

# Enhancing Healthcare Decision-Making: Comparison Between Health Technology Assessments and Access to Medical Care in a High-income Country vs. Low/middle Income Countries

Shashwati Pankaj<sup>1</sup>, Arya Karun<sup>1</sup>, Jignesh Bhate<sup>1</sup>, Guruprasad Rao KS<sup>1\*</sup>

Molecular Connections Analytics Private Limited, Bangalore, Karnataka 560070, India

\*Corresponding Author: Guruprasad Rao KS, Head of Business, Molecular Connections Analytics Private Limited, Bangalore, Karnataka 560070, India. Email: guru@molecularconnections.com

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## Abstract

**Background:** Healthcare decision-making is a complex process that involves evaluating the value, efficacy, and accessibility of medical technologies and interventions. Health Technology Assessments (HTA) in high-income countries (HICs) have become a cornerstone of evidence-based healthcare decision-making. This systematic evaluation framework, exemplified by its robust, impartial examination of various medical technologies, plays a pivotal role in establishing the clinical effectiveness and cost-effectiveness of health technologies. In contrast, low and middle-income countries (LMICs) frequently contend with resource constraints and intricate healthcare systems characterized by fragmentation and limited access to advanced medical technologies. As formalized HTA processes may be less established, limiting comprehensive evaluations, decision-making may rely on regulatory approval, clinical guidelines, or international recommendations in LMICs.

Similarly, access to medical care in high-income settings, such as the presence of universal healthcare coverage and well-developed health systems, contributes to equitable access to a wide range of medical services. In LMICs, challenges related to healthcare infrastructure, funding, and health workforce shortages hinder access to essential medical care, leading to inequities in health outcomes. This short review aims to compare the approaches to healthcare decision-making in high-income and low/middle-income countries, with a specific focus on HTAs and access to medical care.

**Keywords:** Developing Countries; Health Expenditures; Universal Health Insurance; Technology Assessment

## 1. Background

Health Technology Assessment (HTA) serves as a pivotal tool for systematic evaluation, guiding healthcare policy to allocate resources efficiently within budget constraints (1). However, over two billion people in Low- and Middle-Income Countries (LMICs) lack access to essential medicines, and up to 50% of the global population faces this challenge, resulting in widespread extreme poverty (2, 3). Financial barriers, particularly out-of-pocket (OOP) expenses for healthcare services, pose a significant burden in LMICs, limiting access to crucial healthcare (4). Despite strides in healthcare accessibility in North America and the European Union, millions still encounter barriers. In the US, an estimated 30 to 34 million individuals lack health insurance, while Southern Europe grapples

with diminishing healthcare access (4). In Canada, universal access excludes prescription drugs, leaving 10% of the population unable to afford necessary medications (4). Financial obstacles persist as a primary impediment to healthcare access in LMICs, with out-of-pocket payments constituting a substantial portion of health spending (5). Global cancer disparities, with approximately 80% of related deaths in LMICs, underscore limited access to oncology therapies. Strategies such as procuring generic drugs, participating in clinical trials, and implementing universal healthcare systems can mitigate these challenges. Compulsory licensing and public-private partnerships offer avenues to reduce drug costs and finance out-of-pocket drug distribution in LMICs (6). Addressing



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low cancer survival rates in Sub-Saharan Africa and India requires global initiatives enhancing healthcare professional knowledge and practices, particularly in breast and prostate cancer detection. Decentralization emerges as a key strategy to ensure timely, quality cancer care (7).

## 2. Methods

Health Technology Assessment (HTA) is a systematic process evaluating the medical, social, economic, and ethical implications of integrating health technologies into healthcare systems to inform decision-makers on their value and efficacy, facilitating resource allocation, and improving patient outcomes (8).

### 2.1. HTA Processes in High-income Countries: UK and Australia

A scoping review aimed at understanding challenges in HTA across high- and middle-income countries reveals insights into the complexities faced by these nations. Case studies from Australia, Canada, England, and Scotland provide a comparative analysis of HTA processes, emphasizing the role of key committees like the Pharmaceutical Benefits Advisory Committee (PBAC) in Australia and the Medical Services Advisory Committee (MSAC). This comprehensive review enhances global understanding of HTA, offering valuable insights for policymakers and healthcare professionals (9).

### 2.2. HTA Processes in LIC/LMIC: India and Democratic Republic of Congo

India is establishing a centralized HTA body, HTAIn, reflecting its robust economic growth. The International Symposium on Health Technology Assessment (ISHTA) 2023 in New Delhi focused on enhancing healthcare technology affordability, availability, and accessibility. In contrast, the Democratic Republic of the Congo faces challenges with a decentralized HTA process due to lim-

ited resources. India's HTA involves agencies like the Central Drugs Standard Control Organization, emphasizing safety, efficacy, and cost-effectiveness. Challenges include limited data and resource constraints, while the Congo relies on decentralized decision-making at regional or institutional levels. India's diverse healthcare landscape influences technology assessment, and the private sector significantly impacts healthcare delivery. International collaborations may aid the Congo in overcoming resource limitations (10-12).

### 2.3. HTA Recognition in Selected LMICs

In Africa, selected LMICs like Egypt, Morocco, Tunisia, and Cote d'Ivoire are increasingly recognizing HTA methods. Ghana has initiated a pilot study exploring HTA application for specific healthcare technologies, guiding the Ministry of Health in prioritizing initiatives. Across Asia, countries like the Philippines and Vietnam draw inspiration from Thailand's successful HTA experience, while Myanmar reports informal HTA use. India employs formal processes for informed decision-making in health insurance benefits (10-13).

### 2.4. HTA Initiatives in LICs

Tanzania and Uganda are among the limited LICs establishing HTA committees, considering HTA principles in revising Essential Medicine Lists. Ethiopia is actively reforming healthcare services, forming a dedicated team within the Ministry of Health to streamline and institutionalize HTA efforts. In Nepal, there's growing acknowledgment among decision-makers of the value of HTA methods, shaping healthcare prioritization and improving access. Afghanistan and Rwanda show informal use of HTA methods, though formal, independent entities conducting HTA are lacking (14-20).

Appendix 1, Table 1, provides a complete list of GDP and the percentage of GDP spent on health expenditure in all countries.

**Table 1.** Annual Growth in per Capita Healthcare Expenditure per Country (2019-2020) a

| Country         | Per Capita Healthcare Expenditure (%) |
|-----------------|---------------------------------------|
| Korea           | 1.4                                   |
| Lithuania       | 5.6                                   |
| Estonia         | 15.4                                  |
| Czech Republic  | 8.9                                   |
| Poland          | 8.4                                   |
| Chile           | -4.9                                  |
| Slovenia        | 8.9                                   |
| Portugal        | -0.8                                  |
| Iceland         | 5.6                                   |
| Slovak Republic | 5.9                                   |
| Ireland         | 8.8                                   |
| Germany         | 1.9                                   |

|                       |      |
|-----------------------|------|
| <b>United Kingdom</b> | 11.5 |
| <b>Denmark</b>        | 4.6  |
| <b>Netherlands</b>    | 6.1  |
| <b>Austria</b>        | 2.6  |
| <b>Italy</b>          | 3.5  |
| <b>Finland</b>        | 2.3  |
| <b>France</b>         | 2.9  |
| <b>Mexico</b>         | 3.9  |

<sup>a</sup> Source: OECD library.

### 2.5. Role of the Private Insurance

Private sector engagement in healthcare encompasses a diverse range of activities conducted by various non-state entities, including multinational corporations (MNCs), non-governmental organizations (NGOs), and non-profit organizations. They provide direct healthcare services, manage healthcare institutions, manufacture healthcare goods such as medications, pharmaceuticals, and rehabilitation services, and finance healthcare products (21).

In the Netherlands, private health insurance plays a crucial role in the healthcare sector. Following the transition from a dual public-private insurance system to a single compulsory health insurance scheme, private insurance companies are required to offer a basic health insurance package formulated by the government. This package must be accessible to every resident within their designated area of operation. The mandatory involvement of private insurance ensures that all residents have access to essential healthcare services, while the government establishes the coverage framework and standards within the private insurance sector (21).

Among 27 high-income countries (HICs), primary care ownership is primarily public in six, while in 21, it is predominantly in private hands. In 70 low- and middle-income countries (LMICs) surveyed using household data, private healthcare services contribute approximately 65% of care for childhood illnesses, although this proportion varies significantly among nations (22).

Children with conditions like diarrhea, fever, or cough are often treated by private providers, with more than half of such cases managed by them, while public providers remain the primary source for services related to childbirth, antenatal care, and modern contraception. Therefore, asserting that the private sector dominates healthcare provision in these countries without considering the specific types of services involved is overly simplistic (23).

LMICs face specific challenges in achieving Universal Health Coverage (UHC) due to limited public healthcare resources, inefficient allocation, over-reliance on out-of-pocket payments, and often, a large population size. Historically, social health insurance, tax-based insurance, or a mix of the two have been the dominant health insurance models among HICs and some LMICs, including Brazil, Colombia, Costa Rica, Mexico, and Thailand (24).

In recent decades, Community-Based Health Insurance

(CBHI) or “mutual health organizations” have become increasingly popular among LMICs, particularly in Sub-Saharan Africa (e.g., Burkina Faso, Senegal, and Rwanda) and Asia (e.g., China and India), emerging as an alternative health financing strategy in cases where the public sector has failed to provide adequate access to healthcare (24).

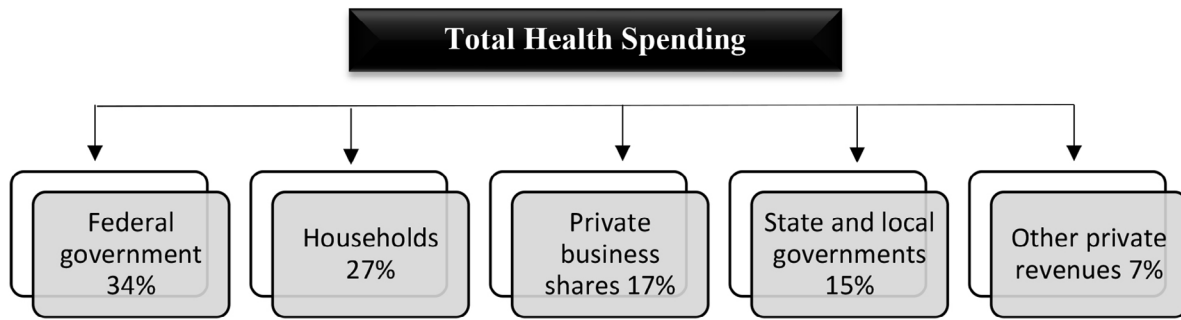
In LMICs, private sources contribute to nearly half of both primary healthcare (PHC) and non-PHC spending. In low-income countries (LICs), the remaining funding comes from external aid, accounting for one-third of total PHC spending and one-fifth of total non-PHC spending, as well as government sources, which make up one-fifth of total PHC spending and one-third of total non-PHC spending (25).

### 2.6. Role of the Government Subsidies

Government health subsidies (GHS) play a crucial role in covering healthcare expenses at public medical institutions, contributing to national health outcomes and universal health coverage (UHC). In China, GHS is allocated to both healthcare providers and patients through various insurance programs. Research by Qin reveals distribution patterns, with a pro-poor tendency for primary care and pro-rich tendencies for outpatient and inpatient services in both urban and rural populations (26).

The Kakwani Index (KI) values indicate that government health subsidies are progressive, reducing the economic gap between the poor and the rich (26). Government spending on health, particularly during the COVID-19 pandemic, has seen a significant increase, driving the overall health expenditure growth in OECD countries. Health spending as a percentage of GDP rose to 9.7% in 2020, up from 8.8% in 2019 (27). Preliminary estimates for 2021 suggest continued robust growth, with an average increase of around 6% (27).

In 2019, average per capita health spending in OECD countries exceeded USD 4,000, varying widely among nations. The US had the highest per capita spending, while countries like Japan and the United Kingdom were in line with the OECD average. In China, per capita spending was just under 20% of the OECD average (28). Over 76% of healthcare spending across OECD countries is funded through government or compulsory insurance schemes, reaching 85% in the US with the Affordable Care Act (28) (Figure 1).



**Figure 1.** Total health spending according to the recent NHE fact sheet 2023 (29)

Primary health care (PHC) spending constituted over 50% of total health expenditure in 2019, averaging 3.1% of GDP. While higher-income countries had higher per capita PHC spending, lower-income countries allocated a larger portion of their total health expenditure to PHC (30).

Healthcare financing in Low-Income Countries (LICs) heavily relies on out-of-pocket spending (44%) and external aid (29%), while High-Income Countries (HICs) primarily rely on government spending (70%). Over the past two decades, external aid has significantly grown, impacting government spending in countries highly dependent on aid. In Lower-Middle-Income Countries (LMICs), approximately two-thirds of external aid for health is directed toward infectious diseases (30).

### 2.7. 100% Coverage and OOP Expenses

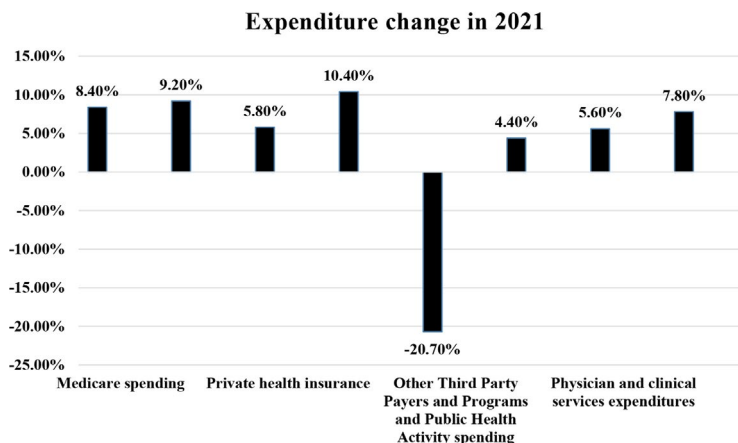
In a study by Rahman et al., Common Health Expenditure measurements were analyzed, revealing coping strategies for healthcare expenses, including borrowing, selling assets, and receiving contributions. Thailand and China achieved near-universal health insurance coverage, but Thailand demonstrated lower Financial Risk Protection due to effective public health insurance schemes. LMICs show varying rates of Catastrophic Health Expenditure (CHE) and impoverishment, with high incidence rates for chronic illnesses and infectious diseases (31).

A study by Hooley et al. found a mean health insurance coverage of 31.1% in LMICs, with significant variations across income groups. Out-of-pocket (OOP) expenditure accounted for 39.9% of Catastrophic Health Expenditure, affecting 9.4% of households exceeding 10% of their income (32).

In 2021, the US spent \$4.0 trillion on healthcare, constituting 17.4% of GDP. Private health insurance covered 29.9%, Medicare 22.3%, and Medicaid/CHIP 18.7%. OOP spending accounted for 10.7% (33).

Private health insurance plays diverse roles globally, ranging from primary coverage to supplementary, complementary, and duplicate coverage. In countries like the US, Switzerland, and the Netherlands, it plays a primary role, while in others, it serves specific groups or provides supplementary, complementary, or duplicate coverage (34). Governments contribute 51% of healthcare spending globally, with over 35% covered through out-of-pocket expenses. In low- and middle-income countries, over half of healthcare spending goes to primary health care, but less than 40% of its funding comes from governments (35).

As domestic healthcare spending rises, reliance on external aid decreases to less than 1% of global health expenditure, with half dedicated to HIV/AIDS, Tuberculosis, and malaria (35) (Figure 2).



**Figure 2.** Expenditure change in 2021 according to the NHE fact sheet 2023 (29)

### 3. Results

#### 3.1. Approaches to Enhance HTA Capabilities in Low-Income Countries (LICs)

In Low-Income Countries (LICs), Health Technology Assessment (HTA) is primarily utilized for traditional roles such as determining healthcare coverage, pricing, and priority setting. To enhance HTA capabilities in these countries, two key approaches are suggested.

Firstly, disinvestment is proposed as a strategy, involving the reallocation of healthcare resources away from practices, procedures, technologies, or pharmaceuticals that offer little or no health benefits relative to their cost. This process aims to improve the efficiency of resource allocation in healthcare within the constraints of limited resources.

Secondly, in countries with limited capacity, a focus on organizational considerations is recommended to enhance the relevance of HTA. This involves promoting early engagement with stakeholders to identify additional costs and non-health outcomes. Utilizing this information is crucial in guiding the development and implementation of health technologies. Early HTA is advocated as a tool to help LMICs select more appropriate new products while avoiding less suitable ones. The strategic incorporation of the private sector is also emphasized for securing funding and potentially increasing transparency. For instance, a market-driven, value-based advance commitment is proposed as a mechanism to attract private sector funding for health research and development in LMICs (36).

### 4. Discussion

This review underscores the significance of achieving a balance between evidence-based decision-making, as exemplified by HTAs, and addressing access barriers within healthcare systems (36). Established HTA processes in high-income countries can serve as models for efficient resource allocation and the enhancement of care quality. Conversely, low- and middle-income countries can benefit from capacity-building efforts in HTA methodologies and targeted interventions aimed at improving access to cost-effective and essential medical technologies.

A new cross-border HTA alliance spanning three continents, known as the AUS-CAN-UK Collaboration Arrangement, has recently been introduced. This collaboration brings together six like-minded organizations: NICE, Healthcare Improvement Scotland (overseeing the SMC), Health Technology Wales, the All-Wales Therapeutics & Toxicology Centre, CADTH, and the Australian Government Department of Health and Aged Care (overseeing the PBAC) (36). The collaboration aims to achieve incremental improvements in the partner organizations' work by sharing best practices and collaborating on significant challenges.

Key priority areas for this collaboration include:

**COVID-19:** This encompasses the management of medicines with strong evidence but no plans for obtaining marketing approval.

**Future-proofing HTA systems:** Developing processes to anticipate technological and methodological challenges, including environmental sustainability and real-world evidence.

**Collaborating with regulators:** Enhancing cooperation between regulatory and HTA agencies in the three countries.

**Work sharing and efficiency gains:** Exploring the feasibility of recognizing or using each other's HTA information and conducting a joint clinical assessment pilot.

**Digital health technologies and artificial intelligence:** Sharing information on the evaluation of these technologies, including adaptive algorithms, alignment with regulators, accommodating regular algorithmic updates, HTA evidence requirements, and ongoing data monitoring (36).

Working groups aligned with these priority areas will convene quarterly to assess progress and discuss activities. An annual meeting will review all activities and, if necessary, adjust areas of cooperation. The arrangement will undergo a review every two years (36). According to World Bank data, in 2020, the US had the highest healthcare expenditure as a percentage of GDP (18.82%) among HICs, while Monaco had the lowest (1.67%) (37-41). In 2021, Afghanistan had the highest health expenditure as a percentage of GDP (16.83%) among LICs, and Lesotho (11.78%) among LMICs in 2020 (37-41).

Recent reports indicate that key decision-makers from New Zealand's Pharmaceutical Management Agency are keen on collaborating with other countries, such as Australia, on health technology assessment (37-41). Healthcare decision-making is influenced by a complex interplay of evidence, resources, and healthcare infrastructure (37-41). HICs exhibit successful integration of HTAs into decision-making, while LICs and LMICs face unique challenges that demand tailored approaches to improve healthcare access and enhance health outcomes (37-41). Collaborative efforts between countries and international organizations facilitate knowledge exchange and strengthen healthcare decision-making globally (37-41).

**Authors' Contribution:**

Shashwati L.: Writing, Arya Karun: Writing, Jignesh Bhate: Writing, Guruprasad Rao KS: Writing.

**Conflict of Interests:**

The authors declare no conflicts of interest related to this review.

**Data Reproducibility:**

As this is a review article, there are no specific datasets or materials to be made available. For any inquiries related to this review, please contact the corresponding author, Guruprasad Rao KS at guru@molecularconnections.com.

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