



Accredited Drug Seller Initiatives Publication Compendium: 2009–2017

Pharmaceuticals & Health Technologies Group • Management Sciences for Health

Background

With four consecutive grants from the Bill & Melinda Gates Foundation over the period of 2000 to 2019, MSH's Pharmaceuticals and Health Technology group has demonstrated how private sector drug sellers can help ensure access to essential medicines in resource limited, underserved, and remote populations. The Strategies for Enhancing Access to Medicines (SEAM) program (2000–2005) provided proof of concept in Tanzania's Ruvuma Region for a new point of access for pharmaceutical products and services—accredited drug dispensing outlets (ADDOs). The second grant, the East African Drug Seller Initiative (EADSI; 2007–2011), picked up where SEAM left off by demonstrating scalability (Tanzania) and replicability (Uganda) of the ADDO model. The third grant, Sustainable Drug Seller Initiatives (SDSI; 2011–2014), focused on maintenance and sustainability of accredited drug shops and the adaptation and implementation of the model by a fragile state (Liberia). The fourth and current grant, Launch Drug Seller Initiatives (LaunchDSI; 2015–2019), is facilitating adaptation and scale-up of accredited drug seller initiatives (ADSI) in Africa, with activities ongoing in Nigeria and Zambia in addition to Liberia, Tanzania, and Uganda. In addition, with funding from the UK Department for International Development and the US Agency for International Development, MSH has been working with the government of Bangladesh to develop standards for retail drug outlets as well as a pharmacy and drug shop accreditation implementation plan.

About the Accredited Drug Seller Initiatives Publication Compendium

MSH works with country stakeholders to implement public–private initiatives that combine government accreditation of premises and personnel with building the capacity of shop owners and sellers. Our comprehensive accredited drug seller initiative combines training, incentives, supervision, and regulatory enforcement with efforts to increase customers' desire for quality pharmaceutical products and services. Launched in Tanzania, the national program has accredited more than 11,000 shops and almost 20,000 dispensers.

Over more than a decade MSH authors have published a number of journal articles describing the accredited drug seller implementation experience and lessons learned in Tanzania—home of the flagship ADDO program. Ranging from robust multi-method quantitative research to informative qualitative research, the following compendium is classified by overarching topic and includes links to the full articles, if available.

Additional information can be found at www.drugsellerinitiatives.org, including a bibliography with any article related to drug sellers worldwide.



The Role of ADDOs in Tanzania's Health Care System

Accrediting Retail Drug Shops to Strengthen Tanzania’s Public Health System: An ADDO Case Study

Edmund Rutta, Jafary Liana, Martha Embrey, Keith Johnson, Suleiman Kimatta, Richard Valimba, Rachel Lieber, Elizabeth Shekalaghe, Hiiti Sillo. *Journal of Pharmaceutical Policy and Practice* (2015) 8:23. DOI 10.1186/s40545-015-0044-4.

Full text: <https://joppp.biomedcentral.com/articles/10.1186/s40545-015-0044-4>

Introduction

Retail drug sellers are a major source of health care and medicines in many countries. In Tanzania, drug shops are widely used, particularly in rural and underserved areas. Previously, the shops were allowed to sell only over-the-counter medicines, but sellers who were untrained and unqualified often illegally sold prescription drugs of questionable quality.

Case Description

In 2003, we worked with Tanzania’s Ministry of Health and Social Welfare to develop a public-private partnership based on a holistic approach that builds the capacity of owners, dispensers, and institutions that regulate, own, or work in retail drug shops. For shop owners and dispensers, this was achieved by combining training, business incentives, supervision, and regulatory enforcement with efforts to increase client demand for and expectations of quality products and services. The accredited drug dispensing outlet (ADDO) program’s goal is to improve access to affordable, quality medicines and pharmaceutical services in retail drug outlets in rural or peri-urban areas with few or no registered pharmacies. The case study characterizes how the ADDO program achieved that goal based on the World Health Organization’s health system strengthening building blocks: 1) service delivery, 2) health workforce, 3) health information systems, 4) access to essential medicines, 5) financing, and 6) leadership and governance.

Discussion and Evaluation

The ADDO program has proven to be scalable, sustainable, and transferable: Tanzania has rolled out the program nationwide; the ADDO program has been institutionalized as part of the country’s health system; shops are profitable and meeting consumer demands; and the ADDO model has been adapted and implemented in Uganda and Liberia. The critical element that was essential to the ADDO program’s success is stakeholder engagement—the successful buy-in and sustained commitment came directly from the effort, time, and resources spent to fully connect with vital stakeholders at all levels.

Conclusions

Beyond improving the quality of medicines and dispensing services, availability of essential medicines, and the regulatory system, the impact of a nationwide accredited drug seller approach on the pharmaceutical sector promises to provide a model framework for private-sector pharmaceutical delivery in the developing world that is sustainable without ongoing donor support.

Understanding the Role of Accredited Drug Dispensing Outlets in Tanzania's Health System

Martha Embrey, Catherine Vialle-Valentin, Angel Dillip, Bernard Kihyo, Romuald Mbwasi, Innocent A. Semali, John C. Chalker, Jafary Liana, Rachel Lieber, Keith Johnson, Edmund Rutta, Suleiman Kimatta, Elizabeth Shekalaghe, Richard Valimba, Dennis Ross-Degnan. *PLoS ONE* 11(11): e0164332. doi:10.1371/journal.pone.0164332.

Full text: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0164332>

Introduction	People in many low-income countries access medicines from retail drug shops. In Tanzania, a public-private partnership launched in 2003 used an accreditation approach to improve access to quality medicines and pharmaceutical services in underserved areas. The government scaled up the accredited drug dispensing outlet (ADDO) program nationally, with over 9,000 shops now accredited. This study assessed the relationships between community members and their sources of health care and medicines, particularly antimicrobials, with a specific focus on the role ADDOs play in the health care system.
Methods	Using mixed methods, we collected data in four regions. We surveyed 1,185 households and audited 96 ADDOs and 84 public/nongovernmental health facilities using a list of 17 tracer drugs. To determine practices in health facilities, we interviewed 1,365 exiting patients. To assess dispensing practices, mystery shoppers visited 306 ADDOs presenting one of three scenarios (102 each) about a child's respiratory symptoms.
Results and Discussion	Of 614 household members with a recent acute illness, 73% sought outside care—30% at a public facility and 31% at an ADDO. However, people bought medicines more often at ADDOs no matter who recommended the treatment; of the 581 medicines that people had received, 49% came from an ADDO. Although health facilities and ADDOs had similar availability of antimicrobials, ADDOs had more pediatric formulations available ($p < 0.001$). The common perception was that drugs from ADDOs are more expensive, but the difference in the median cost to treat pneumonia was relatively minimal (US\$0.26 in a public facility and US\$0.30 in an ADDO). Over 20% of households said they had someone with a chronic condition, with 93% taking medication, but ADDOs are allowed to sell very few chronic care-related medicines. ADDO dispensers are trained to refer complicated cases to a health facility, and notably, 99% of mystery shoppers presenting a pneumonia scenario received an antimicrobial (54%), a referral (90%), or both (45%), which are recommended practices for managing pediatric pneumonia. However, one-third of the dispensers needlessly sold antibiotics for cold symptoms, and 85% sold an antibiotic on request. In addition, the pneumonia scenario elicited more advice on handling the illness than the cold symptoms scenario (61% vs. 15%; $p < 0.0001$), but overall, only 44% of the dispensers asked any of the shoppers about danger signs potentially associated with pneumonia in a child.
Conclusion	ADDOs are the principal source of medicines in Tanzania and an important part of a multifaceted health care system. Poor prescribing in health facilities, poor dispensing at ADDOs, and inappropriate patient demand continue to contribute to inappropriate medicines use. Therefore, while accreditation has attempted to address the quality of pharmaceutical services in private sector drug outlets, efforts to improve access to and use of medicines in Tanzania need to target ADDOs, public/nongovernmental health facilities, and the public to be effective.

Creating a New Class of Pharmaceutical Services Provider for Underserved Areas: The Tanzania Accredited Drug Dispensing Outlet Experience

Edmund Rutta, Katie Senauer, Keith Johnson, Grace Adeya, Romuald Mbwasi, Jafary Liana, Suleiman Kimatta, Margareth Sigonda, and Emmanuel Alphonse. *Progress in Community Health Partnerships: Research, Education, and Action* 2009 Summer;3(2):145-53. doi: 10.1353/cpr.0.0063.

Link to abstract: <http://muse.jhu.edu/article/265915>

The Problem	In developing countries, the most accessible source of treatment for common conditions is often an informal drug shop, where drug sellers are untrained and operations are unmonitored.
Purpose	We sought to describe a public–private initiative in Tanzania that created a new class of provider in government-accredited drug outlets, which improved the quality of medicines and pharmaceutical services in previously underserved areas.
Key Points	The accredited drug-dispensing outlet program combines changing behavior and expectations of community members who use, own, regulate, and work in drug shops. Success resulted from including community stakeholders from the beginning of the process.
Conclusions	Addressing shortages in qualified health care providers by training and accrediting private sector drug dispensers to recognize common conditions and provide quality pharmaceutical products and services is feasible in a developing country, when supported by an appropriate policy and regulatory environment. Scaling up and sustaining the program will be a challenge.

Reformed Drug Shops can Widen Access to Healthcare

Jafary Hassan Liana, Martha Embrey. *SciDev.Net*, 10/06/15

Full text: <http://www.scidev.net/global/health/opinion/reformed-pharmaceuticals-widen-healthcare-access.html>

- These shops are popular with rural people but many sellers lack qualifications
- Introducing training, accreditation and oversight can enhance their services
- Once established, such a system funds itself, ending the need for donor support



ADDOs and Antimicrobial Resistance

What Roles do Accredited Drug Dispensing Outlets in Tanzania Play in Facilitating Access to Antimicrobials? Results of a Multi-Method Analysis.

John C Chalker, Catherine Vialle-Valentin, Jafary Liana, Romuald Mbwas, Innocent A Semali, Bernard Kihyo, Elizabeth Shekalaghe, Angel Dillip, Suleiman Kimatta, Richard Valimba, Martha Embrey, Rachel Lieber, Edmund Rutta, Keith Johnson, Dennis Ross-Degnan. *Antimicrobial Resistance and Infection Control* (2015) 4:33. DOI 10.1186/s13756-015-0075-2.

Full text: <https://aricjournal.biomedcentral.com/articles/10.1186/s13756-015-0075-2>

Background	People in low-income countries purchase a high proportion of antimicrobials from retail drug shops, both with and without a prescription. Tanzania's accredited drug dispensing outlet (ADDO) program includes dispenser training, enforcement of standards, and the legal right to sell selected antimicrobials. We assessed the role of ADDOs in facilitating access to antimicrobials.
Methods	We purposively chose four regions, randomly selected three districts and five wards per district. Study methods included interviews at 1200 households regarding care-seeking for acute illness and knowledge about antimicrobials; mystery shoppers visiting 306 ADDOs posing as a caregiver of a child with 1) pneumonia, 2) mild acute respiratory infection (ARI), or 3) a runny nose and request for co-trimoxazole; and audits of antimicrobial availability and prices at 84 public health facilities (PHFs) and 96 ADDOs.
Results	Four hundred sixty seven (76 %) members from 367 (77 %) households had recently sought care outside the home for acute illness; 128 had purchased antimicrobials, of which 61 % had been recommended by a doctor or nurse and 32 % by an ADDO dispenser. Only 29 % obtained the antimicrobial at a PHF, whereas, 48 % purchased them at an ADDO. Most thought that ADDOs are convenient place for care, usually have needed medicines, and have high quality services and products, contrasting with 66 % who reported dissatisfaction with PHF waiting times and 56 % with medicine availability. One-third (34 %) of mystery shoppers presenting the mild ARI scenario were inappropriately sold an antimicrobial and 85 % were sold one on request; encouragingly, 99 % presenting a case of pneumonia received either an antimicrobial, referral to a trained provider, or request to bring the child for examination. Overall, 63 and 60 % of the 15 tracer antimicrobials were in stock in ADDOs and PHFs, respectively; ADDOs had significantly more antimicrobial formulations for children available (83 vs. 51 %). Of 369 records of antimicrobial sales in 47 ADDOs, 63 % were dispensed on prescription.
Conclusions	ADDOs have increased access to antimicrobials in Tanzania. Community members see them as integral to the health system. Antimicrobials are overused due to poor ADDO dispensing, poor PHF prescribing, and inappropriate public demand. Multi-pronged interventions are needed to address all determinants.

What Motivates Antibiotic Dispensing in Accredited Drug Dispensing Outlets in Tanzania? A Qualitative Study

Angel Dillip, Martha Embrey, Elizabeth Shekalaghe, Dennis Ross-Degnan, Catherine Vialle-Valentin, Suleiman Kimatta, Jafary Liana, Edmund Rutta, Richard Valimba, John Chalker. *Antimicrobial Resistance and Infection Control* (2015) 4:30. DOI 10.1186/s13756-015-0073-4

Full text: <https://aricjournal.biomedcentral.com/articles/10.1186/s13756-015-0073-4>

Background	Tanzania introduced the accredited drug dispensing outlet (ADDO) program more than a decade ago. Previous evaluations have generally shown that ADDOs meet defined standards of practice better than non-accredited outlets. However, ADDOs still face challenges with overuse of antibiotics for acute respiratory infections (ARI) and simple diarrhea, which contributes to the emergence of drug resistance. This study aimed to explore the attitudes of ADDO owners and dispensers toward antibiotic dispensing and to learn how accreditation has influenced their dispensing behavior.
Methods	The study used a qualitative approach. We conducted in-depth interviews with ADDO owners and dispensers in Ruvuma and Tanga regions where the government implemented the ADDO program under centralized and decentralized approaches, respectively; a secondary aim was to compare differences between the two regions.
Results	Findings indicate that the ADDO program has brought about positive changes in knowledge of dispensing practices. Respondents were able to correctly explain treatment guidelines for ARI and diarrhea. Almost all dispensers and owners indicated that unnecessary use of antibiotics contributed to antimicrobial resistance. Despite this knowledge, translating it to appropriate dispensing practice is still low. Dispensers' behavior is driven by customer demand, habit ("mazoea"), following inappropriate health facility prescriptions, and the need to make a profit. Although the majority of dispensers reported that they had intervened in situations where customers asked for antibiotics unnecessarily, they tended to give in to clients' requests. Small variations were noted between the two study regions; for example, some dispensers in Ruvuma reported sending clients with incorrect prescriptions back to the health facility, a practice that may reflect regional differences in ADDO implementation and in Integrated Management of Childhood Illness training. Dispensers in rural settings reported more challenges in managing ARI and diarrhea than their urban counterparts did.
Conclusion	To reduce inappropriate antibiotic use, integrated interventions must include communities, health facilities, and ADDOs. Periodic refresher training with an emphasis on communication skills is crucial in helping dispensers deal with customers who demand antibiotics. Responsible authorities should ensure that ADDOs always have the necessary tools and resources available.

Engaging the Private Sector to Improve Antimicrobial Use in the Community: Experience from Accredited Drug Dispensing Outlets in Tanzania

Richard Valimba, Jafary Liana, Mohan P Joshi, Edmund Rutta, Martha Embrey, Maganga Bundala, Bryceson Kibassa. *Journal of Pharmaceutical Policy and Practice* 2014, 7:11.

Full text: <http://www.joppp.org/content/7/1/11>

Objectives	A public-private partnership in Tanzania launched the accredited drug dispensing outlet (ADDO) program to improve access to quality medicines and pharmaceutical services in rural areas. ADDO dispensers play a potentially important role in promoting the rational use of antimicrobials, which helps control antimicrobial resistance (AMR). The study objectives were to 1) improve dispensing practices of antimicrobials, 2) build ADDO dispensers' awareness of the consequences of misusing antimicrobials, and 3) educate consumers on the correct use of antimicrobials through the use of printed materials and counseling.
Methods	Our intervention targeted ADDO dispensers and community members in Kilosa district. We promoted AMR awareness using posters hung in public places, health facilities, and ADDOs; sensitizing 84 health care providers on AMR issues; and providing training and on-site support for 124 ADDO dispensers to increase their AMR knowledge and dispensing skills. Baseline and endline assessments included direct observation of dispensers' practices; interviews with ADDO dispensers (71 at baseline and 68 at endline) regarding dispensing experiences; 230 exit interviews with ADDO customers regarding use of antimicrobials during monitoring visits; and review of ADDO records. Indicators were based on product availability, dispensing practices, customers' knowledge of how to take their medicines, and dispenser and public awareness of the AMR threat.
Results	Availability of tracer antimicrobials increased by 26% ($p = 0.0088$), and the proportion of ADDOs with unauthorized items decreased from 53% to 13% ($p = 0.0001$). The percentage of ADDO dispensers following good dispensing practices increased from an average of 67% in the first monitoring visit to an average of 91% during the last visit ($p = 0.0001$). After the intervention, more dispensers could name more factors contributing to AMR and negative consequences of inappropriate antimicrobial use, and over 95% of ADDO customers knew important information about the medicines they were dispensed.
Conclusions	Providing educational materials and equipping ADDO dispensers with knowledge and tools helps significantly improve community medicine use and possibly reduces AMR. The number of community members who learned about AMR from ADDO dispensers indicates that they are an important source of information on medicine use

Household Knowledge of Antimicrobials and Antimicrobial Resistance in the Wake of an Accredited Drug Dispensing Outlet (ADDO) Program Rollout in Tanzania

Daudi Simba, Deodatus Kakoko, Innocent Semali, Anna Kessy, Martha Embrey. *PLoS ONE* 11(9): e0163246. doi:10.1371/journal.pone.0163246

Full text: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0163246>

Introduction	Private sector drug shops are an important source of medicines in Tanzania. In 2003, the government introduced the accredited drug dispensing outlet (ADDO) program to improve access to good-quality medicines in rural and peri-urban areas that have frequent drug shortages in public health facilities and few or no registered pharmacies. However, increasing access may also contribute to antimicrobial resistance (AMR) due to the potential overuse and misuse of drugs.
Methods	<p>We conducted a cross-sectional household survey in four regions in mainland Tanzania to characterize consumer care-seeking habits and medicines use and to determine the extent to which members of the community are knowledgeable about antimicrobials and AMR.</p> <p>Within the regions, we applied a multistage cluster sampling design, cascading from districts, wards, and villages to households. Multivariate logistic analysis was done to determine variables influencing knowledge of antimicrobials and AMR, while controlling for confounding factors. Variables included age, occupation, level of education, membership in an insurance scheme, and wealth status.</p>
Results and Discussion	We revealed that communities in four Tanzanian regions have low levels of knowledge of the concepts of antimicrobials and their use and AMR. Level of public understanding rose with wealth status and education. Only one-third of 1,200 respondents (33.6%) had ever heard of a medicine called an antimicrobial, and 5±15% could name at least one antimicrobial spontaneously. Some thought other medicines, such as paracetamol were antimicrobial (7.5%). People were equally likely to agree that pneumonia should be treated with an antimicrobial (21.4%) as well as common cold (28.4%). Understanding of AMR risks was better, particularly related to HIV and AIDS (32.2%) and malaria (38.6%)—most likely due to information campaigns focused on those two diseases. The level of knowledge decreased the further away respondents lived from an ADDO ($p = 0.0001$) and where ADDO density was lower ($p = 0.001$), which supports the use of ADDO dispensers as sources of community information and change agents for more appropriate medicine use.
Conclusion	Lack of knowledge about antimicrobials and AMR in Tanzanian communities needs to be addressed through multi-pronged strategies that focus on prescribers and the public—especially those who are poorer and less educated.



ADDOS as a Platform for Community Health Initiatives—Malaria, Tuberculosis, and Community Health Workers

Improvements in Access to Malaria Treatment in Tanzania after Switch to Artemisinin Combination Therapy and the Introduction of Accredited Drug Dispensing Outlets—A Provider Perspective

Sandra Alba, Manuel W Hetzel, Catherine Goodman, Angel Dillip, Jafary Liana, Hassan Mshinda, Christian Lengeler. *Malaria Journal* 2010, 9:16.

Full text: <http://www.malariajournal.com/content/9/1/164>

Background	To improve access to treatment in the private retail sector a new class of outlets known as accredited drug dispensing outlets (ADDO) was created in Tanzania. Tanzania changed its first-line treatment for malaria from sulphadoxine-pyrimethamine (SP) to artemether-lumefantrine (ALu) in 2007. Subsidized ALu was made available in both health facilities and ADDOs. The effect of these interventions on access to malaria treatment was studied in rural Tanzania.
Methods	The study was carried out in the villages of Kilombero and Ulunga Demographic Surveillance System (DSS) and in Ifakara town. Data collection consisted of: 1) yearly censuses of shops selling drugs; 2) collection of monthly data on availability of anti-malarials in public health facilities; and 3) retail audits to measure anti-malarial sales volumes in all public, mission and private outlets. The data were complemented with DSS population data.
Results	Between 2004 and 2008 access to malaria treatment greatly improved and the number of anti-malarial treatment doses dispensed increased by 78%. Particular improvements were observed in the availability (from 0.24 shops per 1,000 people in 2004 to 0.39 in 2008) and accessibility (from 71% of households within 5 km of a shop in 2004 to 87% in 2008) of drug shops. Despite no improvements in affordability this resulted in an increase of the market share from 49% of anti-malarial sales 2005 to 59% in 2008. The change of treatment policy from SP to ALu led to severe stock-outs of SP in health facilities in the months leading up to the introduction of ALu (only 40% months in stock), but these were compensated by the wide availability of SP in shops. After the introduction of ALu stock levels of the drug were relatively high in public health facilities (over 80% months in stock), but the drug could only be found in 30% of drug shops and in no general shops. This resulted in a low overall utilization of the drug (19% of all anti-malarial sales)
Conclusions	The public health and private retail sector are important complementary sources of treatment in rural Tanzania. Ensuring the availability of ALu in the private retail sector is important for its successful uptake.

Increasing Access to Subsidized Artemisinin-based Combination Therapy through Accredited Drug Dispensing Outlets in Tanzania

Edmund Rutta, Bryceson Kibassa, Brittany McKinnon, Jafary Liana, Romuald Mbwasi, Wilson Mlaki, Martha Embrey, Michael Gabra, Elizabeth Shekalaghe, Suleiman Kimatta, and Hiiti Sillo. *Health Research Policy and Systems* 2011, 9:22.

Full text: <http://www.healthpolicysystems.com/content/9/1/22>

Background	In Tanzania, many people seek malaria treatment from retail drug sellers. The National Malaria Control Program identified the accredited drug dispensing outlet (ADDO) program as a private sector mechanism to supplement the distribution of subsidized artemisinin-based combination therapies (ACTs) from public facilities and increase access to the first-line antimalarial in rural and underserved areas. The ADDO program strengthens private sector pharmaceutical services by improving regulatory and supervisory support, dispenser training, and record keeping practices.
Methods	The government's pilot program made subsidized ACTs available through ADDOs in 10 districts in the Morogoro and Ruvuma regions, covering about 2.9 million people. The program established a supply of subsidized ACTs, created a price system with a cost recovery plan, developed a plan to distribute the subsidized products to the ADDOs, trained dispensers, and strengthened the adverse drug reactions reporting system. As part of the evaluation, 448 ADDO dispensers brought their records to central locations for analysis, representing nearly 70% of ADDOs operating in the two regions. ADDO drug register data were available from July 2007-June 2008 for Morogoro and from July 2007-September 2008 for Ruvuma. This intervention was implemented from 2007-2008.
Results	During the pilot, over 300,000 people received treatment for malaria at the 448 ADDOs. The percentage of ADDOs that dispensed at least one course of ACT rose from 26.2% during July-September 2007 to 72.6% during April-June 2008. The number of malaria patients treated with ACTs gradually increased after the start of the pilot, while the use of non-ACT antimalarials declined; ACTs went from 3% of all antimalarials sold in July 2007 to 26% in June 2008. District-specific data showed substantial variation among the districts in ACT uptake through ADDOs, ranging from ACTs representing 10% of all antimalarial sales in Kilombero to 47% in Morogoro Rural.
Conclusions	The intervention increased access to affordable ACTs for underserved populations. Indications are that antimalarial monotherapies are being "crowded out" of the market. Importantly, the transition to ACTs has been accomplished in an environment where the safety and efficacy of the drugs and the quality of services are being monitored and regulated. This paper presents a description of the pilot program implementation, results of the program evaluation, and a discussion of the challenges and recommendations that will be used to guide rollout of subsidized ACT in ADDOs in the rest of Tanzania and possibly in other countries.

Understanding Private Retail Drug Outlet Dispenser Knowledge and Practices in Tuberculosis Care in Tanzania

Edmund Rutta, Allan Tarimo, Emily Delmotte, I James, Salama Mwakisu, Diane Kasembe, Niranjana Konduri, Richard Silumbe, Kanjinga Kakanda, Richard Valimba. *The International Journal of Tuberculosis and Lung Disease* 2014, 18(9):1108-1113(6).

Full text: <http://dx.doi.org/10.5588/ijtld.14.0020>

Setting	Private sector accredited drug dispensing outlets in Morogoro and pharmacies in Dar es Salaam, Tanzania.
Objective	To assess 1) the level of knowledge about tuberculosis (TB) among dispensers in Tanzania's retail pharmaceutical sector; 2) practices related to identification of patients with suspected TB; 3) the availability of educational materials and training; and 4) the availability of first- and second-line anti-tuberculosis treatment in retail drug outlets.
Design	A cross-sectional descriptive study involving the administration of a structured questionnaire among drug dispensers in 122 pharmacies and 173 accredited drug dispensing outlets.
Results	Private retail drug outlets are convenient; most are open at least 12 h per day, 7 days/week. Although 95% of dispensers identified persistent cough as a symptom of TB, only 1% had received TB-related training in the previous 3 years; 8% of outlets stocked first-line anti-tuberculosis medicines, which are legally prohibited from being sold at retail outlets. The majority of respondents reported seeing clients with TB-like symptoms, and of these 95% reported frequently referring clients to nearby health facilities.
Conclusion	Private retail pharmaceutical outlets can potentially contribute to TB case detection and treatment; however, a coordinated effort is needed to train dispensers and implement appropriate referral procedures.

Can Formalizing Links Among Community Health Workers, Accredited Drug Dispensing Outlet Dispensers, and Health Facility Staff Increase Their Collaboration to Improve Prompt Access to Maternal and Child Care? A Qualitative Study in Tanzania

Angel Dillip, Suleiman Kimatta, Martha Embrey, John C Chalker, Richard Valimba, Mariam Malliwah, John Meena, Rachel Lieber, and Keith Johnson. *BMC Health Services Research* 2017, 17:416. doi: 10.1186/s12913-017-2382-1

Full text: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-017-2382-1>

Background	In Tanzania, progress toward achieving the 2015 Millennium Development Goals for maternal and newborn health was slow. An intervention brought together community health workers, health facility staff, and accredited drug dispensing outlet (ADDO) dispensers to improve maternal and newborn health through a mechanism of collaboration and referral. This study explored barriers, successes, and promising approaches to increasing timely access to care by linking the three levels of health care provision.
Methods	The study was conducted in the Kibaha district, where we applied qualitative approaches with in-depth interviews and focus group discussions. In-depth interview participants included retail drug shop dispensers (36), community health workers (45), and health facility staff members (15). We conducted one focus group discussion with district officials and four with mothers of newborns and children under 5 years old.
Results	Relationships among the three levels of care improved after the linkage intervention, especially for ADDO dispensers and health facility staff who previously had no formal communication pathway. The study participants' perceptions of success included improved knowledge of case management and relationships among the three levels of care, more timely access to care, increased numbers of patients/customers, more meetings between community health workers and health facility staff, and a decrease in child and maternal mortality. Reported challenges included stock-outs of medicines at the health facility, participating ADDO dispensers who left to work in other regions, documentation of referrals, and lack of treatment available at health facilities on the weekend. The primary issue that threatens the sustainability of the intervention is that local council health management team members, who are responsible for facilitating the linkage, had not made any supervision visits and were therefore unaware of how the program was running.
Conclusion	The study highlights the benefits of approaches that link different levels of care providers to improve access to maternal and child health care. To strengthen this collaboration further, health campaign platforms should include retail drug dispensers as a type of community health care provider. To increase linkage sustainability, the council health management team needs to develop feasible supervision plans.



ADDOS and Pharmaceutical Product Quality

The Quality of Selected Essential Medicines Sold in Accredited Drug Dispensing Outlets and Pharmacies in Tanzania

Eliangiringa Kaale, Vicky Manyanga, Mhina Chambuso, Jafary Liana, Edmund Rutta, Martha Embrey, Thomas Layloff, Keith Johnson. *PLoS ONE* 2016,11(11): e0165785. doi:10.1371/journal.pone.0165785

Full text: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0165785>

Introduction	The purpose of this study was to investigate the quality of a select group of medicines sold in accredited drug dispensing outlets (ADDOs) and pharmacies in different regions of Tanzania as part of an in-depth cross-sectional assessment of community access to medicines and community use of medicines.
Methods	We collected 242 samples of amoxicillin trihydrate, artemether-lumefantrine (ALu), co-trimoxazole, ergometrine maleate, paracetamol, and quinine from selected ADDOs and pharmacies in Mbeya, Morogoro, Singida, and Tanga regions. The analysis included physical examination and testing with validated analytical techniques. Assays for eight of nine products were conducted using high-performance thin-layer chromatography (HPTLC). For ALu tablets, we used a two-tiered approach, where tier 1 was a semi-quantitative Global Pharma Health Fund-Minilab [®] method and tier 2 was high-performance liquid chromatography (HPLC) as described in The International Pharmacopoeia's monograph for artemether-lumefantrine.
Results and Discussion	The physical examination of samples revealed no defects in the solid and oral liquid dosage forms, but unusual discoloration in an injectable solution, ergometrine maleate. For ALu, the results showed that of 38 samples, 31 (81.6%) passed tier 1 testing and 7 (18.4%) gave inconclusive drug content results. The inconclusive ALu samples were submitted for tier 2 testing and all met the quality standards. The pass rate using the HPTLC and TLC/HPLC assays was 93.8%; the failures were the ergometrine maleate samples purchased from both ADDOs and pharmacies. The disintegration testing of the solid dosage forms was conducted in accordance with US Pharmacopeia monographs. Only two samples of paracetamol, 1.2% of the solid dosage forms, failed to comply to standards. The study revealed a high overall rate of 92.6% of samples that met the quality standards. Although the overall failure rate was 7.4%, it is important to note that this was largely limited to one product and likely due to poor distribution and storage rather than poor manufacturing practices.
Conclusions	Over 90% of the medicines sold in ADDOs and pharmacies met quality standards. Policy makers need to reconsider ergometrine maleate's place on the list of medicines that ADDOs are allowed to dispense, by either substituting a more temperature-stable therapeutically equivalent product or requiring those sites to have refrigerators, which is not a feasible option for rural Tanzania.