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AccessABX Implementation and Impact Plan

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What Specific Problem Are You Solving?

Antimicrobial Resistance (AMR) is rapidly escalating in India, fueled by the widespread misuse of antibiotics in both human and animal health, compounded by poor surveillance and the circulation of Substandard and Falsified (SF) drugs. In rural communities, frontline providers often dispense antibiotics without proper guidance, leading to inappropriate use and the emergence of resistant infections. In 2019, AMR was linked to over 1 million deaths in India, underscoring the severity of the crisis. Complicating the issue further, low-quality antibiotics are prevalent—an estimated 12.4% of antibiotics in Low-and Middle-Income Countries (LMICs) are substandard or fake. These ineffective drugs fail to treat infections and accelerate the development of resistance.

Despite the growing threat, data on antibiotic use and resistance at the community level remains fragmented across human, veterinary and environmental sectors. This siloed system leaves health authorities with limited visibility, making it difficult to respond effectively. Since AMR is a One Health issue—where human, animal and environmental health are deeply interconnected—it requires an integrated solution. Empowering grassroots providers, including community health workers and veterinarians, with digital tools and real-time data is essential to improving antibiotic use, detecting SF medicines and reducing AMR at the source.

What Is Your Solution's Stage of Development?

It is in proof of concept, a project initiative (AcessABX), venture, or organization building and testing its prototype, research, product, service, or business/policy model and has built preliminary evidence or data.

Explain why you selected this stage of development for our solution

We have selected the Pilot stage for AccessABX because the solution has moved beyond concept and early development and is now being tested in real-world settings to validate its effectiveness and scalability.

We are currently implementing AccessABX in a limited number of rural communities, where frontline providers—community health workers, veterinarians, pharmacists and smallholder farmers—are using the app to record antibiotic use, verify drug authenticity and access decision support. Early feedback is being collected to refine the user interface, improve offline functionality and tailor treatment guidance to local needs.

Our pilot is generating baseline data on antibiotic use patterns, medicine quality and user behavior, helping us assess both impact and usability. We are also testing our training and engagement strategies to ensure sustained use among digitally inexperienced users.

This stage is crucial for identifying operational challenges, gathering proof of concept and building partnerships with local health systems, NGOs and regulators. It allows us to generate evidence for effectiveness before a broader rollout.

Selecting the pilot stage reflects our focus on learning, adaptation and evidence-building, intending to scale AccessABX across diverse low-resource settings once key insights and improvements are in place.

Describe the core technology, community-level data, or other data sources that power your solution

The architecture outlined for the integrated one health data collection and monitoring system is highly suitable for implementing AccessABX in Low-and Middle-Income Countries (LMICs). It uses a cloud-based, modular design that enables real-time data sharing and centralized analysis across human, animal and environmental health sectors—essential for addressing AMR through a One Health approach.

A mobile interface ensures accessibility for frontline users such as health workers, veterinarians and farmers, even in low-resource settings. Offline functionality and lightweight design make it practical where connectivity is limited. The inclusion of prescription validation allows immediate checks against treatment guidelines, reducing antibiotic misuse.

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Integration with an e-commerce and drug verification system helps detect counterfeit or substandard antibiotics at the point of sale or use, protecting patients and livestock. A public access library enhances transparency and supports behavior change by offering educational content on antibiotic stewardship.

This architecture mirrors successful digital health systems like DHIS2, MedSafety and mTrac, which have demonstrated impact in LMICs. Its layered design—from mobile data collection to centralized decision-making—makes it a robust, scalable solution. It enables AccessABX to deliver timely insights, improve antibiotic practices and reduce AMR at the community level.

Provide evidence that this technology works. Cite your sources.

While specific pilot data for AccessABX is currently limited, evidence from analogous digital health interventions underscores the potential effectiveness of such solutions in combating Antimicrobial Resistance (AMR).

For instance, a study conducted in a tertiary care teaching hospital in North India implemented an Antibiotic Stewardship Program (ASP) and observed significant improvements (12).

- Appropriate antibiotic prescription rates increased from 66% to 86%.
- The mean number of antibiotics used per patient decreased from 4.41 to 3.86.
- The average duration of hospital stays was reduced from 17 to 14 days (12), 13).

These outcomes highlight the impact of structured stewardship interventions on antibiotic usage and patient outcomes.

Moreover, the implementation of mobile applications for antimicrobial prescribing guidance has shown promise. In Ghana, the Commonwealth Partnerships for Antimicrobial Stewardship (CwPAMS) app was introduced to support healthcare professionals. Users reported increased awareness of antimicrobial stewardship practices and the app facilitated improved documentation and prescribing behaviors (13).

These examples illustrate that digital tool, when integrated into healthcare settings, can enhance antibiotic prescribing practices and contribute to the reduction of AMR. As AccessABX progresses through its pilot phase, similar methodologies and user engagement strategies are being employed to ensure its effectiveness in diverse, low-resource environments.

Please select all the technologies currently used in your solution

Below are the technologies used for the solution:

- Artificial Intelligence / Machine Learning
- Behavioral Technolgy
- Big Data
- Block Chain Technology
- Crowd Sourced service / Social Networks
- GIS and Geospatial Technology
- Internet of Things
- Software and Mobile Applications

What Makes Your Solution Innovative and Unique?

AccessABX is unique in its holistic, community-centered approach to tackling Antimicrobial Resistance (AMR) across human, animal and environmental health—embodying the One Health philosophy in a practical, scalable tool. Unlike traditional surveillance systems that operate in silos, this mobile platform integrates real-time data collection, clinical decision support, drug quality verification and behavioral nudges into one seamless solution for frontline users.

What sets it apart is its focus on empowering the grassroots—community health workers, farmers, vets and pharmacists—who are the daily decision-makers around antibiotic use. The app's context-specific treatment guidance, combined with an antibiotic authenticity scanner, ensures both appropriate use and medicine quality, addressing two major drivers of AMR: misuse and counterfeit drugs.

Additionally, AccessABX transforms fragmented, local data into actionable insights, offering early warning signals for resistance patterns that can inform local and national responses. Its inclusion of educational modules and behavior-change tools further drives sustained impact, fostering a culture of stewardship.

This integrated, cross-sectoral design—bridging gaps between human and animal health at the community level—makes AccessABX an innovative, comprehensive solution in the fight against AMR, where local action has global significance.

What "Public Good" Does Your Solution Provide?

AccessABX provides a critical public good by safeguarding the effectiveness of antibiotics, a cornerstone of modern medicine, for both current and future generations. By empowering frontline providers—community health workers, farmers, veterinarians and pharmacists—to make informed decisions around antibiotic use, AccessABX helps curb misuse and reduce the spread of antimicrobial resistance (AMR), a growing global health threat.

AMR not only jeopardizes individual patient care but also threatens food security, livelihoods and entire health systems. AccessABX addresses this by ensuring antibiotics are used responsibly across human and animal health, preventing resistant infections from spreading within and between communities. The platform's ability to detect counterfeit or substandard drugs further protects public health by ensuring only quality-assured medicines reach people and livestock.

Moreover, by gathering real-time data on antibiotic use and resistance patterns, AccessABX creates a community-driven surveillance system that benefits public health authorities, enabling faster, evidence-based responses to emerging threats. Educational modules within the app foster long-term behavior change, promoting antibiotic stewardship at the grassroots.

In essence, AccessABX strengthens the resilience of entire communities, reduces the burden of infectious diseases and

contributes to global efforts to combat AMR—an essential public good with far-reaching health, economic and social benefits.

How Will Your Solution Create a Tangible Impact and for Whom?

AccessABX creates a tangible impact by directly supporting frontline providers—community health workers, veterinarians, farmers, pharmacists and drug vendors—who are the key decision-makers influencing antibiotic use in rural and underserved areas. These individuals often operate without sufficient guidance, leading to antibiotic misuse, poor treatment outcomes and the spread of Antimicrobial Resistance (AMR).

By offering real-time decision support, drug quality verification and educational tools, AccessABX equips these providers with the knowledge and resources needed to use antibiotics appropriately and ensure the medicines they dispense are genuine and effective. This leads to better patient outcomes, healthier livestock and reduced environmental contamination from antibiotic misuse.

For families and communities, this means fewer treatment failures, less exposure to resistant infections and safer food sources, improving overall health and livelihoods. Local health authorities also benefit from community-level data on antibiotic use and resistance patterns, enabling targeted interventions like outbreak control or supply chain improvements.

Over time, AccessABX fosters a culture of responsible antibiotic use at the grassroots, slowing the spread of resistance. This creates a lasting impact not only for the immediate users but also for broader public health, protecting antibiotics as a vital resource for both human and animal health across communities.

Is the solution currently active and operating in any country?

No

In Which Countries Do You Plan to Deploy Your Solution Within the Next 2 Years?

Over the next two years, AccessABX aims to achieve three key impact goals to combat antimicrobial resistance (AMR) and improve antibiotic stewardship at the community level:

Expand reach to frontline providers across sectors

We aim to deploy AccessABX in at least 500 villages across multiple states in India, reaching 2,500+ frontline users, including community health workers (CHWs), veterinarians, farmers, pharmacists and drug vendors. By empowering these critical players with real-time decision support and drug verification tools, we seek to reduce inappropriate antibiotic use by 40% in both human and animal health across our target areas.

Enhance antibiotic quality and safety

Our goal is to prevent the circulation of substandard or counterfeit antibiotics through the widespread adoption of our drug verification feature. We aim for 95% of antibiotics dispensed by participating providers to be verified through the app's authentication system. This ensures that communities receive quality-assured medicines, reducing treatment failures and the spread of resistant infections.

Establish robust one health surveillance

We plan to build a comprehensive, cross-sectoral database capturing antibiotic use and resistance trends across human, animal and environmental health in pilot regions. Our goal is to gather 100,000+ data points on antibiotic use and resistance patterns, generating early warning alerts for health authorities and supporting targeted interventions.

Measuring success

We will track progress through a mix of process, outcome and impact indicators:

Adoption & Usage Metrics:

- Number of frontline providers trained and actively using AccessABX.
- Frequency and consistency of data entries related to antibiotic prescriptions and drug verifications.

Behavior Change Indicators:

- Reduction in inappropriate antibiotic prescriptions (measured through app logs and periodic audits).
- Increase in correct dosage adherence and withdrawal period observance in livestock treatments.

Drug Quality Metrics:

- Proportion of antibiotics verified through the app.
- Rate of detection and reporting of substandard or falsified medicines.

Surveillance & Public Health Impact:

- Volume and quality of antibiotic use and resistance data collected across sectors.
- Number of alerts or reports generated for health authorities, leading to targeted AMR interventions (e.g., supply chain adjustments or outbreak responses).
- Reduction in AMR prevalence rates in selected sentinel sites (measured through periodic sampling and lab analysis).

Community Awareness:

- Pre- and post-intervention surveys to assess Knowledge, Attitudes and Practices (KAP) around antibiotic use and AMR among providers and community members.

By focusing on empowering grassroots providers, ensuring medicine quality and creating real-time surveillance, AccessABX will contribute significantly to slowing AMR and improving health outcomes across human and animal populations in rural India.

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What barriers currently exist for you to accomplish your goals in the next 2 years? How do you plan to overcome these barriers?

Several barriers could challenge AccessABX in achieving its goals over the next two years.

First, limited digital literacy among frontline providers, especially in rural areas, may slow the adoption of the app. To overcome this, we plan to offer hands-on training sessions and continuous user support and design the app with simple, intuitive interfaces tailored for low-tech environments.

Second, inconsistent internet connectivity in remote regions may affect real-time data collection. To address this, AccessABX is designed with offline functionality, allowing data to be stored locally and synced when connectivity is available.

Third, provider resistance to behavior change around antibiotic use could hinder stewardship improvements. We will tackle this through continuous engagement, demonstrating the benefits of appropriate antibiotic use and embedding behavioral nudges and incentives within the app to encourage best practices.

Lastly, coordination across human, animal and environmental health sectors remains a challenge due to fragmented systems. We plan to foster partnerships with local health authorities, veterinary networks and NGOs, creating aligned incentives and shared goals for AMR reduction.

By proactively addressing these barriers, AccessABX aims to ensure successful implementation, foster long-term behavior change and build a sustainable model for antibiotic stewardship at the grassroots level.

Does this solution introduce any risks? How are you addressing or mitigating these risks in your solution?

Yes, AccessABX introduces some potential risks, which we are proactively addressing.

One key risk is the misuse of the app's guidance if users rely solely on digital recommendations without considering clinical judgment or local context. To mitigate this, the app is designed as a decision-support tool, not a diagnostic substitute. It encourages users to consult with supervisors or referral centers for complex cases and includes disclaimers and training modules reinforcing appropriate use.

Another risk is data privacy and security, especially when collecting sensitive health information. We address this by implementing strong data encryption, user authentication and compliance with national data protection standards. Only de-identified data is shared for analysis and users are educated on ethical data use.

There's also the risk of low sustained engagement over time. To counter this, AccessABX includes behavioral nudges, gamified learning modules and periodic incentives to maintain user motivation.

Finally, incorrect identification of counterfeit drugs due to barcode limitations or database gaps may pose challenges. We are mitigating this by partnering with regulatory bodies and pharma companies to build and continuously update a reliable verification database.

By anticipating these risks, we are embedding safeguards to ensure safe, effective and responsible use of AccessABX.

Does your solution and/or organization have a website, app, or social media handle?

No

Please provide a one-minute demo of your solution.

https://www.youtube.com/watch?v=RdGyHUjDS-k

Why Are You Applying for The Challenge?

We are applying to this AMR Challenge because it perfectly aligns with our mission to address antimicrobial resistance (AMR) in low- and middle-income countries, particularly around antibiotic supply, quality and responsible use. The Challenge's emphasis on stock control and substandard medicines directly matches our solution—AccessABX—which ensures access to genuine antibiotics while promoting their prudent use through frontline decision support.

This is more than a funding opportunity; it's a platform to bring a bold, cross-sector idea to life. Traditional funding for early-stage, interdisciplinary solutions is limited, but this Challenge values innovation at the intersection of human, animal and environmental health.

The £500,000 grant and the credibility of being selected would be catalytic—allowing our team to commit full-time to development, pilot work and collaboration with Indian government and community partners. It will also open doors to global health mentors, policy networks and AMR coalitions, enhancing our reach and impact.

We're especially excited about the opportunity to join a cohort of changemakers. With this support, we can demonstrate real-world impact within two years—something that would take far longer without this boost. The Challenge is the ideal springboard to scale AccessABX and help safeguard antibiotics for the future.

Executive Summary

Substandard and Falsified (SF) oral antibiotics present a serious public health risk in Low and Middle-Income Countries (LMICs), fueling Antimicrobial Resistance (AMR) and compromising healthcare outcomes. AccessABX offers a digital, One Health solution that addresses these challenges by integrating human, animal and, environmental health considerations. The platform combines mobile technology, data analytics and authentication tools such also IoT-enabled scanners to strengthen antibiotic stock control and prevent the circulation of SF drugs.

This report comprises five major sections.

In Section -1, a detailed roadmap is discussed to give an overview of who, what, when, how and why, detailing our strategic objectives.

Section 2 discusses our strategy to identify the regions and plan to implement this project initially.

Section 3 discusses in detail step-by-step plans to implement this plan and its challenges and how we plan to mitigate them.

Section 4 briefly discusses our strategy in partnering with key stakeholders such as NGOs, Government Officials, etc. Our Final Section discusses the phase-wise approach and demonstrates our sustainable plan and also briefly details financial sustainability after the initial funding period from MIT SOLVE (if selected).

We ensured that every section highlights our stewardship at the community level, focusing on behavioral change to bring a greater impact in the long run, rather than technological innovation as the only solution. AccessABX's core philosophy is to encourage and combine a multitude of involvement, such as encouraging involvement from the community, health workers, et,c to strengthen the ecosystem so that the implemented solutions are self-sustained and give long-term benefits as they mature. We aim to create a measurable impact to decrease and finally eradicate the circulation of fake drugs and medicines while helping with inventory control of required medicines as per demand and spikes identified in the region.

Section 1: AccessABX overview and strategic objectives

Stock control improvements

Efficient stock management ensures that antibiotics are available when needed, reducing shortages and preventing the entry of SF medicines into the market.AccessABX aims to leverage cutting-edge technologies to promote robust supply chains, where users can monitor, control and visualize the progress in real time. A few of such operational approaches, fused with technology, are listed below:

Digital supply chain tracking

- We plan to leverage RFID tags or QR codes to monitor the end-to-end product cycle i.e., from the manufacturer to clinics so that we can have real-time visibility enabled. Every batch could have its unique code like a QR code or a bar code and when that barcode or QR code is scanned into the AccessABX app at every point it could be a distribution center or it could be the clinic or it could be an agency and such kind of activity can help with a clean record of understanding where and how these particular medicines are being used.
- In the future, we are also planning to leverage blockchain technology for foolproof verification of the drugs. By enabling these technologies, we can also help the health authorities uh to make quick decisions such as if there is any need for isolating and recalling any suspect batches we can certainly do that because we would have control over the source and supply to any communities.
- Implement automated inventory management to detect low stock and prevent overstocking, reducing the risk of expired drugs being used.

Demand forecasting with AI and big data

- Once the data is collected via the app and the other health information systems, we plan to use AI-driven technology to predict the region level and the consumption level and any metrics that can be catered through this lens and we envision AccessABX platform to analyze the trends with seasonality such as a particular region could have seasonal illness as prevalent and maybe certain outbreaks or for both the humans, livestock and the community overall.
- This particular data that is collected with these apps can help both the health facilities to understand what is the intensity of the issue and also pharmacies to stock up in case needed.
- By this informed decision-making, we could be preventative in action and thereby this could certainly prevent any stockouts that might happen because of the demand spikes and any kind of unaltered demand.

Mobile-based inventory monitoring

- Given our solution is an AccessABX mobile app, this can be certainly used as an inventory reporting tool for all the frontline workers pharmacies animal healthcare providers and other involved parties so that this will be an easy access solution for all these people who can actually log into the current stock levels and also receive low stock alerts on their phones. Thereby, the information could be made easy to work with and accessible.
- As a next step, we also want this data to be aligned with a central dashboard for the local Ministry of Health or the involved supply chain managers, this way, there is a connected vector digital twin established & this can be helpful for any kind of rapid restocking in case there is a shortage.
- This will also reduce the chance of temptations or any kind of motivation to buy unverified drugs or medicines. Thus, it promotes the use of verified drugs instead of SF drugs, especially in the rural clinics run or similar setups.

This is already used (Netmeds an example, where they sell medicines with online consultations and there is no need for extra investment these are targeted via doctors directly to the manufacturers, which is the best method to adopt and bring in the BOOT (build own and transfer) to the government registered medical shops, this investment is worth a model as it does not need physical buildings and no overheads, all done through mobile apps and integrated to warehouse to save tax. It is easy to maintain and push in India since the digital transactions crossed (Netmed Financials 4). In the financial year 2021, there were over 35 billion digital transactions worth over 60 trillion Indian rupees across India. The number of transactions is expected to rise to over 214 billion in the financial year 2026 in the country. India offers a variety of digital payment methods, including banking cards, Unstructured Supplementary Service Data (USSD), the Aadhaar Enabled Payment System (AEPS), Unified

Payments Interface (UPI), mobile wallets, bank prepaid cards, Point-of-Sale (PoS) terminals and internet banking. Over the next five years, the volume of digital transactions in the country is projected to reach an average of 1.5 billion per day. (statista.com 10).

By leveraging these stock control improvements, antibiotics of premium quality can be assured to be accessible consistently. This can be achieved with a responsive optimally controlled and stocked supply chain. Overall, AccessABX plans to build trust in both the health system and responsible antibiotic usage.

Case study on Netmed challenges

The rise of online medicine purchases marked a major paradigm shift. For Netmeds, convincing and educating consumers to embrace this change and move beyond traditional brick-and-mortar pharmacies was no small feat.

Like any other e-commerce business operating in a vast country, managing the complex logistics has been challenging. A typical chronic patient might require six or more medications each month. Netmeds must efficiently source and deliver both prescription medicines and over-the-counter products in one seamless package.

Although requiring a valid prescription might seem inconvenient or unnecessary to some, this practice encourages individuals who have long avoided hospital visits to consult a doctor, promoting healthier behaviors.

This shift should also be viewed as an opportunity to ensure proper prescribing practices and reduce the circulation of substandard and falsified oral antibiotics, particularly for community use in Low- and Middle-Income Countries (LMICs). It addresses the automatic substitution of generic medicines, which often occurs without proper medical oversight, as well as the influence of medical representatives who push branded drugs, sometimes with more side effects, through cartel-like networks. Promoting responsible adoption of generics, especially in LIMICs, can help ensure safer and more effective treatment options for these communities.

Rising medicine costs negatively impact both access to healthcare and the economic well-being of households. Despite having the same therapeutic efficacy, branded medicines are often priced much higher than their generic counterparts, even after patent expiration. As governments promote wider adoption of generics, price remains a decisive factor.

Objective: This study aims to assess the current state of research in the field of pharmacoeconomics related to generic medicines and to evaluate whether unbranded generics are indeed more affordable than branded drugs through a detailed cost analysis in the Indian context.

Methods: A qualitative review of highly cited, Scopus-indexed research papers published since the onset of COVID-19 (2020) was conducted using VOSviewer (v1.6.10) to gauge the research landscape in generic pharmacoeconomics. Additionally, a quantitative cost comparison was made between branded and unbranded generic solo-formulation drugs across the top five therapeutic categories.

Results: The bibliometric analysis revealed a strong correlation between the volume of generic medicine research and national adoption rates. While the assumption that unbranded generics are cheaper largely holds, some exceptions exist. The greatest price discrepancies were observed in cardiology, respiratory and diabetes-related medications. Special attention needs to be paid to improving the efficiency and quality of local generic manufacturing plants to ensure the cost-effectiveness of generics. (Lakshya Singh, 07)

Conclusions: India must invest more in pharmacoeconomic research and enhance collaboration to drive awareness and uptake of generics. Improving local manufacturing quality and efficiency is critical to maintaining the cost advantage of generics.

Reducing substandard and falsified antibiotics

Technology can enhance drug authentication, regulatory oversight and consumer awareness to combat SF antibiotics. It is necessary to have advanced mechanisms to authenticate the antibiotics and also implement surveillance measures to keep the fake antibiotics out of circulation. AccessABX's platform could act as the go-to solution because this platform can enable data integration and help both the users and local body authorities in combating fake antibiotics.

Track-and-trace systems

- As mentioned in the previous section, we plan to track each antibiotic batch that will have a unique barcode or QR code and this can be scanned using AccessABX's app to verify the authenticity of the medicine.
- The app is planned to be set up to connect to a secure database to enable such action. While the solution could be new to the selected region, similar solutions like mPedigree are being widely used in Africa. In a mPedigree case (Drug Authentication via SMS mPedigree, blog.oup.com Appendix). Once the app reads the barcode or a specific code, a confirmation message is sent via SMS, ensuring the authenticity of the medicines used. Similarly, AccessABX is planning to partner with all the involved parties, including pharmaceutical companies and regulatory agencies, to integrate the existing serialization systems or generate new codes for the upcoming production batches.
- Once this is enabled, even the frontline providers can also validate the medicines on the spot and this can dramatically lower the chance of SF antibiotic circulation
- Blockchain-based serialization ensures a tamper-proof history of each drug batch.

Portable drug quality testing

AccessABX will facilitate low-cost tools like GPHF Minilab or paper-based analytical devices that can detect common antibiotic ingredients and identify SF formulations in a short time. These kits are expected to work offline and AccessABX will help facilitate training for the users on how these kits can be leveraged to understand and verify the SF drugs. We are also planning to incorporate a feature in the app for recording and uploading the test results to a central database. This can certainly be used as evidence for any failed quality

tests and by such action, the authorities concerned can trace back to the problematic batches.

Adding an extra layer of security, if the local health officers and veterinary extension officers could use such kits, it would act as an extra layer against the SF drugs without needing full laboratories to test them.

We plan to leverage AI-driven image recognition to identify counterfeit and fake packaging.

Crowdsourced reporting platforms

We plan to provide information in two ways to the community, one is through an app either through SMS or phone calls, or pharmacists or farmers can report any suspicious or SF antibiotics that they encounter so if there is a situation where multiple patients report a certain batch of pills had no effect then our system will raise an alert and the central "AccessABX watch" dashboard.

The moderators review and escalate as needed when these patterns emerge say something like clusters or about a specific drug brand or specific issue, we are planning to have a system that automatically pushes alerts to the users in the region this system can also be used to help pharmacists receive a warning via SMS or WhatsApp circulating fake batch so that these first-hand responders could be vigilant about it and this can act as an early warning trigger.

Regulatory data integration

We plan to share this data with national regulatory authorities and law enforcement in real-time. We will establish channels to connect to the platform database with existing government systems such as a local body or it could be port of entry officers etc. We are also planning to use analytics that can scan the supply chain data for anomalies such as if there is an unexpected influx of a product in one area this could indicate an SF drug distribution. Thus, the collaborative approach showcases our philosophy by protecting both the people and animals from SF medications

By combining our strategies, such as data sharing, leveraging technology and low-cost testing tools, AccessABX plans to drastically reduce the impact and circulation of SF antibiotics at the community level. The integrated partnerships with authenticity scanners and reporting features can help screen out the fake drugs before they reach the patient and can also be swiftly detected and removed from circulation. However, technology could be the first line of defense, but it will only be impactful and would work best in the informed community, which is why we pair it with the strength of the community advocating awareness and education efforts. This will be further discussed in the next section.

Strengthening community awareness & engagement

To counter the SF drugs, it is very important to rely on the strength of the community to achieve a higher order of success. Understanding that AccessABX emphasizes community-driven engagement to foster premium antibiotic usage. This involves various levels of educational efforts that could yield better results and help with long-lasting behavior changes. A few of the key strategies are detailed below

Learning center

We plan to include an offline accessible library of antibiotic information and treatment guidelines for both humans and livestock in a user-friendly language specific to the local language. We also plan to have interactive modules that can teach users how to distinguish genuine from fake medicine. A few of the examples include having videos, images, easily accessible quizzes, etc so that the user can be his vigilante to identify the SF medicine.

Further enablement of these educational resources, such as adding gentle reminders to promote advocacy, always verifying the drugs using scanners and making continual learning efforts as fun and interesting. We are aiming for a sustained engagement rather than One-Off training.

Chatbots and helplines

In the era of AI agents, we understand that chatbots do play a major role in the technology and the way the technology interacts with humans. So, we plan to integrate a simple AI-powered chatbot through our app along with a toll-free SMS and a voice call-enabled approach. The goal of this chatbot is to answer basic questions such as "How do I understand SF antibiotics," and other strategies that are related to identifying the counterfeits. We also plan to establish a dedicated support team, similar to a customer service unit, rained to provide personalized assistance and address any knowledge gap users may encounter. This team will offer interactive, responsive guidance to ensue sers can navigate the platform effectively and confidently.

Community workshops and outreach:

A tool can be highly effective and widely adopted, successful outreach is essential to building a strong and engaged user base. Recognizing this, we plan to conduct in-person sessions, particularly withing village health communities and farmer co-operatives. These sessions will involve hands-on demonstrations with health workers and veternerians to address key questions:

- How to use AccessABX?
- Why is antibiotic resistance being a serious public health threat?
- How individuals and communities can actively contribute to combating this issue?

These offline inititives are especially aimed at suppting users who may be less familiar with digital tools. As part of our outreach, we also plan to identify and empower local champions something similar to Train the Trainer concept, respected community figures who can promote responsible antibiotic use. By creating social incentive and incorpating these messags into communal workshops, we aim to fostr a sense of shared responsibility and embed stewardship pratices at the grassroots level.

Leveraging traditional knowledge:

To gain confidence with the community, it is important to recognize, respect and practice traditional medicine and that is where

we would plan to work with local traditional medicine practitioners, especially those who are experienced in identifying natural forms of medicine such as herbal, ayurveda, unani and similar. We aim to promote such kinds of remedies for medium to low-critical cases. Several studies have shown that when farmers and humans have gone through Ayurvedic treatments, minor illnesses for both animals and humans are treated well; this way, these powerful antibiotics could be saved for something serious in the future.

Its important that technology can be rightfully embedded into the social fabric of the community so that frontline workers and other involved stakeholders will not only use these tools but also become champions, advocates and promote for antibiotic stewardship in their local communities. This is important for the success of the community for better health outcomes.

Low-cost technologies to improve stock control and reduce substandard and falsified antibiotics in LMICS

To tackle stock management issues and reduce prevalent of Substandard and Falsified (SF) antibiotics, affordable and scalae technologies can be utilized effectively. Below are several practical solutions we have researched, offering insight into to success and impact of existing interventions.

Low-cost technologies for stock control

- mSupply Mobile – A mobile inventory management app used in LMICs, allowing clinics, hospitals and pharmacies to track medicine stocks effectively, even without ternet connectivity.
- OpenLMIS (Open-Source Logistics Management Information System) – A cost effective, cloud based platfor that support government in monitoring medicine distribution and demand, helping reduce stockouts and minimize wastage.
- SMS-Based Stock Reporting (e.g., SMS for Life) –Enables health workers and pharmacies toept stock levels via simple SMS messages, feeding into centralized databases with asynchronous updates. This allows health ministries to anticipate shortages and reallocate antibiotics where needed.
- AI-Powered Demand Forecasting (e.g., DHIS2 with AI integration) – Utilizes big data and predictive analytics to forecast regional medicine demand, improving supply planning and avoiding overstock or shortages.
- RFID and QR Codes Tracking -Low-cost RFID tags (radio-frequency identification) can be deployed to trace the movement of medicines in Warehouses, While QR codes allow for easy scanning ad stock updates using basic smartphones, enchancing visibility and accuracy in block chain of inventory model with the port of origin known for drill down analytics.

Low-cost technologies to detect and prevent sf antibiotics

- QR Code Authentication (e.g., mPedigree, Sproxil, Medsaf) –enables atients and pharmacists to verify he authenticity of medicine by scanning Q cods or texting erificaton numbers. Widey adpted in LMICs as an effected anti-countering tool.
- Portable Drug Testing Kits (e.g., GPHF Minilab, Paper Analytical Devices - PADs) – affordabs, potable chemical test kts that can detect countered atioics iunder 30 mins without required advanced laboratory infrastructure.
- AI-Powered Image Recognition for Fake Packaging (e.g., PharmaSecure, IBM's AI Visual Recognition) –Utilizes smartphone cameras and artificial intelligence to detect subtle dicreanc is in drg pacging, assign pharmacists in identifying counterfeit products bore dispensing.
- Blockchain-Based Track-and-Trace Systems (e.g., MediLedger, Farma Trust) –Secure digital ledgers that trace each batch of antibiotics from manufacturer to patient, ensuring transparency and preventing counterfeit dugs from entering the supply cha ideal for government and NO drug surveillance initiatives.
- Crowdsourced Reporting Platforms (e.g., Fight the Fakes, Lextant Protect) –empowers community members and health workers to report suspected SF antibiotics via SMS or mobile apps. Real-time dashboards help authorities identify and respond to counterfeit medicine hotspots.
- mHealth Alerts for Public Awareness (e.g., U-Report, Health Alert Systems) –Sends targeted alert *via* S or What so to pharmacists and healthcare workers when counterfeit antibiotics are detected in their region, enhance rapid response and awareness.

These affordable and scalable technologies provide LMICs with practical solutions to improve antibiotic stock management and curb the spread of Substandard and Falsified (SF) medicines. By combining mobile technology, AI, blockchain and community engagement, they help build a more secure, efficient and transparent antibiotic supply chain.

Section 2: Deploy Affordable Stock Management and Anti-Counterfeit Measures for Oral Antibiotics in LMCs

To implement effective stock management and anti-counterfeit solutions in LMICs, a tailored approach is essential—one that accounts for the local healthcare system, regulatory environment and digital infrastructure. Below is a step-by-step guide for implementing AccessABX in low- and middle-income countries, beginning with strategic site selection and progressing through phased deployment.

Selecting the target region

We have selected India for the initial pilot due to its significant burden of substandard and falsified (SF) antibiotics. Our recent research confirms ongoing challenges with antibiotic misuse and the prevalence of counterfeit drugs. Specific districts impacted by antimicrobial resistance (AMR) in both human and animal health have been prioritized.

Key selection criteria:

1. High prevalence of SF antibiotics.

India has documented widespread antibiotic misuse and frequent reports of counterfeit medications. We aim to demonstrate that better antibiotic practices in high-risk districts can significantly reduce disease burden.

2. Weak Supply Chain Visibility.

Regions with fragmented supply systems and reliance on informal vendors stand to benefit from improved stock control and medicine verification through AccessABX.

3. Digital infrastructure:

India's widespread mobile phone usage, even in rural areas and its support for digital services (like UPI) make it an ideal environment for deploying mobile-enabled health tools.

4. Strong Local Partnerships:

We will engage key institutions including:

- AFMC for clinical training support
- ICAR and IVRI for outreach to livestock sectors
- AIIMS for integration into the broader public health system

We will focus on a predominantly rural district with high farming activity, allowing us to address both human and veterinary antibiotic use. Using this criterion, our team has identified candidate districts for a 24-month pilot. The launch will focus on clusters of villages, health centers, pharmacies and farming communities to gather rich, localized insights before scaling.

Section 3: Step-by-step implementation plan

With the region identified and partnerships established, AccessABX will be implemented in two main tracks:

(Track A) Strengthening stock control.

(Trak B) Prevening and detecting substandard and falsified antibiotics.

A. Strengthening stock control (pilot phase)

Phase 1: Digital stock monitoring (0–6 months)

We will deploy systems like OpenLMIS or a simplified inventory module within AccessABX to digitize medicine tracking at clinics, pharmacies and vet posts. Remote areas will use SMS-based reporting (e.g., SMS for Life model). A central dashboard at the district health office will consolidate this data and a supply hotline will enable emergency restock requests.

- Deploy mSupply Mobile or OpenLMIS for public hospitals & pharmacies to digitize medicine stock records.
- Use SMS-based stock reporting (e.g., SMS for Life) for rural clinics where internet access is limited.
- Partner with the Ministry of Health, NGOs, or the WHO to set up central data dashboards for real-time stock monitoring.

Phase 2: On-the-ground testing and AI detection (6–12 months)

Portable drug testing kits (e.g., GPHF Minilab) will be placed in select referral hubs. Simultaneously, an AI-powered packaging verification feature will be introduced within the app, allowing frontline workers to identify suspicious medicines via image recognition.

- Integrate AI-driven analytics (e.g., DHIS2 + AI) to predict medicine shortages & excess stock.
- Work with pharmaceutical distributors to ensure timely restocking & reduce waste.
- Set up RFID/QR code tracking for warehouses (where feasible).

B. Preventing & detecting substandard & falsified antibiotics

Phase 1: Implement Authentication Systems (0–6 months)

In the initial phase, our priority will be deploying medicine verification tools at every point of care. We will either partner with an existing service or develop our own secure database to generate and manage unique verification codes (such as scratch-off codes or QR codes) for antibiotic packaging used in the pilot.

Ahead of the pilot rollout, we'll collaborate with manufacturers or procurement partners to ensure that all antibiotic batches supplied to pilot sites are labeled with these verification codes. As medicines reach clinics, pharmacies and veterinary posts, staff will be trained, often during inventory system training, on how to use the AccessABX app's scanning feature to verify authenticity.

Patients and livestock owners will also be educated on how to verify medicines themselves using a basic mobile phone by texting the code provided. This community-driven verification empowers end users to confirm the legitimacy of their medicines, even outside formal healthcare channels.

By the end of this phase, verifying antibiotics through scanning or SMS will become a standard routine in the pilot areas. We will track verification rates and aim for at least 70% of dispensed antibiotics to be verified initially, to exceed 90% as awareness and adoption grow.

- Roll out QR code verification (e.g., mPedigree, Sproxil) on antibiotic packaging—patients can scan using mobile phones.
- Train pharmacists & community health workers on using mobile apps for drug verification.

Phase 2: Deploy low-cost testing (6–12 months)

In the mid-pilot phase, we will introduce physical drug testing and advanced detection tools to further empower users and strengthen quality assurance. Portable testing kits (such as the GPHF Minilab) will be deployed at selected high-volume locations, such as the main district hospital pharmacy and a key veterinary lab. These sites will serve as referral hubs: if a smaller clinic or a farmer suspects a

substandard drug (due to an app alert or poor treatment response), they can send a sample for rapid testing.

In parallel, around month 9, we will launch an AI-powered image recognition feature within the AccessABX app. This tool will be preloaded with verified images of authentic antibiotic packaging. Pharmacists and providers will be trained to use it by snapping photos of suspicious-looking medicines for automated analysis. The pilot will monitor how often the AI flags potential counterfeits and track outcomes through follow-up testing or lab confirmation.

By month 12, our goal is for 100% of pilot outlets to have access to at least one method of drug quality verification—whether via code scanning, referral testing, or AI image analysis. Any medicine that fails these checks will be reported and withdrawn, laying the foundation for a layered, integrated detection system.

- Provide portable drug testing kits (e.g., GPHF Minilab, Paper Analytical Devices - PADs) to pharmacies and regulators.
- Set up AI-powered image recognition systems (e.g., PharmaSecure) to detect fake packaging.

Phase 3: Surveillance and enforcement (12+ months)

We will launch a community reporting platform, integrated with WHO's Fight the Fakes and UNICEF's U-Report. A blockchain-based track-and-trace system will be piloted for high-priority antibiotics. Our goal: investigate every SF report within weeks and document tangible reductions in counterfeit drug circulation.

Monitoring & Evaluation (M&E) will be ongoing, tracking indicators such as stockout rates, prescribing accuracy, verification adoption and counterfeit detection. This will inform real-time adjustments and iterative improvements to AccessABX.

- Establish blockchain-based track-and-trace (e.g., FarmaTrust) for high-risk antibiotics to prevent counterfeiting.
- Launch community reporting platforms (e.g., U-Report, Fight the Fakes) where patients and Pharmacists can report suspected SF antibiotics via SMS or WhatsApp.
- Work with customs & border control to integrate data-sharing platforms for tracking medicine imports.

Monitoring & Evaluation (M&E) will be an ongoing process throughout the implementation of both components—stock control (A) and SF antibiotic detection (B). We will track key indicators from baseline through post-implementation, including stockout rates, prescription accuracy, drug verification rates and the incidence of detected counterfeit or substandard medicines. These metrics will drive continuous improvement; for instance, if a clinic shows low verification usage, we will revisit training efforts or streamline the process to enhance adoption.

By the conclusion of the pilot (within 18–24 months), our goal is to present a fully tested, community-validated model that proves AccessABX can be effectively implemented in real-world settings. This model will demonstrate clear, measurable outcomes and offer practical insights for scaling the solution across other regions.

Section 4: Partnering with key stakeholders

AccessABX's success depends on collaborative partnerships:

- Government and public health authorities will provide regulatory support, integration with national systems and potentially fund operations post-pilot.
- Local health providers (clinics, pharmacies, CHWs) will help shape and refine implementation through advisory groups and direct feedback.
- Veterinary and agricultural networks will support outreach and appropriate antibiotic use in livestock, with backing from ICAR and IVRI.
- NGOs and international bodies such as WHO, MSF, USAID and PATH will lend technical guidance, training support and co-funding.
- Technology and private sector partners will contribute to app development, SMS services, data security and medicine verification systems.
- Community leaders will help promote responsible antibiotic use and support grassroots adoption.

A multi-stakeholder steering committee will oversee the pilot and coordinate implementation across sectors.

Veterinary & Agricultural Stakeholders: To fully embody a One Health approach, we will engage veterinary clinics, livestock officers and farmer cooperatives. Institutions like ICAR and IVRI will provide technical guidance on antibiotic use in animals and help localize treatment protocols. Partnerships with farmer groups (e.g., dairy or poultry cooperatives) will include formal agreements for training and reporting participation, ensuring that the animal health sector is equally empowered and involved.

NGOs & International Organizations: We will collaborate with NGOs and global health bodies focused on AMR, digital health, or supply chain resilience. Organizations like WHO, MSF, PATH and USAID can contribute technical support, training resources and possible co-funding. Aligning with their community-based programs enhances efficiency and credibility. We also welcome collaboration with The Trinity Challenge's network and other global AMR initiatives to share learning and extend impact.

Technology & Private Sector Partners: Technology is core to AccessABX. We will work with local IT firms for app development and maintenance and telecom providers for SMS-based communication and potential zero-rated access. Pharmaceutical manufacturers and distributors will be engaged to implement verification codes at the packaging level, supporting authenticity tracking. Some may also support the program as part of their brand protection efforts. Academic institutions like AFMC and AIIMS will support research and validation.

Community leaders and civil society: Local influencers—village elders, schoolteachers, women's group leaders—will help shape community norms around antibiotic use. While not formal partners, their endorsement is critical to building grassroots trust and adoption.

All partners will be coordinated through a multi-stakeholder steering committee during the pilot, ensuring aligned action, shared learning and collaborative problem-solving. These partnerships will not only drive success in the pilot but also lay the foundation for scaling AccessABX nationwide.

- Government & Health Authorities – Regulatory approvals & large-scale deployment.
- NGOs (WHO, Gavi, USAID, MSF, PATH) – Funding & logistics support.
- Local Pharmacies & Clinics – Adoption of mobile stock tracking & drug authentication.
- Tech Startups & Mobile Providers – Developing SMS-based & AI-driven solutions for SF detection.

Section 5: Scaling and sustainability

With a successful pilot as our foundation, AccessABX is poised for a bold but strategically phased scale-up. Our vision is to adapt and replicate the solution across diverse geographies and embed it within national health systems for lasting impact. Equally essential is our long-term sustainability plan to ensure AccessABX continues beyond initial grant support.

Phased Roadmap for Scale-Up

Phase 1: Pilot Implementation (years 1–2)

We will deploy and refine AccessABX in a selected pilot district, targeting 50–100 frontline users—including health workers, pharmacists and veterinarians—reaching approximately 50,000 individuals, including farmers. Key outcomes include a >50% reduction in antibiotic stockouts, >80% verification of dispensed drugs and at least a 20% drop in unnecessary prescriptions (e.g., for viral infections). Lessons learned, user feedback and measurable health indicators will guide improvements and build a strong evidence base for expansion.

Phase 2: Regional/national expansion (years 3–4)

AccessABX will expand across multiple districts or an entire state in India, integrating with government health systems. We target 10× growth—reaching 500–1,000 facilities and millions of people. Rollout will occur in waves, starting with neighboring districts. The platform will be localized to accommodate different languages and regional health profiles. Integration with national systems (like DHIS2) and negotiations for government cost-sharing (e.g., covering SMS or staffing) will begin. By the end of Year 4, we aim for 70% coverage of public health facilities in the target area and a demonstrated reduction in AMR rates.

Phase 3: Global expansion (year 5+)

We plan to scale AccessABX to other LMICs facing similar challenges, such as Kenya or Nigeria. Using our India-based success as a proof of concept, we'll partner with local stakeholders, conduct localization pilots and leverage the platform's cloud-based, modular architecture for efficient adaptation. Over time, AccessABX will form part of a global surveillance network, contributing to international AMR data and health improvements. We anticipate reaching tens of millions of end-users across multiple countries, supporting WHO AMR goals and improving patient outcomes.

Sustainability Strategy

Public sector integration

Our primary goal is to embed AccessABX into national health systems, securing public funding for ongoing operations. Once the value is proven, we will advocate for Ministries of Health to adopt the platform within their regular budgets (e.g., for mobile health tools or AMR surveillance), making AccessABX a long-term public health asset.

Grants and donor support

Recognizing that full government adoption takes time, we'll pursue co-funding from global donors such as the Gates Foundation, Wellcome Trust, USAID and multilateral organizations like the Global Fund. We will also explore public-private partnerships—where pharmaceutical companies or tech firms sponsor features aligned with their interests.

Selective revenue models

While core services will remain free to frontline workers and public health systems, modest revenue may be generated through value-added services. For example, pharmaceutical companies could access anonymized usage data for planning, or private hospitals might license advanced dashboards. Any income would be reinvested to sustain and improve the platform.

Cost efficiency and local capacity

We'll build local capacity by training health workers and government staff to manage AccessABX, reducing reliance on external support. Open-source tools and existing infrastructure (e.g., government servers and SMS gateways) will be leveraged to keep operational costs low. Community-based roles like AMR champions will further integrate the platform into routine practice.

Global partnerships for scale

\As we expand internationally, partnerships with WHO, FAO and other One Health stakeholders will provide technical support and advocacy to institutionalize AccessABX in national policies. The visibility from the Trinity Challenge will boost our credibility, helping attract additional investment and possibly evolve AccessABX into a globally supported nonprofit or social enterprise.

Conclusion

The Trinity Challenge prize will serve as a powerful catalyst for launching AccessABX, but our strategy is built with long-term scale and sustainability in mind. By Year 4, we aim for partial government ownership and additional donor support. By Year 5 and beyond, AccessABX will be a durable, integrated solution combatting AMR across countries—delivering tangible health, economic and social benefits. This is not a short-term intervention, but a long-term

commitment to preserving the power of antibiotics for generations to come.

- Pilot in 1-2 regions before expanding nationwide.
- Monitor data dashboards to track impact & improve strategies.
- Educate the public & healthcare workers through mobile awareness campaigns.
- Explore donor & government funding for long-term sustainability.

Conclusion and Final Thoughts

AccessABX is a solution-oriented initiative that unites technology, community participation and the One Health approach to tackle one of today's most urgent healthcare challenges: Antimicrobial Resistance (AMR). By harnessing real-time data and digital tools, AccessABX significantly improves antibiotic stock management and helps eliminate substandard medicines from circulation, ultimately advancing health outcomes in underserved communities. Simultaneously, it empowers frontline providers and citizens with the knowledge and tools to verify medicines, cultivating a culture of antibiotic stewardship that endures beyond the lifespan of any single project.

The detailed implementation plan and phased roadmap outlined here go beyond vision—they provide a practical framework for execution, with defined steps, accountable actors and built-in mechanisms for continuous learning and adaptation. Each component reflects the core ethos of AccessABX: Community-led solutions, integration across human and animal health and scalable, technology-enabled impact. These elements are translated into measurable outcomes—such as reduced stockouts, increased verification rates and better prescribing practices—linked to broader public health objectives, including lower AMR transmission, improved clinical outcomes, stronger livelihoods and greater public trust in health systems.

Importantly, this proposal also addresses long-term viability. With a clear strategy for financial sustainability and scale, AccessABX is designed to evolve from a donor-funded pilot to a nationally integrated, globally replicable program. Its model is built to attract diverse support and to eventually be owned and operated by the very communities and governments it aims to serve.

While success will require ongoing collaboration, innovation and responsiveness to local needs, the comprehensive plan presented here offers a compelling, fundable and high-impact solution. Investing in AccessABX means investing in a future where quality-assured antibiotics are accessible to all and where empowered communities lead the charge against antimicrobial resistance (Table 1) (Figure 1-4).

Technology/Tool	Use case (domain)	LMIC examples (location)	Outcome / Impact	Links
Smartphone app for guidelines (CwPAMS)	Human health – clinical stewardship	Ghana, Tanzania, Uganda, Zambia	>80% of users reported improved antibiotic prescribing awareness; comfortable use on wards. Enhanced compliance with guidelines observed in pilot hospitals.	pmc.ncbi.nlm.nih.gov
SMS reporting & alerts (mTrac-like)	Human health – surveillance & supply	Uganda (national), Kenya (pilot)	High scalability; >85% reporting rates achieved in districts. Faster response to drug stockouts and outbreak signals (stockout durations cut by >50% in pilots).	
Drug Authentication via SMS (mPedigree)	Human health – medicine quality	Nigeria, Ghana, Kenya	5+ million verifications to date; counterfeit hotspots identified and busted. Consumers are empowered to avoid fake antibiotics, improving treatment success.	blog.oup.com
Blockchain supply chain (Pilot)	Human/Animal – supply chain integrity	Ethiopia (concept), Zambia (pilot)	Emerging: Pilot in Zambia tracking antibiotic deliveries to clinics improved traceability (qualitative result). Potential to reduce falsified drug entry (impact TBD, high initial cost).	ibm.com
AI prediction & mapping	Cross-sector – AMR risk mapping	India (hospital AI), multi-country research	AI models predict resistance trends from use patterns. In trials, up to 90% accuracy in identifying likely resistant infections (but limited LMIC deployment so far). High potential if integrated with surveillance systems.	pmc.ncbi.nlm.nih.gov
IoT farm sensors (wearables, etc.)	Animal health – early disease detection	India (dairy farms), Kenya (pilot farms)	Early illness alerts led to 20–30% reduction in antibiotic use on pilot farms. Improved animal survival and farmer earnings. Cost is medium; scalable via cooperatives.	agdaily.com
Community AMR Awareness (Radio+SMS)	Human health – behavior change (env. too)	Kenya (3 counties)	Community knowledge of proper antibiotic use increased (~11% more people felt informed). 1 M k people saved. Engagement of thousands via SMS; model being scaled to other counties due to positive reception.	data4sdgs.org
Environmental AMR surveillance	Environmental – monitoring & policy	Bangladesh (Dhaka)	Revealed widespread resistant bacteria in water, prompting policy action on waste treatment. Led to multi sector collaboration (health & environment) to mitigate contamination.	pubmed.ncbi.nlm.nih.gov

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Traditional knowledge integration	Human/Animal – community engagement	India (ethnovet practices), Uganda (herbal use)	Qualitative improvements: farmers use proven herbal remedies for minor ailments, reserving antibiotics for severe cases. Increased trust and uptake of AMR initiatives when local wisdom is respected (impact on AMR outcomes being studied).	
Telemedicine for antibiotic access	Human health – access & appropriate use	Mali, Bangladesh (pilot programs)	In Mali, remote consultations reduced inappropriate antibiotic use for fevers (fewer antibiotics given when not indicated). Patients received timely guidance, improving outcomes in isolated areas.	onlinelibrary.wiley.com

Table 1: Case studies and references of affordable interventions in antibiotic stewardship and supply that have been implemented and tested in Low-and Middle-Income Countries (LMICs).

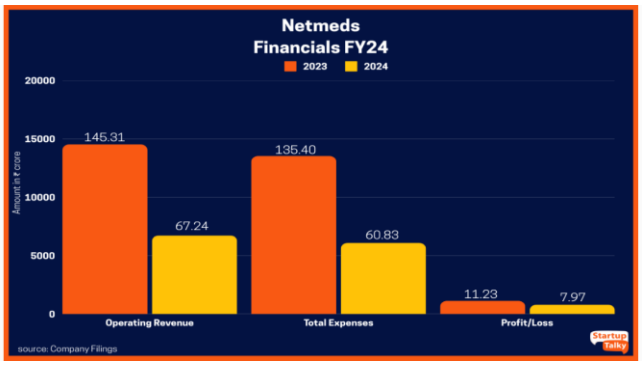

Figure 1: Net Med financials.

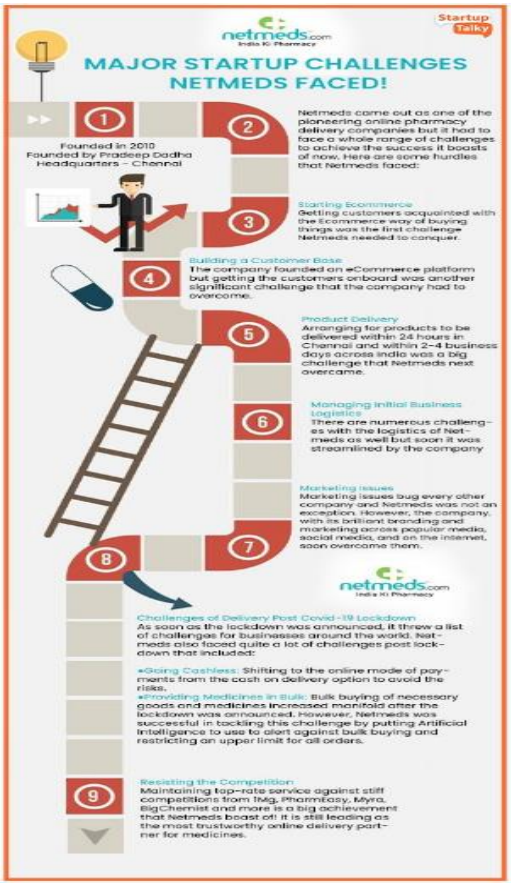

Figure 2: NetMeds challenges.

Figure 3: Number of digital transactions.

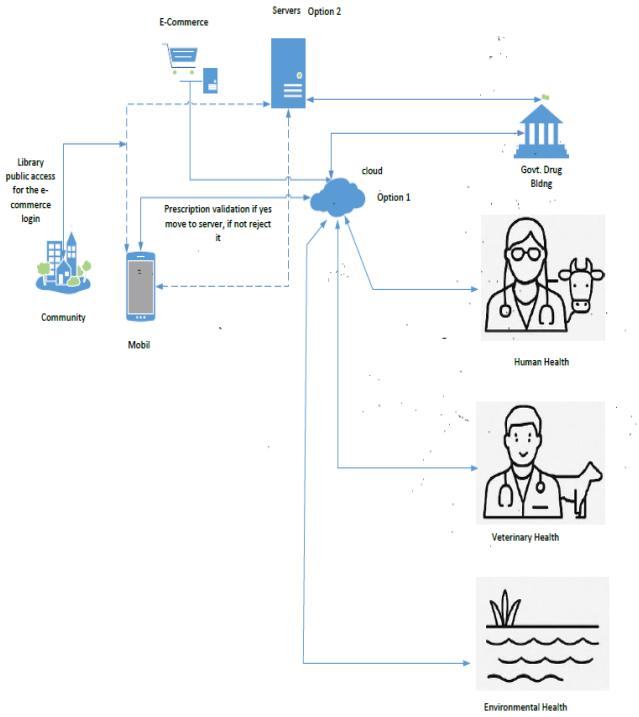

Figure 4: Architecture view of AccessABX. **Note:** Integrated one health data collection and monitoring system to address AMR in communities with AccessABX.

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Key Takeaways

These cases guide us to build AccessABX's strategy – from mobile apps and SMS reporting to verification systems and community education. These studies and real-time use cases have shown success in analogous settings. AccessABX combines these elements into a unified solution, which will be both practical and impactful. AccessABX will build on these lessons to achieve even greater scale and integration across the One Health spectrum.