" (eg, creating new/extra patents on expired patents or prolonging patent life on minor variations of the original drug—new forms, new dosages or schedules, new combinations or combination variations)[33] and "pay-for-delay" and "approved generics" (early introduction of generic drugs into the US market saved $1 trillion over 10 years),[34] (2) preventing the Patient-Centered Outcomes Research Institute, which evaluates treatments for coverage by federal programs, from considering cost comparisons and cost-effectiveness,[35] and (3) forbidding importation of drugs from abroad, even for personal use.[36] The Canadian government's Patented Medicine Prices Review Board estimated that US consumers pay 100% more for patented drugs than patients elsewhere.[37] Imatinib is priced at $92,000 per year (in 2012; $132,000 in 2014) in the United States, $46,000 in Canada, and $29,000 in Mexico. A recent example of the effects of "pay-for-delay" strategies is the successful move by Novartis to further delay the entry of generic imatinib into the US market from July 2015 until February 2016.[38] This delay is estimated to cost US consumers and our health care system at least half a billion dollars.

These regulations may harm patients, impact the Medicare solvency and our health care system, increase insurance premiums, and hurt taxpayers. Why do they happen? Partly because of the pharmaceutical and health care industry lobbying power (an estimated 2500 lobbyists in 2012 and an estimated $306 million spent).[39] Their spending far exceeds the lobbying spending of the defense, aerospace, and gas and oil companies.

Additional factors that contribute to the high cost of drugs include (1) the unnecessary and lengthy bureaucratic burdens that increase cost and shorten patent lives without improving the

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quality of research or reducing patient risk, (2) the interposition of costly intermediary regulators (contract research organizations),[40] (3) highlighting minor improvements with new drugs as major breakthroughs by experts and societies (convincing oncologists and patients to choose the more expensive newer drugs, even when the benefit is negligible), (4) the reluctance of cancer organizations and oncologists to advocate for lower cancer drug prices or to develop treatment pathways/guidelines that incorporate cost-benefit (treatment "value"), and (5) the inflation of drug prices by intermediaries (distributors, pharmacies, hospitals).

POSSIBLE SOLUTIONS

Potential solutions to control and reduce cancer drug prices include the following: (1) allow Medicare to negotiate drug prices, (2) develop cancer treatment pathways/guidelines that incorporate the cost-benefit of cancer drugs (drug "value"), as occurs today in many other countries,[41-44] (3) allow the US Food and Drug Administration or physician panels to recommend target prices based on the magnitude of benefit (value-based pricing), as is practiced in many other developed countries, (4) eliminate "pay-for-delay" strategies, (5) allow the importation of drugs from abroad for personal use, (6) allow the Patient-Centered Outcomes Research Institute and other cancer advocacy groups to consider cost in their recommendations, and (7) most importantly, create patient-driven grassroots movements and organizations (as happened during the AIDS epidemic) to advocate effectively for the interests of patients with cancer. In a for-profit industry, involved parties (pharmaceutical companies, insurance companies, pharmacy outlets, hospitals, lobbyists, and even elected officials and physicians) may advocate for approaches that favor their particular financial interests over patient interests. The only real advocates for patients may be the patients themselves (and hopefully, more recently, oncologists and cancer organizations). Perhaps the best strategy to advocate for affordable cancer drug prices is to organize patient-based grassroots movements (eg, petitions against high cancer drug prices with more than 1 million signatures) to pressure our elected representatives to represent patient interests and to control cancer drug prices. Such movements are in their early stages and are effective.[45]

Finally, the vision and mission statements of many pharmaceutical companies include the desire to help patients and cure diseases. Recently, the perception is that the only mission of drug companies is to maximize profits by any means as the company's fiduciary duty toward shareholders and investors. However, pharmaceutical companies should also be judged by their corporate social responsibility. An Access to Medicine Index has been created, ranking research-based pharmaceutical companies' efforts to make products available, affordable, and accessible.[46] This is a valuable moral scale that applies to cancer drugs.

Abbreviations and Acronyms: **CEO** = chief executive officer

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