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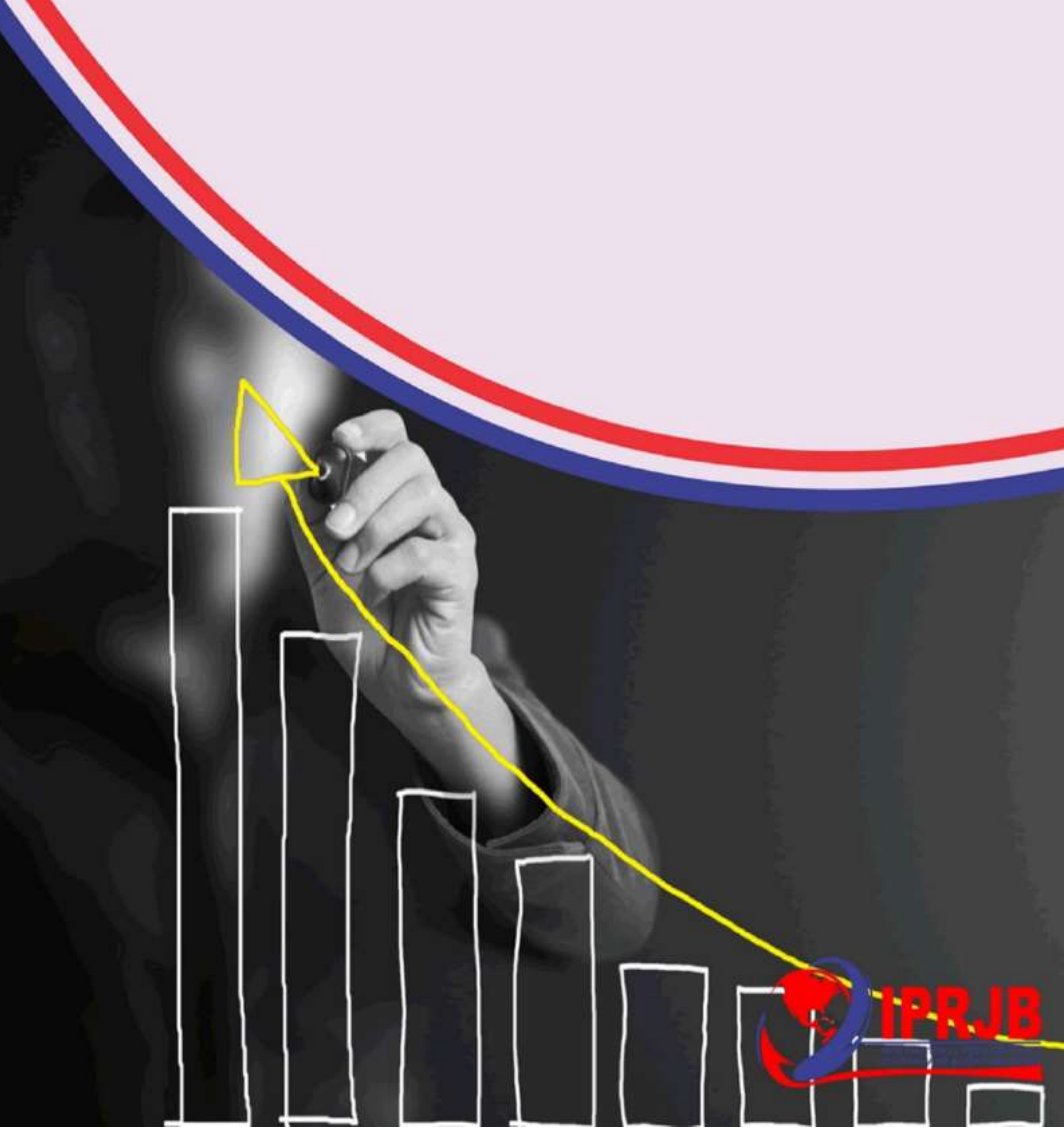
Integrating Pharmacy-Based Primary Health Care Model: A Practical Approach for Expanding Healthcare Access in Low-and Middle-Income Countries, Kenyan Example

Dr. Jesse Kang'ethe Mukuria



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Abstract

Purpose: The paper examines the integration of a pharmacy-based primary health care (PHC) model as a practical strategy for expanding healthcare access in low- and middle-income countries (LMICs), with a particular focus on Kenya. It assesses how pharmacies already widely utilized as first points of care can be systematically incorporated into formal PHC systems to improve access, efficiency, and health outcomes.

Methodology: The study adopts a secondary data research design, drawing on global databases (WHO, World Bank, UN), national health data from Kenya, peer-reviewed literature, and policy documents. A mixed-methods approach combining quantitative trend analysis and qualitative policy analysis is used, alongside comparative analysis of LMICs and high-income countries with established pharmacy-based PHC models such as the United Kingdom, Canada, and Australia.

Findings: Findings indicate that community pharmacies play a significant yet underutilized role in healthcare delivery in LMICs, accounting for a substantial proportion of first-contact care (40–60%), particularly for minor ailments, chronic medication refills, and preventive services. Comparative evidence demonstrates that countries with integrated pharmacy-based PHC models achieve improved access, reduced facility congestion, shorter waiting times, and enhanced system efficiency through structured reimbursement, defined scopes of practice, and strong governance frameworks. In Kenya, the presence of approximately 8,000 community pharmacies presents a scalable and cost-effective opportunity to expand PHC coverage and support Universal Health Coverage (UHC) goals.

Unique Contribution to Theory, Practice and Policy: The study contributes to theory by advancing a health systems strengthening perspective that positions community pharmacies as strategic primary care actors within integrated service delivery networks. Practically, it provides an implementation-oriented framework outlining service packages, workforce competencies, referral pathways, and digital integration mechanisms necessary for operationalizing pharmacy-based PHC. From a policy perspective, it offers evidence-based recommendations for legal and regulatory reform, financing through health insurance schemes, public-private partnerships, and the establishment of quality assurance and governance structures. The study further recommends that formal integration of community pharmacies into PHC systems represents a viable, scalable, and high-impact intervention for improving equitable access to healthcare in Kenya and similar LMIC contexts.

Keywords: *Pharmacy-based PHC, LMICs Healthcare Access, Universal Health Coverage, Policy Integration*

JEL Codes: *111, 115, 118*

INTRODUCTION

Rapid population growth and urbanization in Africa are significantly increasing demand for healthcare services, placing immense pressure on already overstretched available health facilities. As of 2026, Africa's population has reached approximately 1.57 billion people, growing at about 2.2–2.6% annually. This growth is projected to intensify demand for primary healthcare services. However, health system capacity has not kept pace contributing to widespread overcrowding and reduced quality of care. Low- and middle-income countries (LMICs), including Kenya, continue to face structural and systemic barriers to achieving universal health coverage (UHC), notably constrained health workforce capacity, overstretched public health facilities, and persistent inequities in access to essential services. In contrast, High-Income Countries (HICs) with mature PHC models countries experience low or stable population growth and maintain stronger alignment between population needs and health system capacity through higher investment, better workforce density, and well-established primary care systems.

Pharmacies represent one such platform. Widely distributed, highly accessible, and frequently utilized, pharmacies already serve as a de facto first point of care for a substantial proportion of the population. They provide immediate access to medicines, basic health advice, and, in many cases, frontline management of common health conditions. Despite this reality, pharmacies remain insufficiently integrated into formal PHC frameworks, operating largely outside structured policy, financing, and accountability mechanisms. This disconnect limits their effectiveness, creates variability in quality of care, and constrains their potential contribution to national health objectives.

Amid these structural challenges, care-seeking patterns in low- and middle-income countries show that pharmacies and drug shops are the leading first point of care (50%), surpassing public facilities (33%) and private clinics (15%), while other sources account for a small share (7.5%). This pattern confirms that pharmacies are the primary entry point into the health system, indicating a strong case for their formal integration into primary healthcare to improve access, efficiency, and quality of care. This is illustrated in Figure 1

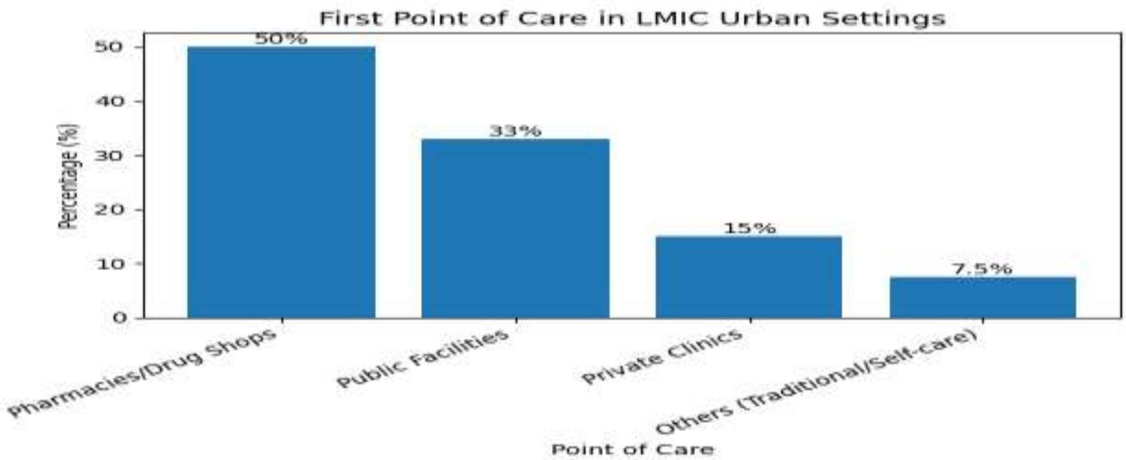

Figure 1: Care-Seeking Behavior (First Point of Care)

In Kenya, the opportunity for policy reform is particularly compelling. The country's pluralistic health system characterized by a mix of public and private providers includes an estimated 8,000 registered community pharmacies, forming a dense and geographically proximate network that reaches deep into communities. This existing infrastructure presents a cost-effective and scalable avenue for expanding PHC coverage without the need for substantial new capital investment. However, the absence of clear policy direction, standardized service delivery frameworks, and sustainable financing mechanisms has hindered the systematic utilization of pharmacies as part of the formal health system.

To compare pharmacy-to-population and physician-to-population ratios in Kenya, the most recent available national estimates are used and presented in Table 1.

Table 1: Direct Comparison

Indicator	Ratio	Interpretation
Pharmacies	~1 : 6,600	Widely distributed, often first point of care
Pharmacists	~1 : 20,000	Severe workforce shortage
Physicians	~1 : 5,000	More available than pharmacists

Key Insights

- **Access vs. workforce mismatch**
  Kenya has many pharmacy outlets, but far fewer qualified pharmacists. This explains why many outlets are run by pharmaceutical technologists or unqualified staff.
- **Pharmacies outnumber physicians in access points**
  Even though doctors are fewer per population than pharmacies, pharmacies are more geographically accessible, making them the primary entry point to care, especially in urban and peri-urban areas.
- **Critical imbalance**
  - Pharmacies: relatively accessible
  - Pharmacists: critically scarce
  - Physicians: limited but still more available than pharmacists
- **Policy implication**
  This gap supports the push for:
  - Pharmacy-based primary healthcare models
  - Task-shifting and expanded pharmacist roles

This context presents a critical and time-sensitive policy opportunity. By adopting a deliberate and well-regulated approach to integrating community pharmacies into primary healthcare systems, policymakers can transform these entities from informal, fragmented providers into coordinated, accountable, and high-impact PHC actors. Such integration would not only expand access to essential services but also enhance system efficiency, reduce the burden on higher-level facilities, and accelerate progress toward UHC.

A pharmacy-based primary healthcare (PHC) model should remain deliberately focused by concentrating on a limited set of high-impact, low-complexity service areas that align with the competencies of pharmacy personnel. Central to this model is the management of minor ailments, where pharmacies provide first-line care for uncomplicated conditions such as respiratory infections, mild gastrointestinal disorders, and common skin conditions, while maintaining clear referral pathways for more serious cases. In addition, the model prioritizes preventive services and health promotion, including patient education on hygiene, nutrition, family planning, and lifestyle modification, as well as supporting medication adherence.

Equally important is the role of pharmacies in screening for non-communicable diseases (NCDs), particularly through routine measurement of blood pressure, blood glucose, and body mass index, which facilitates early detection and timely referral. The model also incorporates medication therapy management, enabling pharmacies to support patients with chronic conditions such as hypertension, diabetes, and HIV through counseling, adherence monitoring, and pharmacovigilance. Where policy frameworks permit, a limited role in immunization may be included, primarily focused on vaccine storage, patient education, and in some cases administration of selected vaccines.

To avoid overextension, the model intentionally excludes complex diagnostics, emergency care, and advanced clinical management. Overall, it is designed to strengthen access to essential PHC services by focusing on minor illness care, prevention, screening, and medication management, thereby complementing rather than replacing formal health facilities.

Problem Statement

Low- and middle-income countries (LMICs), including Kenya, are confronted with persistent gaps in access to primary healthcare (PHC), undermining progress toward universal health coverage (UHC). Despite ongoing health sector reforms, a significant proportion of the population particularly those in rural areas, urban informal settlements, and underserved regions continues to face barriers to timely, affordable, and quality healthcare services. These challenges are driven by systemic constraints, including an inadequate health workforce, overstretched public health facilities, inefficient service delivery models, and heavy reliance on out-of-pocket expenditures.

At the same time, community pharmacies have emerged as widely accessible and frequently utilized points of care, often serving as the first contact within the health system. In Kenya, the presence of approximately 8,000 registered pharmacies constitutes a substantial and geographically distributed healthcare resource. However, this network remains largely underutilized within formal PHC frameworks. Pharmacies operate with limited integration into national health systems, weakly defined clinical roles, and insufficient regulatory oversight, resulting in fragmented service delivery and variability in quality of care.

The absence of a coherent policy framework to guide the integration of pharmacies into primary healthcare systems represents a critical gap in health sector planning. This gap leads to missed opportunities to expand service coverage, improve efficiency, and optimize existing healthcare infrastructure. Furthermore, the current disconnect between policy and practice contributes to risks related to inappropriate medicine use, limited referral linkages, and inadequate accountability mechanisms.

Without deliberate policy action, health systems will continue to underutilize a readily available and trusted platform for service delivery, thereby perpetuating inequities in access and placing additional strain on already burdened health facilities. Addressing this policy problem requires a structured and strategic approach to integrating community pharmacies into PHC systems, supported by clear regulatory frameworks, sustainable financing mechanisms, and strengthened governance structures.

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Crucially, this focused scope must be understood against the backdrop of a persistent regulatory vacuum. In many settings, pharmacies already function as de facto first points of care but operate partially outside formal PHC frameworks, with inconsistent oversight and unclear clinical boundaries. This regulatory gap creates conditions that can promote irrational prescribing practices, including inappropriate dispensing of antibiotics, thereby accelerating antimicrobial resistance (AMR). In this context, integrating pharmacies into PHC is not merely a system efficiency or access-enhancing reform; it becomes a patient safety necessity, ensuring standardized protocols, accountability, and alignment with national treatment guidelines.

To avoid overextension, the model intentionally excludes complex diagnostics, emergency care, and advanced clinical management. Overall, it is designed to strengthen access to essential PHC services by focusing on minor illness care, prevention, screening, and medication management, while addressing regulatory gaps that currently expose patients and health systems to significant risks.

Table 2: Problem Summary Table

Indicator	Integrated Countries (UK, Canada, Australia, Europe)	LMICs (Kenya & Africa)
Pharmacy use as first contact	50–70% (formalized)	40–60% (informal)
Monthly pharmacy consultations	250,000+ (UK)	Not formally tracked
Conditions managed	7–25 conditions	Mostly informal
Reduction in facility burden	20–30%	Not realized
Consultation reimbursement	KES 1,500–2,700	None
Population access	75–95%	50–85%
Digital integration	80–95%	<30%
Quality standardization	~100%	~60–70%
Referral system efficiency	80–90% structured	20–30% informal

The economic burden associated with a fragmented pharmacy-based care pathway arises when patients initially seek care at pharmacies often as their first point of contact but are subsequently required to repeat the same care process at public health facilities due to weak or absent referral linkages. In Kenya, where approximately half of patients first present at pharmacies, the absence of formal integration into the primary healthcare (PHC) system means that initial consultations, treatments, or advice provided at the pharmacy level may not be clinically recognized or formally documented within the broader health system. As a result, patients frequently undergo duplicate consultations, repeat diagnostic assessments, and in some cases, redundant treatments when they present again at public facilities.

This duplication translates into a financial inefficiency at both household and system levels. For patients, it increases out-of-pocket expenditures through repeated payments for transport, consultation, and medicines. For the public health system and ultimately the Kenyan taxpayer it leads to unnecessary utilization of already constrained resources, including healthcare personnel time, diagnostics, and subsidized medicines. In effect, the system pays twice for the same episode of care.

Therefore, the economic burden is not simply about cost escalation, but about system inefficiency driven by poor care coordination. Integrating pharmacies into PHC through structured referral systems, shared records, and standardized treatment protocols would reduce duplication, improve continuity of care, and ensure that initial patient encounters at pharmacies contribute meaningfully to the overall healthcare delivery process rather than creating parallel, disconnected pathways.

METHODOLOGY

This study adopts a purely secondary data research design, utilizing existing datasets, reports, and published evidence to assess the feasibility, effectiveness, and policy implications of integrating community pharmacies into Primary Health Care (PHC) systems in LMICs, with a focus on Kenya. The approach is aligned with health systems research and policy analysis, enabling robust insights without primary data collection.

Research Design

The study employs a desk-based, mixed-methods secondary data design, combining:

- **Quantitative secondary data analysis** → to assess trends in access, utilization, and system performance
- **Qualitative document analysis** → to interpret policy frameworks, implementation experiences, and contextual factors

Analytical Approach

- **Comparative analysis** (LMICs vs integrated countries such as the UK, Canada, Australia) (These countries are deliberately selected as high-income countries (HICs) with legislated and well-established "Pharmacy First" or expanded pharmacy practice models, where pharmacies are formally integrated into primary healthcare systems)
- **Trend analysis** (population growth vs health system capacity)
- **Policy analysis framework** (to assess integration gaps and opportunities)

Data Sources

The study relies exclusively on **credible secondary data sources**, including:

1. Global Health Databases

- World Health Organization (WHO)
- World Bank
- United Nations (UN) population data

2. National Data (Kenya)

- Ministry of Health reports
- Kenya Health Information System (KHIS)
- Kenya National Bureau of Statistics (KNBS)

3. Published Literature

- Peer-reviewed journal articles
- Systematic reviews on pharmacy-based care
- Implementation studies from LMICs

4. Policy and Program Documents

- National health policies and strategies
- Pharmacy regulatory frameworks
- Universal Health Coverage (UHC) documents

5. Comparative Country Data

- Reports from:
    - United Kingdom (Pharmacy First, NHS data)
    - Canada (provincial pharmacy programs)
    - Australia (Primary Health Networks)

Study Variables and Indicators

Key Analytical Domains

1. Population and Demand Indicators

- Population growth rates (Africa vs High-Income Countries (HICs) with mature PHC models)
- Urbanization trends
- Disease burden

2. Health System Capacity

- Health workforce density (per 1,000 population)
- Facility coverage and access (within 5 km)
- Patient load and waiting times

3. Pharmacy Utilization

- % of population using pharmacies as first point of care (40–60%)
- Types of conditions managed (minor ailments, chronic care, preventive services)

4. System Efficiency Indicators

- Facility congestion levels
- Consultation times
- Service delivery gaps

5. Policy and Integration Indicators

- Legal recognition of pharmacy roles
- Financing and reimbursement mechanisms
- Digital integration levels
- Quality assurance frameworks

Analytical Framework

The study is guided by a Health Systems Strengthening Framework, focusing on:

- Service delivery
- Health workforce
- Health financing
- Governance and leadership
- Health information systems

This secondary data methodology provides a cost-effective, comprehensive, and policy-relevant approach to analyzing the integration of pharmacy-based primary healthcare in LMICs. By synthesizing global evidence, national data, and comparative experiences, the study generates robust insights to inform policy design, system strengthening, and scalable implementation strategies. It offers a strong evidence base for positioning community pharmacies as formal, accountable, and high-impact first points of care, contributing to improved access, efficiency, and progress toward Universal Health Coverage.

The study further adopted a structured data synthesis approach that combines both qualitative and quantitative techniques to ensure a comprehensive and coherent interpretation of secondary data. For qualitative sources such as policy documents, regulatory frameworks, and published literature a thematic analysis approach will be employed. This will involve systematically coding the data, identifying recurring patterns, and organizing them into key themes such as service scope, regulatory gaps, integration mechanisms, and patient safety concerns. This approach enables the study to distill complex policy and conceptual insights into clear, analytically meaningful categories.

For quantitative data drawn from national health reports, workforce statistics, and utilization patterns descriptive statistics will be used. This will include the calculation of ratios, proportions, and trends (e.g., pharmacy-to-population ratios, physician density, and care-seeking patterns) to provide empirical grounding for the analysis. These statistics will be presented in tables or simple charts to enhance clarity and comparability.

The integration of these two methods will occur at the interpretation stage, where findings from the thematic analysis will be triangulated with quantitative results to generate well-rounded conclusions. This mixed synthesis approach ensures that policy insights are supported by empirical evidence, thereby strengthening the validity and practical relevance of the study.

Rationale for Integrating Pharmacy-Based PHC

Primary healthcare (PHC) delivery is constrained, particularly in rural areas and urban informal settlements where service availability is limited. Community pharmacies represent a widely distributed and frequently utilized component of the health system. These facilities are often the first point of contact for individuals seeking healthcare services. However, they remain

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insufficiently integrated into formal PHC systems, limiting their contribution to national health goals.

Access to Primary Healthcare (Distance)

The chart compares population access to health facilities and pharmacies (urban and rural) within a 5 km radius in LMIC settings.

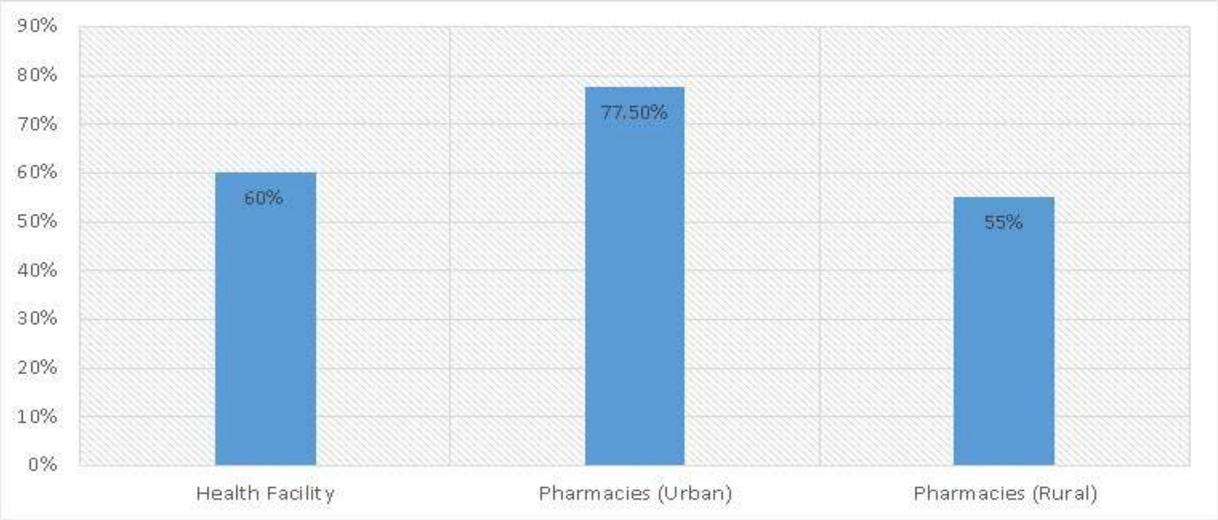

Figure 1: Access to Healthcare (Distance)

Interpretation

a) Higher Access to Pharmacies in Urban Areas (77.5%)

- Urban pharmacies have the highest accessibility among all service points.
- Nearly 4 out of 5 people in urban areas can reach a pharmacy within 5 km.

Implication:
Pharmacies are the most geographically accessible healthcare option in urban settings and can serve as effective first points of care.

b) Moderate Access to Health Facilities (60%)

- About 60% of the population lives within 5 km of a formal health facility.

Implication:
There is a significant access gap (40%), meaning many people may face barriers reaching traditional healthcare services.

c) Lower but Significant Rural Pharmacy Access (55%)

- Rural pharmacies serve about 55% of the population within 5 km.
- Although lower than urban access, it is comparable to health facility access.

Implication:
Pharmacies in rural areas are equally important as health facilities and can help bridge access gaps where infrastructure is limited.

1. **Pharmacies are strategically located within communities**
    - They provide a geographic advantage over traditional facilities

2. **They can significantly improve access to primary healthcare**
   - Especially for underserved and hard-to-reach populations
3. **Rural access gaps remain**
   - But pharmacies still offer comparable reach to health facilities

In dense urban informal settlements such as Kibera and Mathare, conventional distance-based access measures such as a 5 km radius can be misleading and may significantly underestimate actual barriers to care. Although 5 km may appear geographically short, factors such as traffic congestion, poor road infrastructure, high population density, and security concerns mean that the effective access is better understood in terms of "time-distance" rather than physical distance.

In this context, the 20-minute walk metric commonly applied in settings like the United Kingdom provides a more realistic and policy-relevant benchmark for urban access. It captures the lived experience of navigating dense, and often constrained, environments where mobility is shaped less by linear distance and more by time, safety, and ease of movement. Applying a time-based accessibility lens therefore offers a more accurate reflection of healthcare access in informal settlements. This correction reinforces the argument that pharmacy-based primary healthcare models are particularly valuable in such settings, as pharmacies are often embedded within communities and reachable within short walking times. Consequently, integrating pharmacies into PHC frameworks should prioritize proximity defined by time accessibility, ensuring services are within a practical and safe walking distance for the populations they serve.

The assertion that pharmacies possess a geographic advantage should be expanded to include their temporal accessibility, which is a critical but often underemphasized component of healthcare access. Beyond their physical proximity especially in densely populated settings pharmacies typically operate with extended and more flexible hours, often remaining open until 9:00 PM or 10:00 PM, and in some cases even later. In contrast, many public Level 2 and Level 3 health facilities in Kenya generally operate within standard working hours, closing around 5:00 PM, with limited after-hours services.

This difference in operating hours significantly enhances the practical accessibility of pharmacies, particularly for working populations, informal sector workers, and individuals who are unable to seek care during daytime hours. It also makes pharmacies a critical first point of contact for after-hours care, including evenings and weekends, when formal public health services are largely unavailable. When combined with their geographic proximity especially in high-density areas such as Kibera and Mathare this extended availability strengthens the case for integrating pharmacies into primary healthcare systems. It demonstrates that their advantage is not only spatial but also temporal, reinforcing their role as accessible, responsive, and continuous points of care. As such, incorporating operating hours into the rationale transforms pharmacies from merely convenient locations into essential access nodes within the broader PHC framework.

Conditions Managed at Pharmacies

This chart illustrates the distribution of health conditions and services managed at pharmacy level, highlighting the prominent role of pharmacies in delivering primary healthcare. It shows that the majority of interactions involve treatment of minor ailments, followed by chronic care support, preventive services, and other health services, underscoring pharmacies' position as key first points of care in the health system.

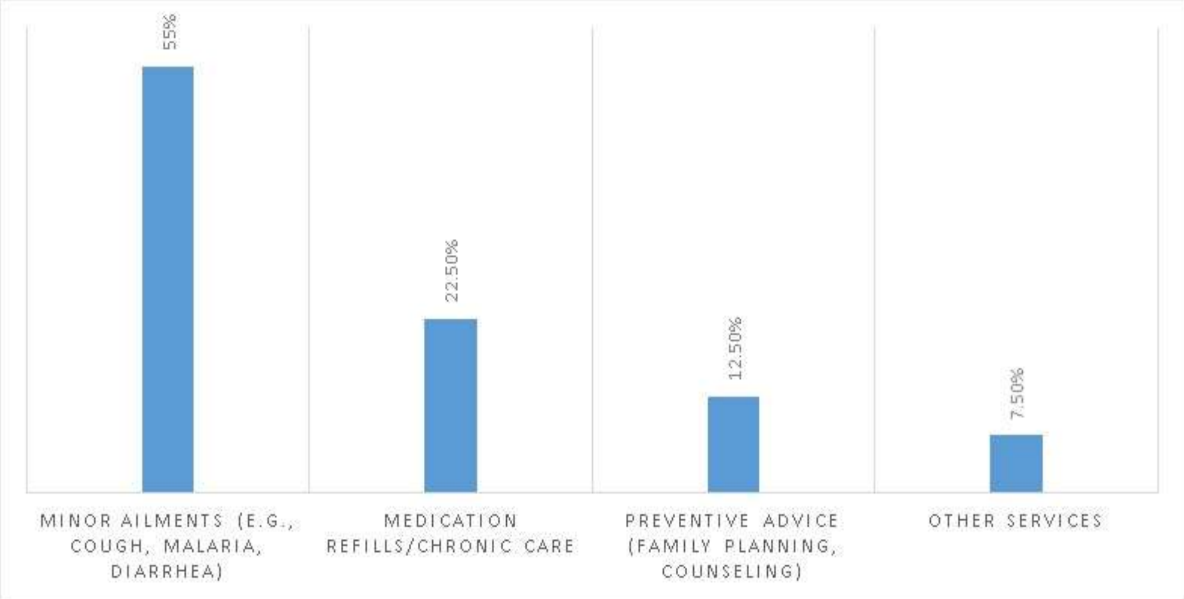

Figure 3: Conditions Managed at Pharmacies

The chart shows the distribution of services provided at pharmacy level, with minor ailments (55%)**,** medication refills/chronic care (22.5%)**,** preventive advice (12.5%), and other services (7.5%).

a) ***Dominance of Minor Ailments (55%)***

More than half of pharmacy interactions involve treatment of common conditions such as cough, malaria, and diarrhea.

Policy Implication:
Pharmacies are already functioning as primary care providers for basic health needs. Formalizing this role can safely shift a large proportion of patient load away from overcrowded health facilities.

b) ***Significant Role in Chronic Care (22.5%)***

Nearly a quarter of services involve medication refills and ongoing management of chronic conditions.

Policy Implication:
Pharmacies can support continuity of care for chronic diseases (e.g., hypertension, diabetes), improving adherence and reducing complications if properly integrated into PHC systems.

c) ***Emerging Preventive Health Role (12.5%)***

Pharmacies provide preventive services such as family planning and health counseling.

Policy Implication:
There is strong potential to expand pharmacies' role in preventive and promotive health services**,** which are critical for reducing long-term disease burden and achieving UHC.

d) ***Limited but Diverse Other Services (7.5%)***

A smaller proportion includes additional services beyond core categories.

Policy Implication:
With proper policy support, pharmacies can diversify into screening, diagnostics, and public health interventions**.**

Overall Policy Insight

Pharmacies are already delivering a substantial share of primary healthcare services—particularly for minor ailments and chronic care—yet this role remains largely informal and underutilized within health systems.

Rationale for Policy Action therefore includes:

Improved Access to Healthcare; Community pharmacies are widely distributed, easily accessible, and operate extended hours without requiring appointments. This makes them an immediate and convenient first point of contact, especially for populations in rural areas, informal settlements, and underserved regions where public facilities are limited or overstretched.

Enhanced Equity in Service Delivery; Pharmacies are embedded within communities and are often closer to populations that face barriers to accessing formal healthcare. Integrating pharmacies into PHC helps reduce geographic, financial, and time-related inequalities, ensuring more people can access essential health services regardless of location or socioeconomic status.

Reduced Burden on Public Health Facilities; Many primary care conditions managed in hospitals and clinics can be effectively handled at pharmacy level. Task-sharing with pharmacies helps decongest overcrowded health facilities, allowing doctors and higher-level providers to focus on more complex cases, thereby improving overall system efficiency.

Strengthened Continuity of Care; Pharmacists often have repeated interactions with patients over time. This enables ongoing medication counseling, adherence monitoring, and early detection of health issues, which improves management of chronic diseases and long-term patient outcomes.

Improved Health Outcomes; Pharmacy-based services support early intervention, screening, and timely referral.

When integrated into the health system with proper protocols, pharmacies can contribute to earlier diagnosis, better disease management, and reduced complications.

Cost-Effectiveness and Efficiency; Pharmacy-based care leverages existing infrastructure rather than requiring major new investments. This makes it a cost-effective strategy for governments to expand PHC coverage while optimizing the use of available human and physical resources.

Support for Universal Health Coverage (UHC); Pharmacies can be included in national health financing and insurance systems. Their integration helps expand service coverage, reduce out-of-pocket spending, and improve financial protection, all of which are key pillars of UHC.

Leveraging Public-Private Sector Synergies; Pharmacies represent a significant private sector component of healthcare delivery. Integrating them into PHC frameworks enables governments to harness private sector capacity through regulation, partnerships, and financing mechanisms.

Contribution to Health System Strengthening; Pharmacies can support data collection, surveillance, and coordination of care when properly integrated. With digital health systems

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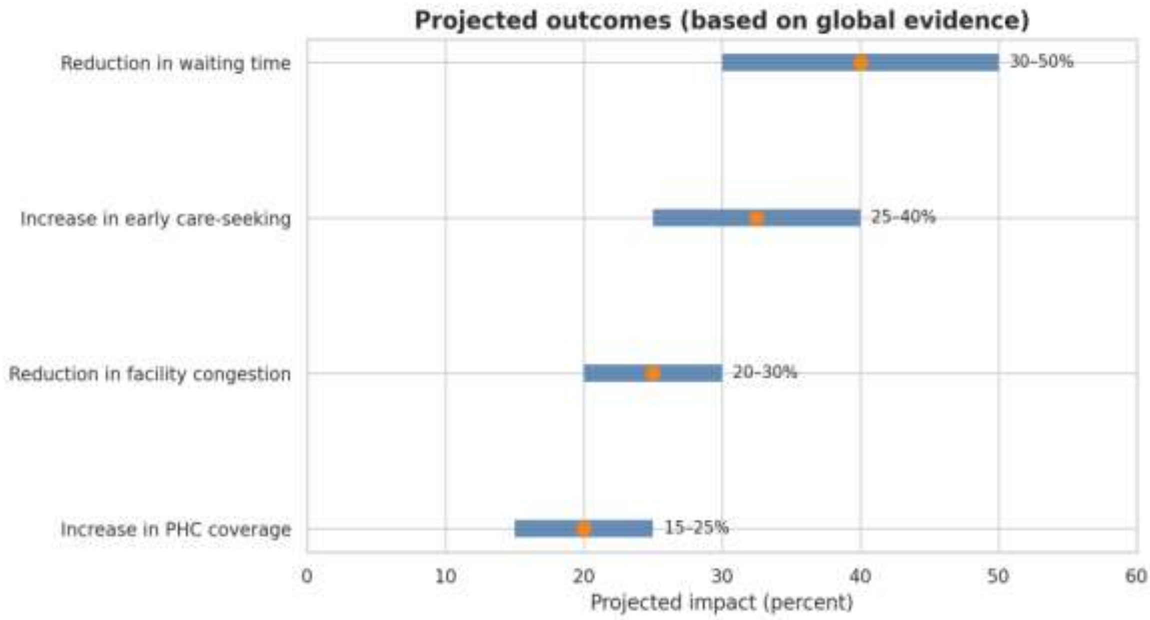
and reporting mechanisms, pharmacies can contribute to monitoring disease trends and improving decision-making within the health system.

Scalability and Sustainability; Pharmacy networks already exist and are widely distributed across LMICs.

This makes the model scalable with minimal additional infrastructure, ensuring long-term sustainability if supported by appropriate policy, regulation, and financing.

POTENTIAL IMPACT OF INTEGRATION

The chart presents projected system-level impacts of integrating pharmacies as first points of care, based on global evidence from integrated countries.



Overall, it shows significant efficiency gains, improved access, and better patient behavior outcomes.

a) Reduction in Waiting Time (30–50%)

This is the **highest projected impact**.

Interpretation:

- Integrating pharmacies can substantially **decongest public health facilities**
- Patients with minor conditions are redirected away from hospitals and clinics
- Leads to **faster service delivery** and improved patient experience

Policy Meaning:
Pharmacies can act as a **pressure-release valve** for overstretched health systems

b) Increase in Early Care-Seeking (25–40%)

This reflects improved patient behavior.

Interpretation:

- Easier access to pharmacies encourages people to **seek care earlier**

- Reduces delays in treatment and prevents complications
- Particularly important for **low-income and underserved populations**

Policy Meaning:
Pharmacies improve **timeliness of care**, which is critical for better health outcomes

c) ***Reduction in Facility Congestion (20–30%)***

Shows system efficiency gains.

Interpretation:

- A significant proportion of patients can be managed at pharmacy level
- Hospitals and clinics become less crowded
- Healthcare workers can focus on **more complex cases**

Policy Meaning:
Integration leads to **better allocation of limited health system resources**.

d) ***Increase in PHC Coverage (15–25%)***

Represents expanded service reach.

Interpretation:

- More people gain access to primary healthcare services through pharmacies
- Especially impactful in **rural and underserved areas**
- Helps close gaps in healthcare access

Policy Meaning:
Pharmacies are a **scalable solution for expanding universal health coverage (UHC)**.

Key Comparative Statistics: Integrated Pharmacy-Based PHC vs LMICs (Kenya Included)

1. Service Utilization and First Point of Care

Integrated Countries

- In the National Health Service (UK)**:**
  - ~90–95% of the population lives within a 20-minute walk of a pharmacy
  - *Pharmacy First*: 250,000–300,000 consultations/month
- Canada (Alberta and others):
  - 50–65% of minor ailments managed at pharmacy level
- Australia:
  - Pharmacies handle 30–50% of primary care interactions for minor conditions

LMICs (Kenya & Africa)

- Pharmacies as first contact:
  - 40–60% (urban LMICs)
  - 30–50% (Kenya informal settlements)

Policy Insight:
Demand already exists in LMICs at levels comparable to integrated systems—but remains unstructured and unsupported.

2. Scope of Services and Clinical Roles

Integrated Countries

- UK (*Pharmacy First*):
    - Treatment for 7–10 conditions (e.g., sore throat, UTI, sinusitis)
- Canada:
    - Pharmacists prescribe for 15–25 minor ailments
- Australia:
    - 60–70% of pharmacies provide vaccinations
    - Chronic disease support widely implemented

LMICs

- Informal service delivery:
    - Minor ailments: 50–60% of pharmacy workload
    - Chronic medication refills: 20–25%
- Legal scope:
    - Primarily limited to dispensing

Policy Insight:
There is a mismatch between practice and policy in LMICs—pharmacies already provide PHC informally.

3. Impact on Health System Efficiency

Integrated Countries

- UK:
    - Reduces ~10 million GP visits annually
- Canada:
    - Reduces clinic visits by 20–30%
- Australia:
    - Reduces hospital admissions by 10–20%

LMICs (Kenya)

- Public facilities:
    - 150–300 patients/day
    - Consultation time: 3–7 minutes
    - Waiting time: 1–4 hours

Policy Insight:
LMICs face severe congestion that could be reduced by 20–30% through pharmacy integration**.**

4. Financing and Reimbursement

Integrated Countries

- UK:
  - Pharmacy consultation: £10–£15 (KES ~1,800–2,700)
- Canada:
  - CAD 15–25 (KES ~1,500–2,500) per consultation
- Europe (Scotland/Wales):
  - Fully reimbursed pharmacy services under MAS

LMICs (Kenya)

- Pharmacy consultation:
  - KES 200–500 ($1.5–4)
- Public reimbursement:
  - 0% coverage

Policy Insight:
Absence of financing frameworks limits quality, scale, and accountability.

5. Access and Geographic Coverage

Integrated Countries

- UK:
  - ~95% population within easy pharmacy access
- Canada:
  - 75–85% access coverage

LMICs (Kenya)

- Pharmacy access:
  - Urban: 70–85%
  - Rural: 50–60%
- Health facility access:
  - 55–65% within 5 km

Policy Insight:
Pharmacies often provide better geographic access than formal facilities.

6. Quality Assurance and Standardization

Integrated Countries

- 100% services guided by national protocols
- Regular inspections every 1–4 years

LMICs

- Kenya:
    - Estimated 60–70% compliance with standards
- Weak enforcement and variability in care

Policy Insight:
Quality gaps require strong regulatory frameworks and accreditation systems.

7. Digital Health Integration

Integrated Countries

- UK:
    - ~95% pharmacies use e-prescriptions
- Canada:
    - 80–90% connected to digital health systems

LMICs (Kenya)

- Pharmacy digital integration:
    - <30% connected to national systems

Policy Insight:
Digital integration is a major enabler of coordinated care, currently lacking in LMICs.

8. Referral Systems and Care Coordination

Integrated Countries

- Structured referral systems:
    - 80–90% appropriate management/referral rates
- Integrated into PHC networks

LMICs

- Kenya:
    - Managed at pharmacy: 60–70%
    - Referred: 20–30%
    - No follow-up: 10–15%

Policy Insight:
Referral exists but is informal and poorly documented.

Global Experiences and Lessons for LMICs

Practical examples of countries globally including some high-income and a few emerging examples from Africa that have *integrated pharmacy-based primary health care models* and **lessons** that Low-and Middle-Income Countries (LMICs) such as Kenya can learn from them:

a) **United Kingdom (UK)**

Model Features

- The **National Health Service (NHS)** supports *Minor Ailments Schemes (MAS)* and *Pharmacy First* initiatives where community pharmacists provide consultations and treatment for common conditions (e.g., coughs, uncomplicated urinary symptoms) without a GP appointment.

Lessons for LMICs

- **Formal recognition & funding:** Government commissioning and reimbursement encourages pharmacies to deliver clinical services, not just dispense medicines.
- **Public awareness campaigns:** Patients are educated to seek care at pharmacies first for minor health needs, reducing congestion at clinics and hospitals.
- **Defined service protocols:** Clear clinical guidelines and referral pathways improve safety and standardization.

b) **Canada**

Model Features

- Provinces such as **Alberta** allow pharmacists to prescribe for *minor ailments* and manage a defined list of conditions independently, with expanded scopes in some jurisdictions.

Lessons for LMICs

- **Legislative empowerment:** Legal frameworks that permit pharmacist prescribing increase access to care and relieve pressure on primary clinics.
- **Training and scope definitions:** Structured clinical training and defined condition lists help maintain quality and safety.
- **Incremental expansion:** Start with a limited scope and expand as capacity and confidence grow.

c) **Australia**

Model Features

- Australia has advanced policies to embed community pharmacy into broader primary care networks (e.g., **Primary Health Networks**), with pharmacists participating in immunization, chronic disease support, and patient education.

Lessons for LMICs

- **Collaborative governance:** Inclusion of pharmacists in planning and governance structures ensures alignment with broader health system goals.
- **Integrated teams:** Embedding pharmacy services within multidisciplinary primary care enhances continuity of care.
- **Policy vision documents:** National strategic plans that articulate pharmacy roles provide clarity for implementation.

d) **European Examples (e.g., Scotland, Wales)**

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Model Features

- In parts of the **UK such as Scotland and Wales**, MAS are widely implemented with pharmacies reimbursed for consultations and medicines, easing the load on general practice.

Lessons for LMICs

- **Commissioned services:** Government or health system funding for pharmacy clinical services promotes sustainability.
- **Regional adaptation:** Programs tailored to local needs and capacity can be scaled across regions.

e) Emerging African and LMIC Experiences

While **formal, nationally legislated pharmacy integration models** are less established in most African countries, research shows **growing roles for pharmacy professionals in PHC activities**, such as health education, chronic disease support, and public health interventions.

Examples

- **Ethiopia, Ghana, Nigeria, Tanzania, Uganda, South Africa:** Studies report pharmacists delivering public health interventions (e.g., NCD support, infectious disease counseling, reproductive health advice) in community settings.

Lessons for LMICs

- **Incremental integration:** Start with services such as health education, screening, and referral systems before advancing to prescribing roles.
- **Policy advocacy:** Evidence from practice can inform policymakers to create supportive legal frameworks.
- **Capacity building:** Focus on clinical training and standard operating procedures to ensure quality.

Key Insight

Global experiences especially from the UK, Canada, and Australia demonstrate that policy-led integration of community pharmacies into primary health care expands access, improves efficiency, and strengthens health systems. For LMICs like Kenya, adapted, phased integration supported by legal frameworks, training, financing mechanisms, and public awareness offers a practical pathway to leverage existing pharmacy networks to advance Universal Health Coverage.

The discussion of the "Pharmacy First" model in the United Kingdom however, should be carefully contextualized to avoid unrealistic policy transfer. While the UK model is supported by a substantial public investment—approximately £645 million—this level of funding is not directly replicable in a resource-constrained setting like Kenya. Framing the lesson purely in terms of large-scale government commissioning and reimbursement risks overlooking the structural and fiscal differences between high-income and low- and middle-income countries.

The more appropriate and transferable lesson for Kenya lies in task-shifting rather than funding scale. The UK experience demonstrates how clearly defined scopes of practice, supported by protocols and regulation, allow pharmacists to safely manage minor ailments, provide preventive services, and reduce the burden on higher-level facilities. For Kenya, the emphasis should therefore be on optimizing existing human resources by formally recognizing and regulating the roles that pharmacies already play, rather than attempting to replicate high-cost financing models.

In this context, task-shifting involves delegating specific, low-complexity clinical functions—such as minor ailment management, NCD screening, and medication adherence support—to pharmacy personnel within a structured and supervised framework. This approach is more feasible, cost-effective, and aligned with existing health system realities. It also directly addresses current inefficiencies, including the regulatory vacuum and fragmented care pathways, by embedding pharmacies within the formal PHC system.

Thus, the key lesson from the UK is not the scale of investment, but the strategic reallocation of responsibilities through regulated task-shifting, supported by clear guidelines, training, and accountability mechanisms. This reframing positions pharmacy integration as a pragmatic and scalable reform, rather than a resource-intensive aspiration.

The South Africa example is particularly relevant because it represents one of the most advanced African models of structured pharmacy-led primary care through the Pharmacist Initiated Management of Therapy (PIMART/PCDT-aligned practice frameworks). This model allows trained pharmacists to independently initiate, manage, and monitor therapy for selected conditions under clearly defined clinical protocols and regulatory oversight. It is therefore the closest regional analogue to the proposed pharmacy-based primary healthcare model for Kenya.

Unlike purely dispensing-focused pharmacy practice, the South African approach formally integrates pharmacists into the clinical management pathway, particularly for minor ailments and selected chronic conditions. Through structured training, standardized treatment guidelines, and collaborative practice agreements, pharmacists are empowered to assess patients, initiate appropriate treatment, and refer cases that exceed their scope of practice. This strengthens continuity of care while reducing unnecessary congestion at higher-level facilities.

Importantly, the PIMART/PCDT framework demonstrates how task-shifting can be operationalized within an African regulatory environment without requiring the high levels of financial investment seen in high-income countries. It provides a practical demonstration that expanded pharmacy roles can be safely implemented when supported by clear protocols, competency-based training, and defined referral systems.

For Kenya, the key lesson is not replication of the South African model in its exact form, but rather the adoption of its underlying principles: regulated pharmacist-initiated therapy, structured clinical governance, and formal integration into primary healthcare pathways. This positions pharmacies not merely as dispensers of medicines, but as active, accountable participants in frontline healthcare delivery within a task-shifted PHC system.

PRACTICAL AND ACTIONABLE RECOMMENDATIONS

To effectively integrate community pharmacies into primary health care (PHC) systems, LMICs must adopt coordinated, multi-sectoral policy actions that address regulation, financing, service delivery, and system integration. The following recommendations provide a practical roadmap for policymakers, with relevance to contexts such as Kenya.

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1. Policy & Regulatory Reform

a. Recognize Pharmacists as PHC Providers

- Advocate for policy changes that formally designate community pharmacists as part of the PHC workforce, enabling them to provide clinical services beyond dispensing.
- Update pharmacy practice regulations to include screening, counselling, referral, and preventive care within pharmacists' scope.

b. Create Supportive Legal Frameworks

- Develop clear guidelines and standards for pharmacy-based PHC services (e.g., point-of-care testing, chronic disease screening, family planning).
- Enable reimbursement mechanisms (public and private insurance) for pharmacist-delivered services to ensure sustainability.

2. Workforce Capacity Strengthening

a. Continuous Professional Development (CPD)

- Implement regular training programs on clinical skills (e.g., NCD management, reproductive health, antimicrobial stewardship).
- Partner with pharmacy schools and professional associations to offer certification in PHC competencies.

b. Practical Tools & Decision Support

- Provide pharmacists with clinical decision support tools and standardized care protocols adapted to LMIC settings.
- Use digital tools (apps, reference guides) to assist in counselling, referrals, and documentation.

3. Service Delivery Integration

a. Expand Clinical Services

- Pilot and scale routine screening for hypertension, diabetes, and mental health in pharmacies.
- Offer point-of-care testing and medication therapy management to improve early detection and chronic disease control.

b. Family Planning & Self-Care Services

- Strengthen pharmacy provision of contraceptives and reproductive health counselling to increase access, especially for youth and women.
- Ensure pharmacies are stocked with quality products and trained staff to build community trust in services.

4. Collaboration with the Health System

a. Referral & Linkage Pathways

- Establish formal referral protocols between pharmacies and public/private health facilities for cases beyond pharmacists' scope.
- Use referral feedback loops so pharmacists receive outcomes and improve continuity of care.

b. Multi-Stakeholder Engagement

- Engage Ministry of Health, county health teams, professional associations (e.g., Kenya Pharmaceutical Association), and community leaders to co-design integration models.
- Promote interprofessional collaboration between pharmacists, clinicians, and community health workers.

5. Financing & Incentive Structures

a. Sustainable Funding Models

- Pilot public-private partnerships to co-finance pharmacy PHC services and infrastructure upgrades.
- Integrate pharmacist services into national health insurance benefit packages to enable reimbursement.

b. Performance-Linked Incentives

- Offer incentives for pharmacies that demonstrate improved health outcomes (e.g., increased screening uptake, referral completion).

6. Community Engagement & Demand Creation

a. Public Awareness Campaigns

- Run campaigns to reposition pharmacies as trusted primary care points, reducing the perception that they are merely retail outlets.

b. Patient Education

- Use pharmacies as education hubs for preventive care messages (e.g., healthy lifestyles, medication adherence, infection prevention).

7. Monitoring, Evaluation & Quality Assurance

a. Data Reporting & Use

- Integrate pharmacy service data into national health information systems for **real-time monitoring** of PHC indicators.
- Track service quality, patient satisfaction, and health outcomes to refine integration strategies.

b. Quality Standards & Accreditation

- Develop **accreditation frameworks** for pharmacies offering expanded PHC services to ensure consistent quality.

8. **Formalization of pharmacies as "spokes" within a hub-and-spoke primary healthcare distribution model**, where public Level 4 hospitals and higher-tier facilities serve as central "hubs" responsible for clinical oversight, while accredited community pharmacies function as decentralized "spokes" for last-mile delivery of chronic medications.

Under this model, stable patients receiving long-term therapies such as antiretroviral therapy (ARVs), insulin, antihypertensives, and other essential chronic disease medications would continue clinical review and prescription authorization at hub facilities, but would collect routine refills from designated community pharmacies closer to their homes. This arrangement reduces congestion at higher-level facilities, minimizes patient travel time and cost, and improves continuity of care through more accessible points of medication dispensing.

Pharmacies in this framework would also play a key role in adherence monitoring, side-effect reporting, and pharmacovigilance, while maintaining structured communication with supervising clinicians at hub hospitals through referral protocols and shared documentation systems. This ensures clinical oversight is preserved while decentralizing service delivery.

Importantly, this hub-and-spoke approach strengthens equity in access, particularly for patients in underserved urban informal settlements and peri-urban areas, where distance, transport costs, and time constraints often compromise treatment adherence. It also aligns with broader primary healthcare goals by integrating pharmacies into formal care pathways rather than treating them as parallel, unregulated points of service. Overall, positioning pharmacies as last-mile “spokes” transforms them from passive dispensing points into active components of a coordinated chronic care delivery network, improving efficiency, adherence, and system-wide patient outcomes.

A central recommendation of the proposed pharmacy-based primary healthcare model is regulatory reform anchored in the amendment of the Pharmacy and Poisons Act (Cap 244)**.** This legal adjustment is critical because, under the current statutory framework, the Ministry of Health (MoH) lacks sufficient authority to formally designate expanded clinical roles for pharmacy personnel beyond traditional dispensing functions. As a result, any attempt to institutionalize pharmacy-led primary care without legislative revision would remain informal, fragmented, and legally constrained.

Amending Cap 244 would provide the necessary legal foundation to clearly define and expand the scope of practice for pharmacists and pharmaceutical technologists, enabling them to participate in structured primary healthcare delivery. This would include legally recognizing functions such as minor ailment management, NCD screening, medication therapy management, and participation in structured referral systems. Importantly, it would also allow the establishment of enforceable standards, clinical protocols, and accountability mechanisms to govern pharmacy-based care.

Without this legal reform, the current regulatory vacuum persists, limiting the effectiveness of any integration efforts and exposing the system to risks such as irrational prescribing and antimicrobial resistance. Therefore, amendment of the Act is not merely administrative but foundational: it transforms pharmacy-based PHC from a policy aspiration into a legally sanctioned component of Kenya’s health system, enabling structured task-shifting, improved patient safety, and more efficient use of healthcare resources.

Conclusion

Integrating a pharmacy-based primary health care (PHC) model in Kenya and other LMICs presents a practical and scalable approach to expanding access to essential health services, particularly in underserved communities. By leveraging the widespread presence, accessibility, and trust of community pharmacies, health systems can improve early detection, prevention, and management of common conditions while reducing pressure on public facilities. Successful integration, however, depends on enabling policy and regulatory reforms, strengthened workforce capacity, structured referral systems, sustainable financing mechanisms, and robust quality assurance frameworks. When effectively implemented, pharmacy-based PHC can play a complementary and transformative role in advancing Universal Health Coverage and improving overall population health outcomes.

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