Patent Power: The Role of Intellectual Property in Robust Global Healthcare Systems

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ABSTRACT

Pharmaceutical development is fundamentally governed by balance. But in the status quo, the balance between upholding the rights of innovators and increasing equitable access to pharmaceuticals has come into question. As lives hang in the balance, this review contends that prioritizing intellectual property (IP) rights in the pharmaceutical industry is essential to sustaining long-term medical innovation, ensuring drug quality, and enhancing equitable global access as part of the progression of long-term global healthcare robustness. Contrary to the belief that IP protections strictly hinder access to essential medicines, this paper demonstrates that such protections incentivize private investment in high-risk, high-cost drug development—particularly in the context of rare diseases and global health emergencies. The review critically evaluates proposed alternatives, such as prize-based models, compulsory licensing, and publicly funded R&D, and finds them insufficient in delivering consistent innovation in the long term. Furthermore, it highlights how IP protection mechanisms, along with equity practices that ensure IP security (ie, tiered pricing and voluntary licensing), enable wider affordability without undermining innovation incentives. Beyond fostering scientific advancement, IP rights serve as tools to uphold manufacturing standards, prevent counterfeit drugs, and strengthen global supply chains: all vital for the well-being of global healthcare systems. The analysis concludes that, while they must be balanced with other economic and regulatory factors, IP protections are fundamental to developing and delivering life-saving therapies in a sustainable and equitable manner.

Keywords: pharmaceutical, intellectual property, research & development, health emergencies, healthcare costs

INTRODUCTION

A single new drug costs pharmaceutical companies, on average, $2.6 billion and takes over a decade to develop.[1] This staggering investment highlights the critical role that robust research and development (R&D) funding plays in discovering treatments for life-threatening diseases, such as cancer, or pandemic threats. Intellectual property rights (IPR), including patent protections, play a central role in maintaining this innovative ecosystem by granting temporary market exclusivity that allows firms to recoup development costs and fund future research. Critics argue that IPR systems limit access to essential medicines, especially in low- and middle-income countries. However, deprioritizing IPR in favor of broad, immediate equitable access can have the unintended consequence of stalling innovation altogether. When the incentive to innovate is weakened, the development of life-saving medicines slows down—or even halts—leaving countless patients without hope for effective treatments.[2] This review explores the complex relationship between intellectual property rights and global pharmaceutical access, arguing that weakening IP protections undermines the long-term development, quality, and availability of life-saving treatments—ultimately compromising the very structural violence the healthcare system seeks to minimize.

METHODS

To examine the relationship between intellectual property rights and pharmaceutical access, this study utilized

a narrative literature review design. This approach was chosen because it allows for the integration of economic models regarding R&D spending with qualitative policy analyses regarding healthcare access.

The data collection process involved an initial aggregation of over 60 research papers, global health organization reports, policy analyses, and company policy pages. To ensure reliable results and minimize bias, the database search was conducted primarily on Google Scholar, PubMed, and JSTOR with the occasional use of news reports from multiple sources and company policy pages. Search parameters included keywords such as "pharmaceutical patents," "TRIPS agreement," "compulsory licensing," and "counterfeit medicines." Inclusion criteria required that sources be predominantly scholarly, published between 2000 and 2025, and range in analyses of IP policies across both high-income and low- and middle-income countries. Ultimately, the literature was narrowed down to 33 sources for analysis.

To effectively evaluate the extent of implications in this paper, the concepts involved must be defined. First, the World Health Organization defines equitable access to pharmaceuticals as ensuring that all people have access to the health services they need.[3] Second, intellectual property rights are defined as rights "which enable people to earn recognition or financial benefit from what they invent or create".[4] Furthermore, the US Food and Drug Administration defines pharmaceuticals as medicinal products used to diagnose, cure, treat, or prevent disease.[5] Lastly, and most importantly, prioritize. To prioritize is to arrange in order of importance.[6] As a result, our analysis evaluates the distinct benefits of intellectual property rights, while also exploring the balance required to achieve equitable access.

The analysis was split into phases utilizing a threefold framework of innovation, quality, and access. These three metrics were chosen because they represent the full life cycle of pharmaceutical development and distribution: innovation measures the system's ability to create new treatments; quality ensures the safety of those treatments; and access evaluates whether those treatments ultimately reach the populations who need them.

INTELLECTUAL PROPERTY AND PHARMACEUTICAL INNOVATION

Prioritizing IP is crucial for fostering innovation. This can be understood through three areas of analysis: the incentive to innovate, the importance of innovation in specific scenarios, and the role of competition.

The first area of analysis is the incentive to innovate. In the pharmaceutical industry, private sector investments account for more than 87% of global R&D funding.[7] By granting exclusive rights to market new drugs for a specific period, IP rights ensure that companies can recoup substantial costs. For example, AbbVie's drug Humira, a treatment for arthritis, became the cornerstone of the company's success due to patent protection. The profits from Humira enabled AbbVie to fund the development of other drugs, such as Skyrizi for plaque psoriasis.[8] Without IP protection, competitors replicate and sell products without bearing the initial research costs. Such scenarios discourage investment in new drug development, which in turn leads to companies prioritizing generics over innovating in new treatments. During the COVID-19 pandemic, U.S. firms like Pfizer and Moderna used mRNA technology, aided by IP protections, to develop vaccines quickly. Granted, the United States had decades of DNA research to expedite this process with strong IP rights, but in comparison to other nations with key academic powerhouses, US backed companies were able to utilize this economic incentive to drive vaccine development.[9] These protections later improved drug access.[10] The COVID-19 pandemic underscored the importance of innovation as a proactive investment. Long-term research and development pipelines made it possible to produce safe and effective vaccines within months. Sustaining this capacity is critical—not just for the next crisis, but for the long-term resilience of health systems in the face of unknown threats.

Protecting IP rights encourages investment in cutting-edge technology by reducing the risk of competition from generics. Investors, in turn, are more willing to fund these companies in the long term due to predictable returns. Additionally, unless they are guaranteed exclusivity, credit, or profit, companies in the pharmaceutical industry are less inclined to invest in risky innovations. IP rights provide this guarantee via the period of exclusivity companies have when they invent a new drug.[11, 12]

Within the second area of analysis, the necessity for the incentive provided by IP rights is seen in two scenarios: during the treatment of niche conditions and global health crises. Firstly, developing treatments for rare diseases or niche conditions involves large amounts of high-risk investment. A world where IP rights are deprioritized in the pharmaceutical industry is a world where patients with unique conditions are neglected simply because they're too risky to treat. However, in the status quo, where IP rights are prioritized and data is protected, pharmaceutical companies regularly pursue R&D initiatives in the treatment of rare conditions. With the Orphan Drug Act of 1983, which protected IP rights for rare diseases, over 650 drugs were produced.[13] The Bayh-Dole Act, passed in the 1980s, strengthened IPR for small businesses and created over 1,100 cancer drugs, 566 of which target rare diseases, emphasizing the role of exclusivity in driving this innovation.[14]

The second scenario to look at is times of global health crises. During global health emergencies, rapid development of treatments is vital. IP rights incentivize companies to invest in R&D despite high costs and risks because they can expect exclusive rights to treatments. Moreover, IP rights facilitate secure knowledge sharing through licensing agreements. During the COVID-19 pandemic, companies like Pfizer and BioNTech entered into agreements with manufacturers worldwide to produce and distribute vaccines efficiently.[15]

The third area of analysis is about the role of competition. IP rights encourage companies to quickly innovate novel pharmaceuticals by rewarding the first company to develop a new pharmaceutical with exclusivity. Sovaldi exemplifies this competitive drive. Multiple companies were vying to create an effective Hepatitis C treatment.[16] The urgency to secure a patent led to swift progress, resulting in Sovaldi's approval and availability to patients sooner than might have otherwise occurred.

Proponents of deprioritizing IPR argue that innovation is meaningless if patients cannot access the resulting treatments. However, IP also encompasses processes such as tiered pricing and voluntary licensing that pharmaceutical companies have recently been adopting to enhance affordability in low-income countries. For example, when approaching developing nations, GlaxoSmithKline (GSK), a malaria vaccine producer, cuts vaccine prices by covering the cost of manufacturing, as GSK wanted to stay competitive on a global market to reach underserved areas where major biotech companies weren't going to.[17] Still, they set prices high enough in other, wealthier markets to reinvest money back into research and development, allowing for lower prices.[18]

Opponents of strict IPR propose alternative methods to gaining funding, such as prize funding and impact rewards. However, neither solutions sufficiently address innovation and affordability. Ongoing revenue from patents encourages sustained investment; prizes, however, are a one-time reward given for the initial discovery of a medication. With drug costs ranging from $1 billion to $2.6 billion, creating prize funds for all needed innovations is unrealistic and burdens governments.[1] According to the Brookings Institute, nearly "70% of innovation prizes fail to result in viable, sustained innovations," as prizes typically are a one-time reward.[19] Even if incremental awards occur, it would require intense capital and incentivize fragmented efforts rather than concentrated advancements.[19] Additionally, dissenters argue that NIH funding or government funding could be a source of innovative capital. This solution is faulty, as the NIH focuses 83% of its funding on basic stages of science research and drug development; however, the private sector is needed for commercialization, manufacturing, and risk-taking, which is the basis of innovation.[20] If a government were to fund pharmaceutical research and development properly, it would require over a hundred billion dollars per drug developed. Innovation is a risky endeavor. Therefore, governments would be more likely to use taxpayer money to fund low-risk projects.[21] This incentive analysis then reaffirms the idea that in order to protect innovation, private interests must also be protected.

QUALITY CONTROL AND COUNTERFEITING

Strong IP rights play a crucial role in preventing the proliferation of counterfeit medications. Patents empower companies to assert legal rights over their products, making it more difficult for counterfeiters to produce fake drugs.[22] Developing countries often prioritize broad access to medications over ensuring quality. Therefore, counterfeit medicines account for as high as 50-70% of the pharmaceutical market in some developing countries.[22] It can, however, be attributed partially to IPR because of a lack of robust protections.[23] Strong IP protections play a critical role in combating this issue, making it significantly harder to produce, distribute, and

use counterfeit products.[22] To put this number into context, however, we acknowledge that this number cannot fully be attributed to weak IPR, as other things such as online pharmacies contribute to counterfeit distribution, with 96% of the estimated 35,000 online pharmacies operating illegally across the world.

Dissenters may argue that reducing IP rights would make medications more accessible and that the moral imperative to save lives outweighs the financial interests of pharmaceutical companies. This view ignores that weak IP rights often lead to counterfeit and substandard drugs due to poor legal deterrents. For instance, in Nigeria, counterfeit drugs account for up to 40% of the pharmaceutical market.[24] This has led to numerous health crises, including a tragic incident in 2008 when 84 children died after consuming deadly medication, illustrating the devastating impact of counterfeit drugs.[25] Equitable access can never be truly achieved as long as the medication people are given access to puts their lives at risk.

ACCESSIBILITY AND HEALTH EQUITY

Many opponents of robust IP frameworks in the pharmaceutical industry center their advocacy on the limitations IP protections place on accessibility.

Firstly, it's important to note that IP rights can coexist with policies like voluntary licensing and tiered pricing. Voluntary licensing is an arrangement in which a patent holder permits another party to produce the patented product, often under agreed terms, to increase access to the product.[26, 27] Tiered pricing is a framework where pharmaceutical prices are adjusted based on different countries and population incomes, enhancing affordability without undermining IP protections.[28] These practices are becoming increasingly common and demonstrate that the inherent purpose of IP rights is not to strip people of access to medicines but rather to ensure that innovators are fairly compensated.

While opponents argue that the accessibility of drugs expands without intellectual property, this misunderstanding stems from the assumption that IP is the sole factor impeding access to pharmaceuticals in the status quo. Inaccessibility has more to do with distribution failures and domestic policy. In fact, “95% of essential medicines… are off patent, but still one-third of the world’s population does not have reliable access to them." [29]

Secondly, policies that prioritize equitable access without strengthening IP rights often create reliance on foreign pharmaceutical companies and international aid rather than fostering local capacity. Contextualizing this, before India complied with the WTO's TRIPS Agreement, it had weak pharmaceutical patents. While some generics were accessible in the short term, they discouraged foreign pharmaceutical companies and domestic investors from entering the market over longer timeframes.[30] This situation is especially harmful during global health emergencies, in which countries with weak IPR frameworks suffer from a lack of competitiveness when compared to, and dependency on, foreign markets in which risky and quick innovation is incentivized.[31] Ultimately, a weak intellectual property framework prevents developing countries from establishing self-sufficient healthcare systems, rendering them vulnerable to ongoing supply disruptions. Without these legal protections, these nations will fall further behind global medical advancements and remain trapped in a multi-decade cycle of foreign dependency.

Finally, evidence indicates that the speedy competition driven by strong IPR frameworks leads to the proliferation of various new variants of the same drugs, causing the original drug prices to decrease. When Gilead introduced Sovaldi in late 2013, it had exclusivity for 10 years. Just a few years later in 2017, competing treatments like AbbVie’s Mavyret entered the market and slashed treatment costs by over 60%, proving that therapeutic competition breaks monopoly pricing even under heavy intellectual property rights.[32]

LIMITATIONS AND ALTERNATIVE PERSPECTIVES

The most significant limitation of this study is its reliance on literature that leans toward a pro-IP orientation, which can limit critical engagement with alternative perspectives. For instance, the anti-IP perspective argues that the exclusivity periods granted by patents create artificial monopolies that keep life-saving drugs out of reach for marginalized populations. Critics of IP point to the HIV/AIDS epidemic in the late 1990s, where

strict patent enforcement kept antiretroviral prices exorbitant in Sub-Saharan Africa until international pressure forced the use of generic alternatives.[33] Furthermore, proponents of the anti-IP stance argue that public funds heavily subsidize the initial R&D of most drugs, meaning taxpayers effectively pay for the research and then pay again through high drug prices.

Additionally, this study associates complex outcomes—such as innovation levels, counterfeit medicines, and vaccine inequity—substantially with intellectual property protection. However, it is important to acknowledge that IP is not the only factor at play. Other economic, regulatory, infrastructural, and political factors—such as a nation's GDP, domestic healthcare spending, and local manufacturing capacity—also have major impacts on healthcare system resilience. Because this study relies on secondary data abstraction, it is difficult to determine whether these outcomes are caused solely by IP laws or by a combination of these other variables.

CONCLUSION

By maintaining strong IP rights, sustainable investment in pharmaceutical innovation and infrastructure is promoted, ensuring that essential medicines are available both now and in the future. Protecting IP rights provides the incentives necessary for ongoing medical advancements, fostering independence in developing countries, and promoting long-term healthcare. While equitable access to pharmaceuticals remains an important global health issue, undermining IP protections can jeopardize the very innovation pipeline necessary to meet future healthcare challenges. By maintaining a balanced approach that safeguards intellectual property while exploring mechanisms for fair access, global policymakers can promote both innovation and global health equity. This balance is essential for fostering self-reliance, building healthcare infrastructure in developing regions, and ensuring sustained pharmaceutical development and equitable therapeutic availability.

Future research should explore the long-term economic and health impacts of patent waivers and voluntary licensing in both developed and developing countries. In addition, studies examining how different national IP policies influence pharmaceutical innovation and access could offer valuable insights into global policy frameworks. Further, researchers could also investigate scalable models such as tiered pricing systems that support access without compromising innovation. By pursuing these areas of study, researchers and policymakers can work toward solutions that increase equitable access and create a sustainable path for medical advancements.

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