POLICY BRIEF · AUGUST 2026

Six opportunities to improve e-pharmacy care in low- and middle-income countries

The global e-pharmacy market is projected to grow rapidly over the coming decade, with estimates suggesting it could exceed USD 250 billion by 2030. Growth in e-pharmacy in low- and middle-income countries (LMICs) has also accelerated in recent years.

E-pharmacies offer important opportunities to improve access to medicines and continuity of care. However, in many LMICs, market expansion has outpaced regulatory development, raising concerns about inappropriate dispensing of prescription-only medicines, variability in quality of care, and risks to patient safety.

This policy brief draws on new empirical research from India and Kenya on the practices and performance of e-pharmacies. It sets out six opportunities to improve e-pharmacy care in LMICs alongside corresponding policy actions. These opportunities are relevant not only for e-pharmacy regulation but also for wider efforts to strengthen pharmaceutical governance, medicine quality, and care within health systems.

Some policy actions are 'quick wins' that can be pursued within existing legal and regulatory frameworks, while others are longer-term 'build-for-tomorrow' reforms requiring further stakeholder engagement, systems strengthening and investment.

THE SIX OPPORTUNITIES

01 **Strengthen prescription verification and enforcement**
Reduces inappropriate access to prescription-only medicines

02 **Improve the quality and safety of e-pharmacy care**
Addresses gaps in pre-dispensing safety checks, counselling and medicine information

03 **Use risk-based regulatory oversight to raise standards and eliminate rogue e-pharmacies**
Helps regulators to focus limited resources where risks are greatest

04 **Use standardised patient methods for research and regulatory surveillance**
Provides a robust methodology for assessing regulatory compliance and pharmaceutical care

05 **Safeguard the quality of medicines supplied**
Helps ensure medicines are authentic, safe and properly handled through supply and delivery chains

06 **Leverage e-pharmacy to improve access to medicines**
Ensures the benefits of e-pharmacy including wider choice, information, and delivery options are equitably shared

Research approach

This brief draws on research conducted between 2023 and 2025 through a collaboration between The George Institute for Global Health in India, Strathmore University Business School in Kenya, and the London School of Hygiene & Tropical Medicine in the UK. The research explored e-pharmacy markets in India and Kenya using multiple methods to assess both regulatory compliance and the quality of pharmaceutical care delivered.

The research included structured reviews of all e-pharmacy websites serving the public in India (n=61) and Kenya (n=28), assessing their features against national or proposed regulatory requirements and international best practice standards.

It also included standardised patient methods, in which trained researchers conducted 364 mystery-shopper visits across all identified e-pharmacies serving consumers in Kenya and 671 visits in India, attempting to purchase medicines under predefined scenarios. These exercises tracked the full patient journey – from initial contact and ordering through to dispensing and receipt of medicines – to assess real-world practices. In Kenya, medicines obtained through standardised patients were also assessed through visual inspection and laboratory testing to identify potential substandard or falsified products.

The wider research also examined e-pharmacy business models and characteristics, reviewed regulatory frameworks in both countries, and used interviews and stakeholder consultations to explore feasible policy and regulatory responses.

The findings from this research inform the opportunities set out in this brief. For more detail on the evidence underpinning these opportunities, see the companion country briefs from India and Kenya and the accompanying evidence brief.

Kenya country brief

E-pharmacy in Kenya: Regulation, practice and performance. New empirical evidence and policy options

India country brief

E-pharmacy in India: Regulation, practice and performance. New empirical evidence and policy options

Evidence brief

The quality of e-pharmacy care in India and Kenya: What can standardised patient methods tell us about e-pharmacy practice?

01

Strengthen prescription verification and enforcement

E-pharmacies create an opportunity to shift prescription control from discretionary checks to a more consistent and verifiable digital process. Unlike physical pharmacies, online platforms can be designed to automatically prevent transactions involving prescription-only medicines proceeding unless a prescription is uploaded and validated.

WHY THIS MATTERS

The illegal sale of prescription-only medicines without a valid prescription is one of the most significant public health risks associated with the e-pharmacy sector, contributing directly to antimicrobial resistance and the potential for drug misuse. Stronger prescription verification can also support regulators by generating auditable records of compliance.

WHAT THE RESEARCH FOUND

The research assessed the availability of prescription upload facilities through website and app reviews. This was followed by standardised patient surveys (mystery shopping), in which trained researchers attempted to purchase medicines under different prescription scenarios to assess how requests were handled.

Upload facility for prescriptions available on:

58% of websites in Kenya*

90% of websites in India

*Upload via WhatsApp or other social media platforms was common

Prescription-only medicines were dispensed without a prescription in:

of cases in Kenya

of cases in India

Uploaded prescriptions were often not scrutinised. Medicines were dispensed despite inappropriate requests* in:

82% of e-pharmacies in Kenya

64% of e-pharmacies in India

*For example, prescribing error or contraindication

These challenges are not unique to e-pharmacies. Compared with standardised patient visits to brick-and-mortar pharmacies, e-pharmacies were less likely to supply medicines without a prescription than their brick-and-mortar counterparts.

POLICY OPTIONS

Quick wins

- Require prescription upload before completing purchase of prescription-only medicines.
- Establish clearly defined prescription validity criteria and verification protocols.
- Place greatest emphasis on enforcing prescription requirements for medicines at high risk of misuse.

Build for tomorrow

- Develop an e-prescribing system in which prescriptions are issued, transmitted and verified electronically.
- Clearly label prescriptions as single use or repeat, and introduce unique prescription identifiers (e.g. QR codes)
- Require records of dispensed medicine quantities to match prescribed quantities.

02

Improve the quality and safety of e-pharmacy care

E-pharmacies create opportunities to strengthen pharmacy care by improving pre-dispensing screening, patient counselling and provision of medicine information. Digital ordering pathways may make it easier to standardise some of these checks by requiring key information before an order can proceed and by providing tailored prompts, alerts and medicine information at the point of purchase.

WHY THIS MATTERS

Pre-dispensing safety checks, counselling and provision of medicine information are core functions of pharmacy care. When these are inadequate or absent, clinical risks may go undetected, and patients may not receive the information they need to use medicines safely.

WHAT THE RESEARCH FOUND

The research used standardised patients to examine whether e-pharmacies carried out basic pre-dispensing safety checks, including screening for allergies, pregnancy, contraindications and other medicines, as well as whether patients received dosing guidance and other medicine information.

Pre-dispensing safety checks were extremely limited

In India, allergies were checked in only **13%** of orders, while screening for other medicines or contraindications occurred in fewer than **1%** of orders. No Kenyan e-pharmacies conducted any of these pre-dispensing safety checks.

Written dosing instructions were frequently absent

- **4%** of orders in India included patient-specific dosing guidance compared with **44%** in Kenya.
- **5%** of orders included a patient information leaflet in India, compared with **76%** in Kenya.

Similar gaps were observed in brick-and-mortar pharmacies where pre-dispensing safety checks were also very limited or absent.

POLICY OPTIONS

Quick wins

- Mandate pre-dispensing screening, for example, for allergies, interactions and contraindications, through required patient input fields before an order can proceed.
- Require provision of patient information leaflets, including dosing and safety advice, in appropriate local languages, including digitally at the point of ordering and supply.

Build for tomorrow

- Mandate pharmacist counselling and clear routes for patients to contact a pharmacist during ordering and supply.

03

Use risk-based regulatory oversight to raise standards and eliminate rogue providers

In many LMICs, regulatory capacity is limited and provider performance is uneven. There is an opportunity for regulators to use risk-based oversight: focusing inspection where risks are greatest, removing rogue or persistently non-compliant providers from the market, strengthening oversight among partly compliant providers, and working with better-performing e-pharmacies to pilot improvements.

WHY THIS MATTERS

Regulatory capacity is limited in many LMICs, and the growth of e-pharmacy has been accompanied by concerns about poorly regulated providers. Rogue e-pharmacies can be especially difficult to oversee, particularly when they operate across borders. A risk-based approach can help regulators use limited resources more effectively, while supporting improvement across the market.

WHAT THE RESEARCH FOUND

Website and app reviews revealed considerable variation in compliance with national regulatory requirements in Kenya, draft regulations in India, and relevant international best practices.

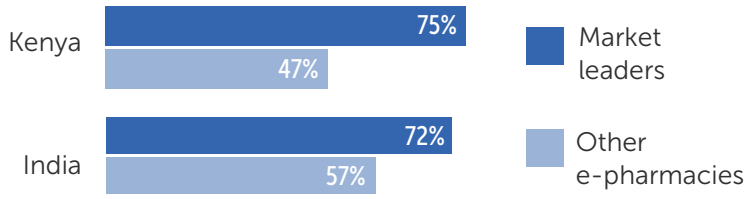
Foreign-based e-pharmacies performed worse

E-pharmacies located outside the study countries were more likely to infringe regulatory or best-practice requirements.

Market leaders generally performed better

Higher-traffic e-pharmacies were more likely to manage standardised patient visits correctly in both Kenya and India.

% of standardised patient visits correctly managed:



In-depth interviews revealed that e-pharmacies operate within a wider ecosystem of interconnected businesses, including search engines, internet service providers, clinical and laboratory service providers, payment platforms, courier firms and, to a lesser extent, health insurers. These actors provide other potential entry points for effective regulation.

POLICY OPTIONS

Quick wins

- Publish a publicly accessible register of licensed e-pharmacies.
- Enforce existing requirements for e-pharmacies to display registration details (e.g. registration number or licence).
- Prioritise inspections, audits, and enforcement actions for lower-traffic platforms.
- Work with more compliant providers to pilot improvements and refine regulatory standards.

Build for tomorrow

- Introduce national and, where relevant, sub-national registration systems where these do not already exist.
- Establish a distinctive e-pharmacy web domain reserved for licensed operators only (e.g. a dedicated '.pharmacy' domain), linked to the regulator's register.
- Work with other actors in the ecosystem, particularly search engines and internet service providers, to block or deprioritise rogue providers.

04

Use standardised patient methods for research and regulatory surveillance

Standardised patient methods provide rigorous evidence on how e-pharmacies operate under routine conditions. Trained staff pose as consumers and follow predefined scenarios, allowing the patient journey to be assessed and performance compared across providers, countries and delivery models. The approach can support both research and routine regulatory monitoring.

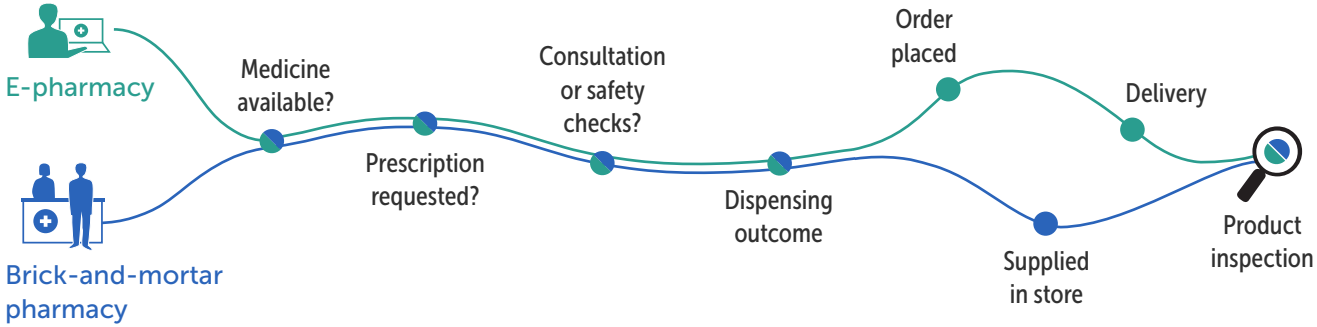
WHY THIS MATTERS

Traditional inspections and website reviews can show what providers say they do, but not always what happens in practice. Because providers believe standardised patients are genuine consumers, the method enables a more accurate assessment of routine care.

WHAT THE RESEARCH FOUND

The standardised patient method proved feasible to apply at scale in both online and brick-and-mortar settings, enabling structured assessment of the full patient journey. It can provide regulators with practical evidence on service quality that is not available from website review or documentary checks alone.

Aspects of patient journey assessed using standardised patients:



KEY CONSIDERATIONS

Scenarios should be carefully designed to cover relevant regulatory, pharmacy care and public health concerns. Detailed scripts and measures to minimise detection are required. Research use also requires ethical approval and may require a waiver of provider consent.

POLICY OPTIONS

Quick wins

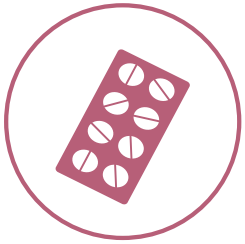
- Integrate standardised patient methodology into regulatory inspection programmes and internal audit systems of e-pharmacies.
- Use findings to inform targeted inspections, provider feedback, and enforcement actions.

Build for tomorrow

- Use standardised patient methods to assess equitable access to good quality pharmacy care, evaluate regulatory reforms and examine emerging models integrating telemedicine and e-pharmacy services.

05

Safeguard the quality of medicines supplied



Substandard and falsified medicines are a major concern in LMICs, but evidence on the quality of medicines supplied through e-pharmacies remains limited. Although medicine quality risks are not unique to online supply, e-pharmacy models introduce additional considerations during home delivery, particularly when third-party couriers are used. Safeguarding medicine quality must therefore extend beyond dispensing to include the storage, handling and transport of medicines. Digital platforms may also offer opportunities to strengthen traceability across the supply chain.

WHY THIS MATTERS

Patients need medicines that are safe, effective and properly handled. Substandard and falsified medicines can lead to treatment failure, prolonged illness, avoidable morbidity and mortality and, where antimicrobials are involved, contribute to antimicrobial resistance.

WHAT THE RESEARCH FOUND

In Kenya, 130 medicine samples purchased by standardised patients underwent visual inspection, and 128 were analysed at Kenya's National Quality Control Laboratory. Samples included amoxicillin + clavulanic acid, tramadol, nifedipine, insulin, mifepristone + misoprostol, diclofenac, erythromycin and fluconazole.

Most medicines tested met quality standards

Some isolated problems were identified

- Based on visual inspection, 3 of 39 Augmentin (amoxicillin + clavulanic acid) samples appeared to be falsified.
- Four of 16 erythromycin samples marginally failed potency tests

Medicine quality problems are not unique to e-pharmacies. Existing evidence has documented similar or greater quality problems in Kenya's physical retail pharmacy sector, while a systematic review of medicine quality surveys across African countries reported a substantially higher average prevalence of unregistered medicines than was observed among e-pharmacies in Kenya.[1]

POLICY OPTIONS

Quick wins

- Ensure e-pharmacies are integrated into existing national pharmacovigilance and medicine quality surveillance systems.
- Establish guidelines for delivery of medicines to patients, covering handling protocols, training for delivery personnel, and cold chain requirements for medicine transport.

Build for tomorrow

- Strengthen digital records and audit trails for medicines supplied by e-pharmacies.
- Introduce or explore QR- or barcode-based medicine authentication and tracking systems across the supply chain.

1. Biset Asrade Mekonnen, Muluabay Getie Yizengaw & Minichil Chanie Worku (2024) Prevalence of substandard, falsified, unlicensed and unregistered medicine and its associated factors in Africa: a systematic review, Journal of Pharmaceutical Policy and Practice,17:1, 2375267.

06

Leverage e-pharmacy to improve access to medicines

E-pharmacies have the potential to improve access to quality medicines, particularly in settings where physical access to pharmacies is limited. They enable users to browse a wide range of medicines, compare prices, access information, and receive medicines with reduced travel costs. Digitised supply chains may also strengthen the availability and traceability of medicines.

WHY THIS MATTERS

Around 2 billion people worldwide lack access to essential medicines. In many LMICs, access is constrained by fragmented healthcare systems, poor distribution networks, inadequate regulatory systems, and high medicine costs. In many countries, medicines are a major cause of out-of-pocket health spending and impoverishment.

However, e-pharmacy development has largely been driven by the private sector. While this may spur innovation, it also raises important considerations around equity and inclusion. Without measures to address digital exclusion, there is a risk that e-pharmacy could widen existing inequalities by disproportionately serving wealthier, urban and digitally connected populations. Efforts to improve access to medicines through e-pharmacy should therefore be accompanied by complementary measures to ensure equitable access and uptake.

WHAT THE RESEARCH FOUND

Interviewees described e-pharmacy users as more likely to be urban, younger or middle-aged, and relatively affluent. E-pharmacy services also varied in their geographic reach, with some providers offering nationwide services and others operating only in selected locations.

E-pharmacies did not consistently offer lower medicine prices. Standardised patient comparisons found little evidence that medicines were consistently cheaper through e-pharmacy channels than through brick-and-mortar pharmacies.

POLICY OPTIONS

Build for tomorrow

- Continue efforts to reduce the digital divide, including by improving digital literacy and equitable access to the internet.
- Partner with e-pharmacy providers or integrate e-pharmacy services into social health insurance schemes.
- Partner with e-pharmacies to enhance or subsidise access to, or delivery of, priority public health interventions.

About this brief

This research was conducted as part of a collaborative research project between the Strathmore University Business School Prism Centre (Kenya), the George Institute for Global Health (India), and the London School of Hygiene & Tropical Medicine (UK). It was supported by an HSRI grant funded by the UK FCDO, the UK MRC and the Wellcome Trust.

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www.lshtm.ac.uk/research/centres-projects-groups/regulating-e-pharmacy

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