

UCLA

Recent Work

Title

Insulin as a Luxury: The Effects of Medical Brokering on Public Health

Permalink

<https://escholarship.org/uc/item/24m3w8r6>

Author

Duong, Dinh

Publication Date

2026-03-16

Insulin as a Luxury: The Effects of Medical Brokering on Public Health

Dinh Duong¹

¹Civil Engineering Department, University of California, Los Angeles

*dinhduong@ucla.edu

Abstract: In 1923, Frederick Banting, Charles Best, and James Collip sold the insulin patent for only \$1. This paper analyzes capitalism's twisted role in modern insulin, where medical innovation now prioritizes profit over public health.

INTRODUCTION

Over a hundred years ago, Frederick Banting declared "Insulin does not belong to me, it belongs to the world." At that time, Frederick Banting, Charles Best, and James Collip made the radical decision to sell their insulin patent for \$1 for the sake of accessible healthcare. Insulin transformed diabetes from a fatal illness to a manageable chronic condition and extended life beyond previous belief. Because diabetics require insulin to survive, it represents one of the clearest examples of a medicine that serves as a necessity rather than a discretionary treatment. The inventors' revolutionary patent choice upheld this principle, spreading their profound discovery intending to prolong life. In a wayward turn, despite insulin's century-long presence on the market, the modern-day cost in the United States increased dramatically. Between 1999 and 2019, the price of a vial of Humalog insulin increased from approximately \$21 to over \$300 in the United States [1]. In a mere hundred years, diabetics yet again experience the same lack of medication needed for life, except this time under the hands of capitalism. Studies have estimated that roughly one in four insulin-dependent patients in the United States have reported rationing insulin, a practice that can lead to severe health complications or death. [2] This paper examines how modern pharmaceutical capitalism has turned scientific innovation into a tool for profit extraction rather than public health. This work is in partial fulfillment of the ENGR184 course using the blueprint curriculum in Ref [3,4] and captured in a collection [5].

METHODS

In the Vexy Thing by Imani Perry, the heteropatriarchal triad consists of the sovereign authority (state, monarchy, or governing power), property (land, goods, and human chattel), and personhood (legal recognition and rights) [6]. In this analysis, property is insulin. Ownership of healthcare is the key determinant to personhood and gives a person a valid ticket to be in economic power and social status. Without a marketed product, capitalism would not have a hand in the medical world to take advantage of. The sovereign authority who grants and enforces property rights and defines and legitimizes personhood are the insulin manufacturers, pharmacy benefit managers, and the government. The big three insulin manufacturers, Eli Lilly, Novo Nordisk, and Sanofi, acquired more than 96% of the insulin market after 2000; creating a monopoly that would allow them to set the base price as they wished [1]. This concentrated structure limits competition to a mere three competitors, allowing manufacturers to play a significant role in price gouging. Moreover, insulin passes through pharmacy benefit managers (PBMs) who act as the middlemen between manufacturers and consumers. The net price of medicine is thus further controlled based on the PBMs' personal profit goals as well as how they choose to negotiate drug prices and rebates. The passage of insulin through this complicated pricing structure dramatically widens the gap between the cost of manufacturing and what consumers pay. Although the government began regulating and capping off insulin prices in numerous states in state-regulated commercial health insurance plans, they play a smaller role as sovereign authority [9].

In our application of the triad on insulin, only health care buyers are considered persons. Despite being human, anyone without health care would not be considered a person because the capitalistic sovereign authority has no value for those who don't purchase their health care product. Even so, the average health care buyer is subject to the sovereign authority's decision of prices and profit. Insulin accessibility is based on economic participation rather than a human right to a life-saving drug, adding to the capitalistic free market. The intricate triad and the way they

blend contribute to the complex system that examines public health discovery versus the pharmaceutical profit system.

Capitalist gain can be further examined in the medical world through Standpoint Theory. The theory emphasizes that marginalized groups experience and gain insightful systemic perspectives that remain invisible to those in positions of power. Accordingly, diabetic individuals who struggle with insulin costs have firsthand experience in struggling to obtain such resources for critical insight. Insulin stockholders will never be able to replicate the perspective of diabetic patients, with or without health insurance, and especially those who are forced to ration, skip doses, or even die from lack of insulin [7].

Unhoused individuals are also included in this group. Their perspective is advantageous because it exists outside the hegemonic perspective. From the hegemonic perspective, patents that lead to monopolies are justified because they help recover the debt acquired from research needed to achieve innovation in the first place, as well as serving an incentive to invest money in acquiring groundbreaking innovation. When the costs of failures and capital were included, the average overall drug development cost ranges from \$378.7 million to \$1756.2 million [8]. In the case of insulin pricing, diabetic patients who struggle to afford insulin offer a perspective that exposes the inequalities created by pharmaceutical markets and reasoning. Unhoused individuals also face additional barriers to insulin access, such as difficulty accessing government programs due to the lack of a valid home address. Homeless people are also more susceptible to prediabetes due to poor nutrition and the daily struggle to access necessities [7]. Because diabetes management becomes overwhelming for both the individual and healthcare providers, especially in situations where finding shelter and food becomes a priority over medical conditions, it's important that research focuses on best practices in treating unhoused people while also moving towards housing justice. When faced with life or death while unhoused, the hegemonic reasoning provides no proper standing or justification for insulin costs marketed at outrageous prices. Despite public health discovery, homelessness is just one of the many perspectives between medical innovation for public health with pharmaceutical profit structures that treat medicine as a commodity instead of a human right.

RESULTS AND INTERPRETATION

PRODUCTION COST VERSUS MARKET PRICE

The “big three” insulin manufacturers Eli Lilly and Company, Novo Nordisk, and Sanofi produce most of the leading analog insulins on the market. This concentrated control illustrates how structural capitalism shapes the modern medical system. However, with great power comes great responsibility. Pharmaceutical patents allow companies to create monopolies over insulin production and uniformly increase prices throughout the monopoly [8]. Because patents limit competition, companies have the ability and incentive to maintain high prices. By closing the playing field to competitors, patents restrict competition and allow dominant manufacturers to exert significant influence over the market.

Figure 1 illustrates the large discrepancy between insulin production costs and the prices patients historically paid in the United States. Although manufacturing costs are estimated to be only a few dollars per vial, market prices of insulins such as Humalog increased from \$21 in 1999 to over \$300 in 2019 [1]. This disparity shows that insulin pricing is legally manipulated through market structure, intermediaries, and pharmaceutical business practices rather than by the actual cost of producing the drug.

Despite manufacturing costs of only a few dollars per vial, the U.S. market price for insulin reveals a significant gap between manufacturing costs and consumer price. Research estimates that the cost to produce a vial of insulin may be as low as \$4.47, yet patients in the United States have historically paid hundreds of dollars per vial. Even when a vial of Humalog cost consumers \$21 in 1999, pharmaceutical companies would have made \$15 profit if compared with production cost as \$6, roughly 71% in profit margin. This difference highlights how market dynamics, a capitalist angle, determines insulin pricing in a way that is unfair and preys on diabetic patients who need the life-saving drug.

	Cost per 1000 unit vial
Insulin lispro (sold as Humalog)	\$4.52–6.16
Insulin aspart (sold as NovoLog /NovoRapid)	\$4.51–6.16
Insuline glargine (sold as Lantus)	\$4.47–6.11
US Humalog Market Price in 1999	\$21
US Humalog Price in 2019	\$322

Fig. 1. Estimated Production Cost of Prominent Analog Insulins. Adapted from [10].

INSULIN IS UNIQUELY EXPENSIVE IN THE US, AND THE MARKET STRUCTURE DETERMINES PRICE

Looking at other first world countries, insulin is uniquely expensive in the U.S. who prices insulin considerable higher for the same doses. In contrast to the United States, many developed countries have already regulated insulin prices through national healthcare systems or government price controls, allowing patients to access insulin at far lower costs [10].

Failure to do the same in the US creates a capitalist system that allows pharmaceutical companies can legally maintain significantly higher prices and PBMs can further inflate prices. Because insulin is required for survival for many diabetic patients, its price carries life-or-death consequences that differ from typical consumer goods. Under the triad framework, the sovereign authority determines how pharmaceutical property is protected and distributed, while patients must participate in the market as consumers in order to access life-saving treatment.

Country	Average Price per 1000 unit Vial
Unites States	\$98.70
Australia	\$6.94
Canada	\$12.00
Japan	\$14.40
United Kingdom	\$7.52

Fig. 2. Comparing Average Market Prices of All Insulin Types Around the World, 2018. Adapted from [11].

These country comparison further proclaim that the problem lies in the U.S. market system rather than from the drug itself. The insulin molecule remains the same across countries, yet the price varies dramatically depending on national market structures and regulatory systems.

Additionally, originally patented insulin differs from the insulin used today. Early insulin treatments relied on insulin extracted from animal pancreases. Modern insulin, however, is dominated by biosynthetic processes that create analog insulin in laboratory settings. The introduction of the modified human insulin molecules was partly driven by concerns about the limited supply of animal pancreases. The innovation to biosynthetic production allows for mass manufacturing for suppliers and less allergic reactions from animal products for consumers. Despite advancements in technology that still keeps insulin production cheap while improving patient experience, insulin costs consumers several times more than when it was first introduced.

In order to combat skyrocketing insulin prices, the government has begun to take a larger role in the triad as part of the sovereign authority through efforts to cap insulin copayments in state-regulated commercial health insurance plans. Currently, 29 states plus the District of Columbia have implemented monthly copayment caps intended to help limit excessive costs for insulin patients [12].

While a medicine can always be improved, insulin has been consistent in its effectiveness for over a hundred years, even in its earliest form derived from animal pancreas. Although patents can help fund innovative research, profit at the expense of the lives of consumers who rely on insulin as a necessity represents a troubling form of capitalistic greed.

Although the original insulin patent has long expired and the insulin manufacturing process has evolved significantly, the narrative of insulin has shifted from an openly shared medical discovery to a highly profitable commodity within the pharmaceutical industry. What was once intended as a life-saving treatment accessible to all has increasingly become a requirement for survival exchanged for economic gain.

Another important factor in insulin pricing is the practice of patent evergreening that legally extends monopolies beyond the standard 20-year patent term. Pharmaceutical companies use this loophole which to keep prices high by making minor modifications to existing drugs, such as new delivery devices or small chemical adjustments, and then patenting those changes. Extended ownership of insulin patents allows companies to maintain control over production, pricing, and distribution. In this way, patents transform scientific knowledge and medical discoveries intended for the benefit of the people into private economic assets.

FURTHER POLICY RECOMMENDATIONS

It is important to acknowledge and identify the struggles faced by the homeless population which are often paired with mental health issues and substance abuse. There are limited studies focusing specifically on insulin access and diabetes treatment among the unhoused population. There is a need for greater collaboration between homeless shelters, healthcare systems, and rehabilitation centers to develop more accessible programs and treatment pathways. Without more studies, the unhoused perspective of insulin access is absent in standpoint theory.

The lack of research raises important questions about how homeless individuals currently receive insulin and diabetic treatment, and if they are able to receive it at all. If they are receiving treatment, it is unclear whether the process involves complicated channels of access and in what pathway. Similar concerns apply to other serious medical conditions that affect the unhoused population [13]. For example, in a topic not examined here, individuals undergoing chemotherapy or radiation therapy often go through financial hardship and lose health care access. When they do lose stable housing or insurance during treatment, questions about how they continue to receive care, if they are able to do so at all, arise.

These issues undoubtedly beg the ethical question: should life-saving medicines operate under normal capitalist market methodology? The conflict between public health innovation and pharmaceutical profit suggests that medicine is increasingly treated as a revenue-generating product rather than a fundamental human right. Within the heteropatriarchal triad, individuals without economic resources losing full recognition as “persons” within the healthcare marketplace simply because they add no profit to the pharmaceutical market.

CONCLUSION

Insulin was originally discovered and distributed with the intention of serving humanity over than generating profit. However, the modern pharmaceutical market transformed a essential medicine into a tremendously profitable commodity at the expense of public health. Through examining insulin pricing, the patent system, and the experiences of marginalized diabetics, particularly those who struggle to afford or access treatment, it is revealed how economic structures stress and shape who is able to receive life saving medical care. In a first world country that prides itself on modernity and freedom, the capitalist nature of the system begs the question of how life is valued within such a society. The story of insulin transformation contrasts sharply with the original intent of insulin's discoverers, who deliberately sold the patent for \$1 to ensure universal access.

REFERENCES

- [1] D. Beran, E. A. M. Gale, and J. S. Yudkin, "The insulin market reaches 100," *Diabetologia*, vol. 65, no. 6, Mar. 2022, doi: <https://doi.org/10.1007/s00125-022-05680-y>.
- [2] K. Teare, "One in four patients say they've skimped on insulin because of high cost," *YaleNews*, Dec. 03, 2018. <https://news.yale.edu/2018/12/03/one-four-patients-say-theyve-skimped-insulin-because-high-cost>
- [3] Lee, Ethan, et al. "Education for a Future in Crisis: Developing a Humanities-Informed STEM Curriculum." arXiv preprint arXiv:2311.06674 (2023).
- [4] Sergio Carbajo, Nurturing Deeper Ways of Knowing in Science, *Issues in Science & Technology*, 2025, v. 41, n. 2, p. 71, doi: 10.58875/jkrw4525
- [5] Carbajo, S. (2026). Queered Science & Technology Center: Volume 4. Queered Science & Technology Center, 4. Retrieved from <https://escholarship.org/uc/item/0zb930m0>
- [6] I. Perry, *Vexy thing : on gender and liberation*. Durham: Duke University Press, 2018.
- [7] L. K. Brooks, N. Kalyanaraman, and R. Malek, "Diabetes Care for Patients Experiencing Homelessness: Beyond Metformin and Sulfonylureas," *The American Journal of Medicine*, vol. 132, no. 4, pp. 408–412, Apr. 2019, doi: <https://doi.org/10.1016/j.amjmed.2018.10.033>.
- [8] A. Sertkaya, T. Beleche, A. Jessup, and B. D. Sommers, "Costs of Drug Development and Research and Development Intensity in the US, 2000-2018," *JAMA Network Open*, vol. 7, no. 6, Jun. 2024, doi: <https://doi.org/10.1001/jamanetworkopen.2024.15445>.
- [8] W. H. Herman and S. Kuo, "100 years of insulin: Why is insulin so expensive and what can be done to control its c9st?," *Endocrinology and Metabolism Clinics of North America*, vol. 50, no. 3, pp. e21–e34, Oct. 2021, doi: <https://doi.org/10.1016/j.ecl.2021.09.001>.
- [10] D. Gotham, M. J. Barber, and A. Hill, "Production costs and potential prices for biosimilars of human insulin and insulin analogues," *BMJ Global Health*, vol. 3, no. 5, p. e000850, Sep. 2018, doi: <https://doi.org/10.1136/bmjgh-2018-000850>.
- [11] ASPE, "Comparing Insulin Prices in the U.S. to Other Countries," *ASPE*, Sep. 23, 2020. <https://aspe.hhs.gov/reports/comparing-insulin-prices-us-other-countries>
- [12] American Diabetes Association, "State Insulin Copay Caps | ADA," *diabetes.org*. <https://diabetes.org/tools-resources/affordable-insulin/state-insulin-copay-caps>
- [13] J. Constance and J. M. Lusher, "Diabetes management interventions for homeless adults: a systematic review," *International Journal of Public Health*, vol. 65, no. 9, pp. 1773–1783, Oct. 2020, doi: <https://doi.org/10.1007/s00038-020-01513-0>.