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ENSURING EQUITABLE ACCESS TO MEDICAL TECHNOLOGIES: A HUMAN RIGHTS PERSPECTIVE

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Abstract *-- Equitable access to medical technologies—such as vaccines, diagnostics, essential medicines, and digital health tools—is central to realizing the fundamental human right to health. International legal frameworks, including the Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights, affirm the obligation of states and global institutions to ensure that health innovations are not only scientifically sound but also accessible to all, regardless of geography or income. Despite this normative clarity, vast disparities persist, particularly in low- and middle-income countries (LMICs). The COVID-19 pandemic exposed deep inequities through vaccine nationalism and the failure of global solidarity. Intellectual property regimes, such as those under the TRIPS Agreement, often prioritize market exclusivity over public health needs. At the same time, limited participation of marginalized communities in policy-making processes continues to weaken efforts toward global health justice. By drawing on legal instruments, real-world case studies—including India's generic drug licensing, South Africa's HIV/AIDS litigation, and the global COVAX initiative—and critical analysis of governance structures, this study underscores the need for urgent reform. It calls for a human rights-based global framework that incorporates ethical innovation, equitable financing, and participatory decision-making. A shift toward accountability-driven governance, grounded in the right to health, is essential for building a resilient and just global health system. Embedding human rights principles into the design and distribution of medical technologies offers a transformative path to health equity and international solidarity.*

Keywords *- Right to Health, Medical Technologies, Health Equity, Human Rights, Global Health Governance*

I. INTRODUCTION

Medical technologies, encompassing a wide spectrum of innovations such as diagnostic tools, life-saving vaccines, essential therapies, and increasingly sophisticated digital health systems, have revolutionized modern healthcare delivery. From the rapid detection of infectious diseases to the management of chronic conditions and the personalization of care through artificial intelligence, these technologies are indispensable to achieving optimal health outcomes in the 21st century.[1] Yet, despite their transformative potential, vast disparities persist in their accessibility across and within nations. These inequities are often rooted in structural injustices, including poverty, intellectual property regimes, geopolitical power imbalances, and insufficient healthcare infrastructure in low- and middle-income countries (LMICs).[2] The concept of *equitable access* refers to the fair and just distribution of medical technologies based on need, without discrimination or socioeconomic exclusion. It goes beyond the notion of equality, which merely assumes uniformity, by acknowledging pre-existing disadvantages and seeking to rectify them through targeted policies and interventions.[3] In both global and national contexts, the failure to ensure equitable access has led to preventable suffering, avoidable mortality, and the deepening of health-related inequalities. This paper argues that equitable access to medical technologies is not merely a logistical or economic concern but a *fundamental human right*, grounded in international legal norms and moral imperatives. Through a human rights lens, the paper explores the normative frameworks supporting this right, highlights global disparities in access, critiques prevailing intellectual property regimes, and examines practical and legal pathways toward more equitable health governance. By doing so, it aims to reconceptualize medical technology not as a commodity but as a public good, integral to human dignity and global justice.

II. THE HUMAN RIGHTS FRAMEWORK AND HEALTH TECHNOLOGIES

The foundation of equitable access to medical technologies lies in the international human rights framework,

[1] World Health Organization. (2021). Global report on effective access to assistive technology. Geneva: WHO.
[2] United Nations Development Programme. (2020). Human development report 2020: The next frontier – Human development and the Anthropocene. New York: UNDP.
[3] Forman, L., Ooms, G., & Brolan, C. E. (2016). Rights language in the sustainable development agenda: Has right to health discourse and norms shaped health goals? Health and Human Rights, 18(2), 113–124.

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which enshrines the right to the highest attainable standard of health. This right is explicitly articulated in **Article 25(1) of the Universal Declaration of Human Rights (UDHR)**, which affirms: *"Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including... medical care and necessary social services..."* .[4] While the UDHR is not legally binding, it has become a cornerstone of customary international law and has profoundly shaped subsequent treaties and jurisprudence.

A more binding articulation appears in the **International Covenant on Economic, Social and Cultural Rights (ICESCR)**, adopted in 1966. **Article 12** obligates State Parties to recognize "the right of everyone to the enjoyment of the highest attainable standard of physical and mental health" and to take steps necessary for the "prevention, treatment and control of epidemic, endemic, occupational and other diseases" as well as the creation of conditions that assure medical service and attention to all.[5] Crucially, the ICESCR employs the principle of **progressive realization**, meaning states must take deliberate, concrete, and targeted steps toward full realization, using the maximum of available resources. However, it also imposes **immediate obligations**, such as non-discrimination and minimum core obligations.[6]

To further interpret these obligations, the **Committee on Economic, Social and Cultural Rights (CESCR)** issued **General Comment No. 14** in 2000, which elaborates the **AAAQ framework**—**Availability**, **Accessibility**, **Acceptability**, and **Quality**—as the four essential elements of the right to health.[7] Under this framework, **medical technologies must be:**

- **Available** in sufficient quantity;
- **Accessible** to everyone without discrimination, physically and economically;
- **Acceptable**, meaning ethically and culturally appropriate;
- **Of Quality**, scientifically and medically appropriate and of good standard.

The AAAQ framework thus provides a normative lens through which access to health technologies—vaccines, diagnostics, and digital platforms—must be evaluated. The CESCR emphasizes that the right to health extends beyond mere access to services to include timely and appropriate technologies necessary for diagnosis, prevention, treatment, and rehabilitation.[8]

Incorporating medical technology into this framework signals a decisive shift: from treating technology as a market commodity to recognizing it as a **public good subject to human rights obligations**. It also places legal and moral pressure on states and international bodies to dismantle systemic barriers that obstruct access and to facilitate the equitable distribution of innovations essential to life and health.

III. Global Disparities in Access to Medical Technologies

The global health landscape is marked by stark and persistent inequalities in access to essential medical technologies. Nowhere was this more evident than during the COVID-19 pandemic, which exposed what has been termed **"vaccine apartheid"**—a term used to describe the grossly unequal distribution of life-saving vaccines between high-income and low- and middle-income countries (LMICs). As of early 2022, over **70% of people in high-income countries** had received at least one dose of a COVID-19 vaccine, compared to **less than 17% in low-income countries**.[9] Despite the COVAX initiative, high-income nations pre-purchased the majority of vaccine doses, leaving LMICs reliant on donations and delayed shipments. Such inequality not only delayed pandemic recovery but also facilitated the emergence of new variants, undermining global health security.

Beyond COVID-19, similar disparities exist in access to **insulin**, a nearly century-old medication essential for

[4] United Nations General Assembly. (1948). *Universal Declaration of Human Rights*, Article 25(1).
[5] United Nations General Assembly. (1966). *International Covenant on Economic, Social and Cultural Rights*, Article 12.
[6] CESCR. (2000). *General Comment No. 14: The Right to the Highest Attainable Standard of Health (Article 12)*, E/C.12/2000/4, para. 30.
[7] Ibid., paras. 12–13.
[8] Ibid., para. 17.
[9] World Health Organization. (2022). *COVID-19 vaccine equity*. Retrieved from https://www.who.int/campaigns/vaccine-equity

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people with diabetes. According to the World Health Organization (WHO), over **50% of people globally who need insulin do not have regular access to it**, primarily due to high costs and limited supply in LMICs.[10] The insulin market is dominated by three multinational companies—Eli Lilly, Novo Nordisk, and Sanofi—which collectively control over 90% of the global supply, contributing to high prices and limited competition.[11] A similar situation prevails with **antiretroviral therapy (ART)** for HIV. While generic production and global funding initiatives like PEPFAR have expanded access, **1.3 million people died from AIDS-related causes in 2022**, many of whom lacked timely access to treatment.[12]

Access to **cancer diagnostics and therapies** also reflects profound inequities. In LMICs, **more than 70% of cancer cases are diagnosed at late stages**, primarily due to the unavailability of affordable diagnostic technologies and treatments.[13] This contrasts with high-income countries, where early detection and treatment options are widely available, contributing to better survival rates. These disparities are further entrenched by global **intellectual property (IP) regimes**, especially the **Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)**, enforced by the **World Trade Organization (WTO)**. TRIPS mandates 20-year patent protections on pharmaceuticals, limiting the production of cheaper generics. While it allows flexibilities such as compulsory licensing, these are rarely exercised due to political pressure, lack of technical capacity, and fear of trade retaliation.[14] Multinational pharmaceutical corporations use IP law strategically to maximize profits, often at the expense of public health in the Global South.

Ultimately, these structural imbalances leave LMICs disproportionately dependent on foreign aid, donations, and external markets. The result is a global health order where access to essential medical technologies is dictated more by geopolitical and commercial priorities than by human needs or rights.

IV. Intellectual Property Regimes and Their Human Rights Implications

The **Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)**, adopted in 1994 as part of the World Trade Organization (WTO) framework, represents a pivotal moment in the global governance of pharmaceuticals. TRIPS mandates a minimum of **20 years of patent protection** for pharmaceutical inventions, standardizing intellectual property (IP) laws across WTO member states. While proponents argue that strong IP protections incentivize research and development (R&D) by ensuring returns on investment, critics highlight that TRIPS has significantly restricted access to affordable medicines, especially in low- and middle-income countries (LMICs).[15] The high costs of patented drugs under TRIPS have resulted in **monopoly pricing**, where pharmaceutical companies exercise exclusive control over the market, charging prices far beyond what many health systems or individuals in LMICs can afford. This has led to situations where life-saving treatments remain out of reach despite being technically available. For example, **sofosbuvir**, a breakthrough hepatitis C drug, was initially priced at **$84,000 for a 12-week course** in the United States, while costing less than **$300** for generics in India—only after legal exceptions were made.[16]

In response to growing global concern, the **Doha Declaration on the TRIPS Agreement and Public Health**

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[10] World Health Organization. (2021). *Global Diabetes Compact: Improving access to insulin*. Geneva: WHO.

[11] Beran, D., Ewen, M., & Laing, R. (2019). Constraints and challenges in access to insulin: A global perspective. *The Lancet Diabetes & Endocrinology*, 7(12), 1035–1045.

[12]UNAIDS. (2023). *Global AIDS update 2023: The path that ends AIDS*. Retrieved from https://www.unaids.org/en/resources/documents/2023

[13]World Health Organization. (2020). *Cancer country profiles 2020*. Retrieved from https://www.who.int/publications/i/item/9789240018579

[14]'t Hoen, E. F. M. (2016). *TRIPS, pharmaceutical patents and access to essential medicines: A long way from Seattle to Doha*. Chicago Journal of International Law, 3(1), 27–46.

[15] World Trade Organization. (1994). *Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)*, Articles 27–34.

[16] Médecins Sans Frontières. (2015). *Hepatitis C: A cure for $1,000 – And who will pay?* Retrieved from https://msfaccess.org

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(2001) clarified that TRIPS should not prevent member states from protecting public health. It reaffirmed the **right of WTO members to use flexibilities**, such as **compulsory licensing and parallel importing**, to ensure access to essential medicines.[17] However, despite this declaration, practical barriers remain. Many LMICs lack the **legal and technical capacity** to issue compulsory licenses and often face **diplomatic and commercial pressure** from wealthier nations and pharmaceutical lobbies when attempting to do so.[18]

From a human rights perspective, the **primacy of IP rights over the right to health** raises profound ethical and legal questions. The **right to life** (Article 6, ICCPR) and the **right to health** (Article 12, ICESCR) are **non-derogable obligations**, meaning they cannot be suspended even in emergencies.[19] Yet, the enforcement of TRIPS often results in systemic denial of affordable treatments, amounting to a **structural violation of these rights**. The **UN Special Rapporteur on the Right to Health** has consistently called for **human rights impact assessments** of trade and IP agreements, noting that public health outcomes must take precedence over commercial interests.[20]

This inherent conflict highlights a need for a **rebalancing of global legal priorities**. IP protections, while important for innovation, must be reconciled with the **universality, indivisibility, and interdependence** of human rights. Equity in access to medical technologies demands that **legal frameworks center people over profits**, especially when lives are at stake.

V. Case Studies in Equity and Innovation

A closer examination of country-level and global initiatives reveals how various legal and policy approaches have sought to balance the need for medical innovation with equitable access. The **COVAX Initiative**, co-led by Gavi, the Coalition for Epidemic Preparedness Innovations (CEPI), and the World Health Organization (WHO), aimed to ensure equitable global access to COVID-19 vaccines. Its goal was to distribute **2 billion doses by the end of 2021**, prioritizing frontline workers and high-risk populations in LMICs. While COVAX did succeed in supplying vaccines to over **140 countries**, it fell far short of its equity goals due to **wealthy nations pre-purchasing a majority of available doses**, logistical challenges, and limited manufacturing capacity.[21] Critics argue that COVAX, while well-intentioned, lacked the binding authority to enforce equitable distribution and was structurally undermined by **vaccine nationalism**.[22]

India's proactive stance on **generic medicine production and compulsory licensing** has had a significant impact on global access to affordable treatments. The landmark **Natco v. Bayer** case in 2012 marked India's first use of **compulsory licensing** under Section 84 of the Indian Patents Act, allowing Natco to produce a generic version of Bayer's cancer drug **Nexavar (sorafenib)**. The generic was priced at **₹8,800 for a month's supply**, compared to Bayer's **₹280,000**, making it vastly more accessible.[23] India's patent laws, which incorporate **TRIPS flexibilities**, have enabled it to become a major supplier of affordable antiretroviral drugs and vaccines for the Global South.[24]

Similarly, **South Africa's legal battle** during the height of the **HIV/AIDS crisis** in the late 1990s exemplified the tension between IP rights and the right to health. The **Pharmaceutical Manufacturers Association of South Africa v. President of South Africa** challenged legislation that enabled the importation of generic drugs. The

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[17]World Trade Organization. (2001). *Doha Declaration on the TRIPS Agreement and Public Health*, WT/MIN(01)/DEC/2.
[18] Sell, S. K. (2007). *TRIPS and the access to medicines campaign*. Wisconsin International Law Journal, 25(3), 481–519.
[19] United Nations. (1966). *International Covenant on Civil and Political Rights*, Article 6; *International Covenant on Economic, Social and Cultural Rights*, Article 12.
[20] UN Human Rights Council. (2009). *Report of the Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health*, A/HRC/11/12.

[21]Gavi, the Vaccine Alliance. (2021). *COVAX explained*. Retrieved from https://www.gavi.org/vaccineswork/covax-explained
[22] Bollyky, T. J., & Bown, C. P. (2021). The tragedy of vaccine nationalism. *Foreign Affairs*, 100(1), 96–108.
[23] Natco Pharma Ltd. v. Bayer Corporation, Compulsory License Decision, Controller of Patents, India (2012).
[24] Chatterjee, P. (2012). India grants compulsory licence for cancer drug. *The Lancet*, 379(9828), 1230.

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public and international backlash, including from civil society and Nelson Mandela's administration, forced pharmaceutical companies to **withdraw the case in 2001**, paving the way for greater access to life-saving treatment.[25]

These case studies illustrate critical **lessons**: legal and policy instruments like **compulsory licensing, judicial activism, and international solidarity** can effectively challenge corporate monopolies and reaffirm that access to medicine is a human right. At the same time, they highlight the fragility of voluntary initiatives and the need for enforceable international norms to ensure **technology equity** in global health governance.

VI. Towards a Human Rights-Centered Global Governance Framework

A sustainable and just approach to global health demands that access to medical technologies be governed by a human rights-centered framework. Existing global and regional mechanisms—while instrumental—require significant reform to align international health governance with the principles of equity, participation, and accountability. The World Health Organization (WHO) has played a central role in standard-setting, coordination, and health emergency response. However, its effectiveness is constrained by voluntary funding, which makes it dependent on donor priorities rather than democratic global needs.[26] The United Nations Human Rights Council (UNHRC) and UN Special Rapporteurs have issued vital normative guidance on the right to health, but their recommendations lack binding force. Regional systems such as the African Commission on Human and Peoples' Rights and Inter-American Court of Human Rights have strengthened health rights jurisprudence, but their scope remains geographically limited.[27]

To bridge these gaps, scholars and civil society actors have advocated for a Framework Convention on Global Health (FCGH)—a proposed international treaty grounded in the right **to** health and designed to codify state obligations around equity, accountability, and universal access to health technologies. As envisioned by Gostin and Friedman, the FCGH would set enforceable standards, promote transparency in pharmaceutical pricing, and require health equity planning and financing benchmarks, particularly for LMICs.[28] Moreover, the current model of public-private partnerships (PPPs)—often celebrated for accelerating innovation—needs a critical reimagination. While collaborations such as Gavi and CEPI have expanded vaccine access, many PPPs are criticized for privileging private profit over public good, often operating without adequate public oversight or equitable access clauses. Future PPP models must be legally bound to principles of affordability, transparency, and human rights impact assessment.[29]

Equally vital is the inclusion of low- and middle-income countries (LMICs) and marginalized populations in global health decision-making. Historically, these groups have been recipients—not shapers—of health policies. Participatory mechanisms, such as community consultations, civil society representation in global boards, and inclusive research agenda-setting, are essential for responsive governance. The COVID-19 pandemic underscored how exclusion of the Global South from key platforms like vaccine manufacturing and distribution led to structural inequities that prolonged the crisis.[30]

A rights-based global governance model must thus prioritize legal accountability, inclusive participation, and

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[25] Heywood, M. (2003). Preventing mother-to-child HIV transmission in South Africa: Background, strategies and outcomes of the Treatment Action Campaign case against the Minister of Health. *South African Journal on Human Rights*, 19(2), 278–315.

[26] Clift, C. (2013). *What's the World Health Organization For?* Chatham House Centre on Global Health Security.

[27] Donders, Y. (2011). The right to enjoy the benefits of scientific progress: In search of state obligations in relation to health. *Medicine, Health Care and Philosophy*, 14(4), 371–381.

[28] Gostin, L. O., & Friedman, E. A. (2013). Towards a Framework Convention on Global Health: A transformative agenda for global health justice. *Yale Journal of Health Policy, Law, and Ethics*, 13(1), 1–37.

[29] Storeng, K. T., & Béhague, D. P. (2016). "Lives in the balance": The politics of integration in the Partnership for Maternal, Newborn and Child Health. *Health Policy and Planning*, 31(8), 992–1000.

[30] Moon, S., et al. (2021). A global pandemic treaty should aim for equity in health systems. *The Lancet*, 397(10280), 623–625.

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equitable innovation, ensuring that access to medical technologies is treated not as charity, but as a matter of justice and international legal obligation.

VII. Conclusion and Policy Recommendations

This paper has argued that equitable access to medical technologies—including vaccines, diagnostics, and essential medicines—is not merely a matter of public health, but a core human rights obligation. Anchored in foundational international instruments such as Article 25 of the UDHR and Article 12 of the ICESCR, the right to health obligates states and the global community to ensure that scientific advancements and health technologies are available, accessible, acceptable, and of high quality for all. The COVID-19 pandemic revealed the devastating human cost of global health inequities. From vaccine apartheid to delayed access to essential treatments, structural barriers—including intellectual property regimes, weak governance, and inadequate financing—continue to undermine universal access. Human rights principles provide a robust legal and ethical framework for confronting these systemic failures. Urgent reform is required across multiple levels. At the global level, the creation of a Framework Convention on Global Health (FCGH) could establish binding commitments to equity and accountability. Intellectual property laws must be rebalanced to allow for compulsory licensing and technology transfer, especially in public health emergencies. Public-private partnerships should be redesigned to prioritize the common good over corporate profit, with transparency, affordability, and inclusive governance at their core.

National governments, too, must adopt rights-based health policies, integrating equity into regulatory frameworks, procurement, and R&D funding. Most importantly, LMICs and marginalized communities must be empowered as co-creators of global health solutions—not passive recipients.

Looking forward, the integration of human rights into every stage of health technology development, regulation, and distribution offers a pathway to a more just and resilient global health order. Equity must become the norm—not the exception—in how we innovate, govern, and deliver medical technologies. Only then can the promise of the right to health be fully realized for all.