

Anti-corruption in Uganda's drug shops: do surplus health workers offer a high-impact, feasible solution?

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Acronyms and abbreviations

ACE	Anti-Corruption Evidence consortium
AMFm	Affordable Medicines Facility for Malaria
DDI	District Drug Inspector
DSV	drug shop vendor
FGD	focus group discussion
iCCM	Integrated Community Case Management
IDI	in-depth interview
LC	Local Council
NDAI	National Drug Shop Advocacy Initiative
NDA	National Drug Authority
R	respondent
UGX	Ugandan Shillings
WHO	World Health Organization

Executive summary

In many African countries, the majority of sick adults and children seek healthcare from medicine retail outlets which are licensed to sell over-the-counter drugs. This includes malaria treatment and occasionally antibiotics. As such, these outlets provide a critical service, enabling access to life-saving medicines for all income groups in both urban and rural areas.

Yet rule violations are commonplace. Examples include retailers operating without a licence; offering services beyond their legal permits and professional capacity (such as in-patient care); selling poor quality products in inappropriate quantities; and failing to refer clients for other medical services when appropriate or necessary.

In a context of high rates of morbidity and mortality from communicable disease, these rule violations have devastating consequences for individuals and severe costs for society. They increase the likelihood of catastrophic expenditure on health and often for services that may not improve health outcomes. They also drive antimicrobial resistance, which increases the costs of medicines and threatens to render many classes of antibiotics ineffective.

Current policy options provided by global health actors to improve medicine markets in low-income countries include either investing heavily in primary healthcare to curtail the market for medicine sellers; or introducing educational and subsidised commodities to improve practices. In Uganda, the focus of this paper, recent cuts in the health budget make substantive investment in primary healthcare highly unlikely. Research suggests that education, subsidised commodities and service improvement programmes are insufficient to affect the sorts and the scale of changes necessary to reform the medicines market and make it work for those providing and seeking healthcare.

Using a mixed-methods approach, this study combines observation, qualitative interviews, focus group discussions and key informant interviews with a mapping exercise and survey to understand the drugs retail market in Uganda. Drawing on the SOAS Anti-Corruption Evidence (ACE) framework, it considers a new governance pathway for drugs retail outlets, arguing that corruption can only be tackled effectively if interventions work as part of the existing institutional framework. This means working within the current regulatory system and identifying drug shop vendors (DSVs) who are likely to support effective forms of regulation. The paper considers the extent to which one particular group of DSVs might support regulatory change and rule-abiding behaviour in the market: this group consists of trained nurses and midwives, most of whom are women and all of whom are surplus to the absorption capacity of the formal health system.

With no access to positions within the public system or large private hospitals, these surplus health workers will likely spend their careers working in the medicine retail sector. While our research indicates that not all surplus health workers would support the idea of regulatory change, it was those who work in drug shops with mid-level profitability and those in the least profitable group of shops understand that poor regulation creates saturated markets

that, in turn, make it difficult to run a profitable business. We find that this group of DSVs support the idea of changes to regulation that would include the involvement of drug shops, their lobby group and local community leaders. Any feasible, high-impact strategy must ensure that there is no negative impact on access to antibiotics through this policy change, however, as these are the most profitable medicines for drug shops. Therefore, a new, more effective form of regulation would have to change the rules for drug shops to acknowledge the role that these outlets play in the distribution of some antibiotics from the 'access' list of the World Health Organization's (WHO) 'Access, Watch, Reserve' (AWaRe) strategy.

1. Introduction

Sustainable Development Goal (SDG) 3 commits to universal access to effective, high-quality healthcare. Private retail health markets offer the opportunity to increase access to medicines, but in low-income settings they also bring with them many threats to the development of quality health services (including profiteering, inequality in cost, risk of poor-quality drugs, and sales of ineffective medicines at inappropriate doses). Over the last 20 years, debates about the benefits, potential and dangers of engaging with these providers have become commonplace among global and national health policy-makers (Basu et al., 2012, Fraser and Druce, 2006, Hozumi et al., 2009, Mayora et al., 2018, Montagu and Goodman, 2016).

From a development perspective, the sale of unnecessary, sub-therapeutic or excessive doses of medicines that are likely to have little or no impact on health outcomes are of considerable concern. These practices impact negatively on citizens' right to health with two negative externalities: first, an increase in the costs of out-of-pocket (OOP) expenditures, which are known to be highly regressive (Nabyonga Orem et al., 2013, Kwesiga et al., 2015); and second, the fostering of antimicrobial resistance, which represents a major public health threat (Pokharel and Adhikari, 2020, Waseem et al., 2019).

In countries such as Uganda, the subject of this paper, OOP expenditure impacts mostly upon the poor who are more likely to engage in self-treatment through purchasing medicines (Kwesiga et al., 2015, Kwesiga et al., 2020). Here, families can be tipped into crisis by making catastrophic payments for medical services, including pharmaceuticals (Xu et al., 2007, Kwesiga et al., 2020). OOPs for health also impact on the entire economy by limiting a household's ability to finance other basic needs. In Uganda, where taxes (which are more progressive) comprise a much smaller proportion of total health-sector financing compared with OOPs (Kwesiga et al., 2015), a higher proportion of OOP expenditure goes on medicines (rather than services, consultation or transport) (Nabyonga Orem et al., 2013). In this respect, Uganda's estimated levels of catastrophic payments and impoverishment are higher in magnitude than Kenya, Rwanda, Zambia, South Africa, Tanzania and Ghana (Kwesiga et al., 2020), with the highest proportion of OOPs occurring in private-sector pharmacies and Class C drug shops as opposed to hospitals or clinics) (Nabyonga Orem et al., 2013).

Poor practice in the medicines retail sector also fosters the ineffective use of drugs, which increases antimicrobial resistance (AMR) – a naturally occurring phenomena that emerges when microbes and bacteria adapt and become resistant to antibiotics, antimalarial and anti-fungal medicines (Smith, 2015) – without making any gains to health outcomes or wellbeing (Laxminarayan et al., 2013, Laxminarayan et al., 2016). While AMR emerges from the general use of antimicrobials, it is accelerated by over-prescription and under-dosing of these medicines (Okeke et al., 2005). Both of these practices are commonplace in Class C Drug shops in Uganda and in the region more generally, due to the pressure to make sales, the desirability of medicines as commodities and the practice of adapting prescriptions in relation to the spending power of each client (Hutchinson et al., 2015, Wafula et al., 2012, Chandler et al., 2011, Hutchinson et al., 2017). AMR also has significant economic

consequences. It results in increased healthcare spending, by increasing the length of illness episodes and hospital stays (World Health Organization, 2014). It also likely increases either government subsidies or OOPs, as cheaper off-patent medicines become ineffective and new, more expensive patented compounds take their place. In some instances, the presence of multiple, multi-resistant bacteria has been known to lead to the death of patients for whom no antibiotic medicines remain effective (Hawkey, 2015).

Over the last 20 years, interventions have been developed to improve the medicines retail sector, stemming from both disease-targeted and health systems programming. From malaria and closely connected programmes such as the Integrated Community Case Management (iCCM) of common childhood diseases, the emphasis has been on providing consumables and/or training packages to improve the ability of medicine sellers to effectively diagnose diseases and administer the correct doses of quality assured medicines (Awor et al., 2015, Awor et al., 2012, Mbonye et al., 2014, Mbonye et al., 2015, Mbonye et al., 2017, Hutchinson et al., 2017, Hutchinson et al., 2015, Hansen et al., 2013, Kitutu et al., 2017).

The Affordable Medicines Facility for Malaria (AMFm) was the largest and, among global policy makers, the most controversial intervention in these markets (Tougher et al., 2012, Fink et al., 2013, Oxfam, 2012). Aimed at increasing the market share for artemisinin-based combination therapy (ACT), crowding out ineffective treatments, poor quality medicines and artemisinin monotherapies, it provided a subsidy at the factory gate with the aim to flood the market with affordable, high-quality, first line malaria medicine in seven African countries, namely Ghana, Kenya, Madagascar, Niger, Nigeria, Tanzania (mainland and Zanzibar) and Uganda (Tougher et al., 2017). An evaluation of AMFm shows that access to medicines was increased across countries, but the intervention also stimulated massive overuse of ACTs in the community (Amfm Independent Evaluation Team: Hanson, 2012). Associated co-interventions then sought to manage the overuse of malaria medicine with the introduction of rapid diagnostic tests (RDTs) (Cohen et al., 2015). While many of these interventions were successful in reducing the overuse of ACTs, there was no incentive for medicine vendors to sell fewer medicines. And, because of this, the introduction of RDTs had the unintended negative effect of stimulating an increase in the inappropriate sales of other medicines. Consequently, improvements in the targeting of malaria treatment were often off-set by unnecessary sales of antibiotics (Hutchinson et al., 2017, Hopkins et al., 2017). This tendency to substitute products often nullifies the benefits of knowledge and technological improvements in retail outlets (Wafula and Goodman, 2010).

Trials of accreditation interventions to upgrade drug shops in sub-Saharan Africa began somewhat earlier than the malaria and iCCM interventions in the retail sector. In Tanzania, the Accredited Drugs Dispensing Outlets scheme began in 2003 and created a new class of provider known as ADDOs (Rutta et al., 2015, Rutta et al., 2009). The idea behind the scheme was that a group of drug shops that were allowed to sell a greater range of medicines including antibiotics would emerge and provide better, safer services for their clients (Rutta et al., 2009, Wafula et al., 2014). As with AMFm and trials to introduce malaria diagnostics, these had some success but poor practice around the use of antibiotics, in particular, has remained a problem as ADDOs continue to prescribe unnecessary antibiotics

despite training (Embrey et al., 2016, Dillip et al., 2015). More recently, Tanzania has begun to experiment with prime vendor schemes (Kuwawenaruwa et al., 2020).

Such interventions are a good example of the ways in which global health actors have sought to harness the dynamism of drug sellers to improve access to essential medicines among those who are poorly served by the public sector (Arrow KJ et al., 2004, Basu et al., 2012, Forsberg et al., 2011, Fraser and Druce, 2006). Unfortunately, they have failed to identify the incentives through which equitable access *and* the rational use of medicines could be realised. The assumption in many of these projects is that improvements in the medicine sellers' knowledge – and sometimes in the knowledgeability of the consumer – will result in improvements in care, and that the desire of a business to provide a good service will in turn increase customers through the demonstration of good practice.

The programmes targeted at improving access to malaria medicine and tackling childhood disease have sought to intervene in the market to provide better access to particular treatments and to upgrade drug shops. Health systems researchers, on the other hand, tend to be concerned with the interrelationship between public and private health actors and focus on this as the basis for interventions. The Lancet Commission on the private sector (2016), for example, understands medicine sellers and drug shops as operating at the margins of the health system, picking up business from the failings of public-sector primary healthcare (Mackintosh et al., 2016, Montagu and Goodman, 2016). The strategies that emerge from these analyses seek to remove the market space for drug shops by investing heavily in primary healthcare and ensuring the availability of commodities. While this could render drug shops redundant, it relies on significant political will to invest public funds in primary health services, which, as we argue below, is unlikely to be realised in countries like Uganda where the government has recently cut the national contribution to the health budget (Oketch, 2021). Improving practice in drug shops remains critical in many low-income settings, but current approaches and the means of achieving this appears to have reached an impasse.

The impasse in tackling poor practice in the medicines retail sector stems, at least in part, from four conceptual and empirical flaws in the debates:

- First, retail outlets are often conceptualised as spaces in which practice is either primarily driven by concerns about health or that concerns about health are equal to the desire of shopkeepers to have a profitable business (Wafula and Goodman, 2010). Going forward, research must recognise that, although these interests can overlap, business concerns are likely to be more important than concerns about the health of the patient within the shop.
- Second, while the heterogenous nature of these shops and shopkeepers is often referred to in papers, interventions do not act effectively on this heterogeneity and have not explored its significance nor how it can be used to mobilise support for changes in the market.
- Third, evidence on how drug shop vendors (DSVs) mobilise and organise themselves politically is almost entirely lacking, as is an analysis of their position within the political settlement.

- Fourth, and most importantly, is the fact that, even though many researchers recognise that there are problems of corruption within the regulatory systems that govern medicine sales, very few recognise that corruption among regulators and the regulatory system is at the heart of the problems with poor practice in the medicines retail sector.

Box 1. Defining corruption

We define corruption within health systems as ‘the abuse or complicity in abuse, of public or private position, power or authority to benefit oneself, a group, an organization or others close to oneself in a way which diverts institutions from their core aims; where the benefits may be financial, material or non-material’ (Gaitonde in Hutchinson et al., 2020).

In this paper, we argue that it is only by tackling corruption (see Box 1) within the existing institutional framework and regulatory system, and by identifying DSVs who are likely to support effective forms of regulation, that the sector can be effectively harnessed and put to work for the benefit of the health system. Drawing on the SOAS ACE anti-corruption framework and strategies set out by Khan and colleagues (Khan et al., 2016), we argue that a feasible, high-impact anti-corruption strategy needs to build on the interests of relatively new entrants to the medicine markets, namely fully trained health workers who are surplus to the capacity of the formal public or private health institutions in the country and who will likely spend their careers working in these shops. These ‘surplus health workers’ have the professional capacity to be rule-abiding in a way that untrained shop keepers do not, but this is only possible if the numbers of actors in the market is reduced. Moreover, to ensure that changes to the market do not impact negatively on access to antibiotics and malaria medicine for citizens, changes need to be made to the rules to allow DSVs to sell these medicines legitimately.

Box 2. Four anti-corruption strategies of SOAS ACE

- 1 Change individual and group incentives.
- 2 Create policy that recognises and acts on differences between actors usually seen as homogenous.
- 3 Create forms of collective action among groups who are powerful enough to effect anti-corruption.
- 4 Render the rights and roles of different actors transparent.

For health systems, which are often underfunded, we add a fifth strategy:

- 5 Employ targeted anti-corruption investments.

Source: Khan et al. (2016).

The remainder of this paper is set out as follows. Section 2 describes the Ugandan health system, showing how changes in the political settlement have undermined long-term planning and have rendered the private sector central to the delivery of medicines. We then outline our methodology in section 3 before presenting our findings in section 4. This analysis is presented in three parts: section 4.1 presents our findings on corruption within the regulatory system, with consideration given to the consequences for medicine markets within Luwero district, Uganda. Following this, we turn to the DSVs themselves in section 4.2 to make sense of their heterogeneity and the social and political networks that they are caught within. Finally, we consider the feasibility of an anti-corruption strategy in section 4.3 by identifying the group of drug shop vendors who see the enactment of regulation as in their interests, and the changes in the current rules that would allow for a successful medicines market to emerge in Uganda. We offer our conclusions in section 5.

2. Pluralism, politics and corruption in Uganda's health system

Uganda has a pluralistic health system, which is dominated by an interdependent formal public and informal private system of bio-medical care, coupled with high demand for western pharmaceuticals (Adome et al., 1996, Kitutu et al., 2017, Hutchinson et al., 2015). Bio-medical care is divided between state-owned institutions, non-governmental organisations (NGOs), faith-based organisations and not-for-profit facilities; private hospitals and clinics; and medicine sellers who operate from pharmacies, drug shops, grocery stores and market places (Adome et al., 1996, Mogensen, 2005).

Public-sector care is organised as a tiered system of health centres run and governed at national and district level. District health teams run the health facilities from general hospitals down to what are known as 'health centres level II', with political oversight by the district chairperson (Bukenya and Golooba-Mutebi, 2020). The higher levels of care, namely regional referral and national referral hospitals, have semi-autonomy and report to the Ministry of Health. Health centre IIs provide access to basic diagnostics and care largely delivered through nursing staff. More sophisticated care is offered at facilities classed as 'health centre level III', which provide some in-patient services delivered by better trained health workers, including clinical officers and sometimes physicians (Health, 2010). District general hospitals are designated 'Health centre level IV'. A community health system also exists alongside these higher levels of care, which is delivered by untrained or minimally trained, unpaid volunteer community health workers who are organised into Village Health Teams. This type of community facility is typically referred to as a 'health centre level I'; such health services are not considered part of the formal health structure although they are guided by a comprehensive policy (Uganda Ministry of Health, 2010).

In the 2000s, a series of health-sector reforms were introduced that tied budgets to results. These created sector-wide approaches to ease coordination, to enable long-term planning for better resource allocation and to improve access to care (Croke, 2012, Tashobya et al., 2006). As these policies began to yield results, however, the political settlement in Uganda shifted. The cohesive ruling coalition began to lose power and the long-term vision fell victim to short-term populist approaches to development (Bukenya and Golooba-Mutebi, 2020). Within the health sector, the shift in the political settlement led to the removal of technically competent, reform-oriented personnel who were replaced with ruling-party loyalists (Bukenya and Golooba-Mutebi, 2019). Leadership instability meant that new ministers were appointed each electoral cycle and there was a high turnover among senior technical bureaucrats. The political appointees who emerged within the health system in the 2000s – notably Minister of Health Jim Muhwezi and Deputy Ministers Mike Mukula and Alex Maugisha – were among those associated with a number of corruption scandals (Kirya, 2011).

At district level, ongoing challenges to President Museveni's authority also led to a new political economy that underpinned decentralisation, with attempts to increase voter shares in politically sensitive areas linked to the creation of new districts. Having more than

doubled over nine years, by 2011 there were 114 districts, which had the responsibility, but limited personnel and funding, to enable effective local government leadership and the successful management of the health system (Croke, 2012).

Currently, health-sector spending sits at 7.2% of the national budget and fulfils approximately 50% of the financing needed to provide minimum healthcare for Uganda's citizens (Uganda Ministry of Health, 2020, Peiffer and Armytage, 2019). There is poor access to health commodities via the public sector and a shortage of staff in most health centres. In the fiscal year 2019/2020, the Ministry of Health reported a drop from 53% to 46% in the numbers of health facilities having 95% availability of commodities. The percentage of health facilities with over 95% availability for essential medicines and health supplies stood at 49%; antiretrovirals (ARVs) at 33%; tuberculosis (TB) drugs at 67%; laboratory commodities at 46%; and reproductive, maternal, newborn, child and adolescent health commodities stood at 33% (Uganda Ministry of Health, 2020).

Uganda's health statistics bear out the tragic fact that many Ugandans continue to suffer from poor access to good quality medicines. Malaria, pneumonia and diarrhoea remain major causes of child morbidity and mortality. Among the population as a whole, malaria remains a major leading cause of hospitalisation and death: it is responsible for 30–50% of all health facility outpatient visits, 15–20% of hospital admissions, and over 20% of hospital deaths (Ssempiira et al., 2018).

The underfunding of healthcare commodities leaves the Ministry of Health reliant on the private sector and drug shops in particular to deliver essential medicines.

The private sector continues to deliver around 50% of medicines in Uganda. This year, it may be slightly more, it could be 55% because although the government increased the budget a lot of funds have gone to COVID handling and the population has increased. Drug shops are still important in delivering medicines.
(key informant interview (KII) 2, interview 2, Ministry of Health, November 2020)

Such drug shops are regulated by the National Drug Authority (NDA), an autonomous public institution that was set up in 1993 to ensure improvements in access to good-quality, safe and efficacious medicines for the population (Camargo, 2012). The NDA governing body comprises representatives from human and veterinary medicine, medical stores, the AIDS Commission, the Uganda Medical Association and Pharmaceutical Society Uganda, but drug shops are not represented. Like other parts of the health system, the NDA has also been subject to corruption scandals, with senior members of staff having been accused of misusing funds and ongoing court cases (*Daily Monitor*, 2018).

According to NDA policy, drug shops are only meant to sell Class C drugs, which include painkillers, oral preparations and anti-fungal medication (see Annex 1 for the current full list). They should be owned and operated by either nurses, midwives or laboratory technicians. In the past, clinical officers were also allowed to operate drug shops but more recently policy has changed to encourage clinical officers to remain in the public health system.

Initially, drug shops were envisaged as a temporary part of the health system, to be replaced by pharmacies and by the re-emergence of primary services as the health system developed over time (Mayora et al., 2018). In 2014, a policy was introduced that stipulated that drug shops were only allowed to operate if they were located 1.5 kilometres from a pharmacy and 200 metres from another drug shop. However, it was only in 2018 that the NDA sought to enact the policy. They issued a press release, sent letters to registered drug shops and held a series of meetings around the country. In response, various political interventions were staged by the National Drug Shop Advocacy Initiative (NDAI), a recently created lobby group that claims to represent 6,000 drug shops across Uganda. The group petitioned the parliamentary health committee, arguing that drug shops provide an essential service within the country, are run by unemployed health workers who cannot work elsewhere and that they raise significant tax receipts for the government (NDAI representative, pers. communication, February 2020). In late 2019, the NDAI reported that they were trying to organise a meeting with President Museveni and, shortly after this, the decision to enact the policy was rescinded. This was the first time that the drug shops had used collective action to voice their concerns and bring about change at national level.

3. Methods

This is a mixed methods study, that combines observation, qualitative interviews, focus group discussions and key informant interviews with a mapping exercise and survey.

The study was conducted in Luwero district, which is located in the central region of Uganda, approximately 60 km to the north of the capital city of Kampala. The most recent census puts the district population at 456,958, with a predominantly rural agricultural population. More than a quarter (26.1%) of households live 5 km or more from a public health facility (Uganda Bureau of Statistics, 2014).

3.1. Qualitative research methods

The project began with a month of ethnographic fieldwork in 10 drug shops. These shops were known to the field workers and the principal investigator, who had been working in the district for the previous 12 months (see Hutchinson et al., forthcoming). This observation time was used at the beginning of the project to ascertain any major changes in the two months since the team had left the field. Observations were conducted in the morning, afternoon and evening in each of the drug shops. These were supplemented with informal discussions with the vendors and the customers visiting the shops. Field notes were written up at the end of each day into Microsoft word, which were then uploaded into Nvivo 12 and coded using thematic data-driven and theory-driven codes.

The qualitative research drew primarily on Wallman's (Wallman, 1984) network chart mapping and was used to elicit the social, economic and political networks of 30 DSVs in the study. Disruptions to the research caused by Covid-19 meant that we could only identify DSVs from one sub-district of Luwero for the network charts (as the full survey had not been completed) and not all of the quantitative data was available at that time. We drew on our anthropological knowledge of the drug shop businesses (Hutchinson et al 2015, 2017, 2021), and of this district (Hutchinson et al 2021) which led us to understand that the profitability or sustainability of drug shops is reflected in 1) the number of medicines on display 2) the level of investment in the shop's infrastructure 3) the number of customers frequenting the shops. Based on these observations, we classified drug shops into higher profits/ higher likelihood of sustainability (=5), mid-level profits / mid-level likelihood of sustainability (n=15) and least profitable/ least sustainable shops (n=10). We included drug shops that had up to date registration documents and those that were not currently licenced or registered. For each of these drug shops, we asked who had provided them with support for their business, either in terms of it being set up or for ongoing support. These individuals were mapped onto the chart, with distinctions made between kin and non-kin, and then details of how these individuals supported the business were discussed in detail. The discussions from these IDIs were recorded and then transcribed. Interviews that were conducted in Luganda were translated using meaning-based translation and then analysed in Nvivo 12 using a mix of codes drawn from theory and from the data itself.

KIIs were also conducted with the Chairman of the NDAI, an official from the Ministry of Health, a district health official and an official from the NDA.

Following the survey, we conducted three focus group discussions (FGDs) with 24 DSVs. These were carried out with vendors in the three different income groups who were trained health workers (nurses and midwives). Those with a high and middle income from their shop were invited to FGD 1, those with medium income to FGD 2, and those with low income to FGD 3. Discussions focused on current difficulties with regulators, perspectives on the crowded nature of the market, the challenges in creating a profitable business, and the DSVs' perspectives on potential changes in regulation to the sector. The FGDs were transcribed verbatim and translated using meaning-based translation (Larson, 1998). They were analysed using Nvivo 12 with a mix of codes drawn from theory and from the data.

3.2. Quantitative research methods

3.2.1. Sampling strategy

Following the month of ethnographic fieldwork, the researchers mapped the drug shops within the district using a global positioning survey (GPS) (see Map 1, section 4.1.1). To locate the drug shops, we drew on lists provided by the local district office that had been compiled by the district drug inspector and a list held by the NDAI (the latter of which was the most comprehensive). We supplemented this by asking DSVs to inform us of any drug shops working close to them.

Two researchers conducted a survey in all drug shops across the districts, using Online Data Kit (ODK) on tablets. The survey was piloted and adapted. It sought to understand the market conditions in which DSVs operate, the differences between drug shop incomes, the most profitable and frequently sold medicines, and the mark-up on medicines across the district. Two sub-districts were surveyed prior to the Covid-19 lockdown in Uganda and the rest of the district was surveyed once restrictions had been lifted. In all cases the researchers asked the DSVs to reflect on whether the time period that they were reporting for was typical or not. The survey responses were analysed using STATA.

A total of 366 drug shops were mapped as part of the study and 344 drug shops participated in the survey. The remaining 22 drug shops were either closed or refused to participate.

3.2.2. Ethics

The research was approved by the Ugandan National Council for Science and Technology, the Makerere University College of Health Sciences School of Public Health, and the London School of Hygiene and Tropical Medicine. Informed Consent was obtained from all participants in English and Luganda.

4. Findings

4.1. Regulatory corruption and its impact on drug shops

At district level, drug shops are regulated by district inspectors who are based in the district health office. The District Drug Inspector (DDI) in post in Luwero at the time of our field work (who also owned a drug shop in the neighbouring district) was well-known and well-liked by many of the DSVs that we interviewed. In addition to the visits that the DDI would make with other personnel (see below), she would visit drug shops alone, providing advice about documentation, which rules could be broken and how this could be managed, and which rules could not be broken without the likelihood of more serious punishment by the authorities. The DDI was known to charge a small fee for the support that she provided to the DSVs. During the interviews, the DDI was identified by 10 of the 30 DSVs as being important and helpful for their business.

In addition to the times when the DDI would come alone to drug shops, there were also occasions when she would undertake inspection visits with other members of the NDA. At these times, she would charge a small fee (to pay for airtime) in order to let the DSVs know when NDA inspection visits were likely to take place and to give the vendors time to prepare. Sometimes, however, the NDA would arrive without the DDI and so the drug shops would have no warning. Unlicensed drug shops often had their medicines removed during these visits. Officially, they are permitted to provide the NDA with paperwork at a later date and collect their medicines. However, during FGD1 the DSVs complained that they have not always been able to retrieve confiscated medicines. For example:

Respondent (R) 3: *For me I wish that even when we are at the wrong, they should not take away our drugs.*

R2: *And those drugs never make it to [where the drugs are stored], they take them to their pharmacies. Even if you go to ask for it back you never get it.*

(FGD1, high-profit drug shops)

In addition to NDA inspections, the drug shops located within the urban centres of the district were subject to informal inspections by a pharmacy inspector. Respondents indicated that this inspector would go to urban drug shops in Luwero and other districts to elicit bribes to remain silent about untrained DSVs running shops as well as shops that provide clinic services. Unlike the DDI who was well-liked, this inspector was feared in the district. During our previous ethnographic research we interviewed one untrained DSV who had refused to pay a bribe and who spent time in the local police cells for selling medicines without proper training (Hutchinson et al., forthcoming).

During the period of fieldwork, the NDA sought to centralise the process of drug inspections. This resulted in the DDI losing her contract. Her absence created confusion in the district about who should and would be regulating the drug shops, which in turn opened up space

for individuals to pose as inspectors to elicit bribes. In these cases, the individual would arrive, notify the DSV that there were NDA inspectors on the way and then demand money to protect them if they lacked a licence, if the medicines they were selling were not Class C, if they provided in-patient services or if they had unqualified individuals running or working in drug shops. FGD 3 participants described the ways in which fake inspectors regularly took money from them:

R2: *Other fake regulators have come, they started telling us those things of licenses and money.*

R1: *I gave them UGX 10,000 (US\$2.5) and then they told me 'no that is little money'. I had just entered the business and I didn't know, I thought maybe this is how they do it and it was a bit discouraging for me.*

R3: *Maybe me, what I can say about those [fake] people, they like drug shops that were new. When I had just started, that woman came and pretended to be very serious. I got scared. She told me 'Those NDA people are here. But you know what I am going to do, if you don't want to get arrested bring me UGX 200,000 (US\$ 55).' They have identity cards and put them here on their chest, they say 'I am from the district', then they always say 'the people of NDA are here in town and they are coming, hurry'. I was about to call my boss, but she took away my phone and said 'No, don't call anyone, bring the phone here'. Now [the district drug inspector] told me 'Be careful of the fake people because now me am no longer there so be careful of them because they will come'. (FGD 3)*

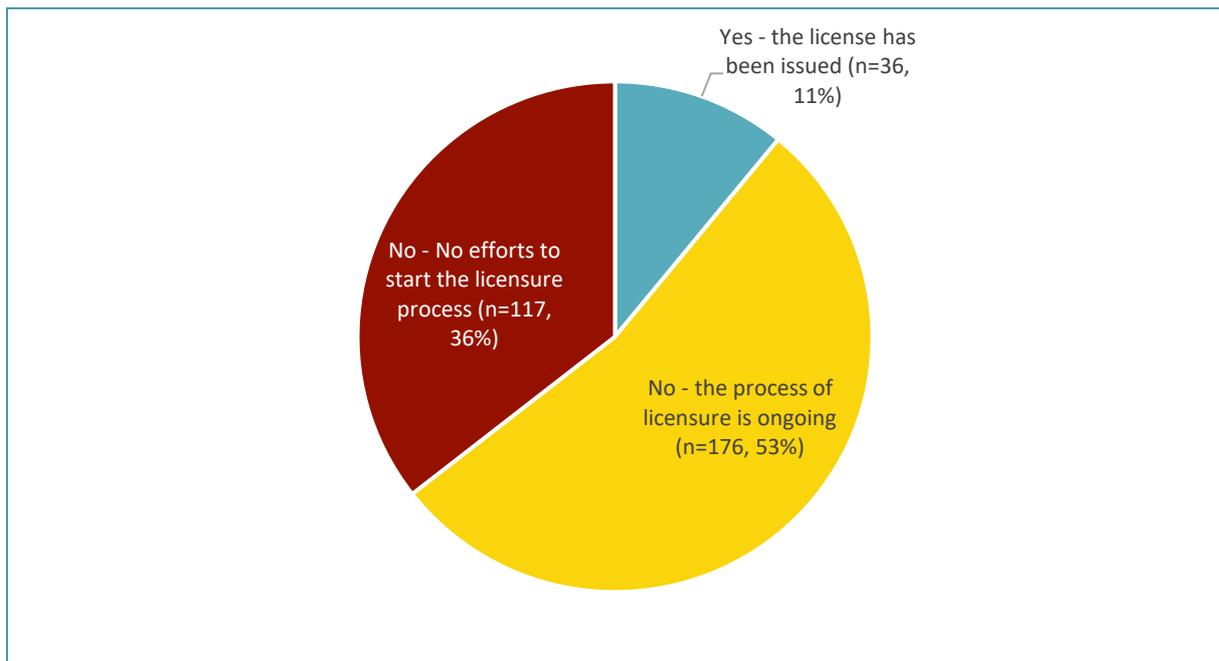
4.1.1. The impact of regulatory corruption on the market

In this section, we draw on the survey to explore the impact of regulatory corruption on the market.

a) The majority of drug shops operate without licences

Figure 1 provides details of the shops in Luwero according to the status of their licence. In the knowledge that some DSVs were in the process of licensing their shops, we provided survey respondents with three possible answers to the question about licensing – either their licence had been secured, it was ongoing or they had made no attempt to license their shop. Only 11% of drug shops that we visited had a licence; 53% said that their licence was being processed; and, strikingly, over a third (36%) stated that they had no licence and that they had made no effort to secure one.

Figure 1. Licenced and unlicenced drug shops

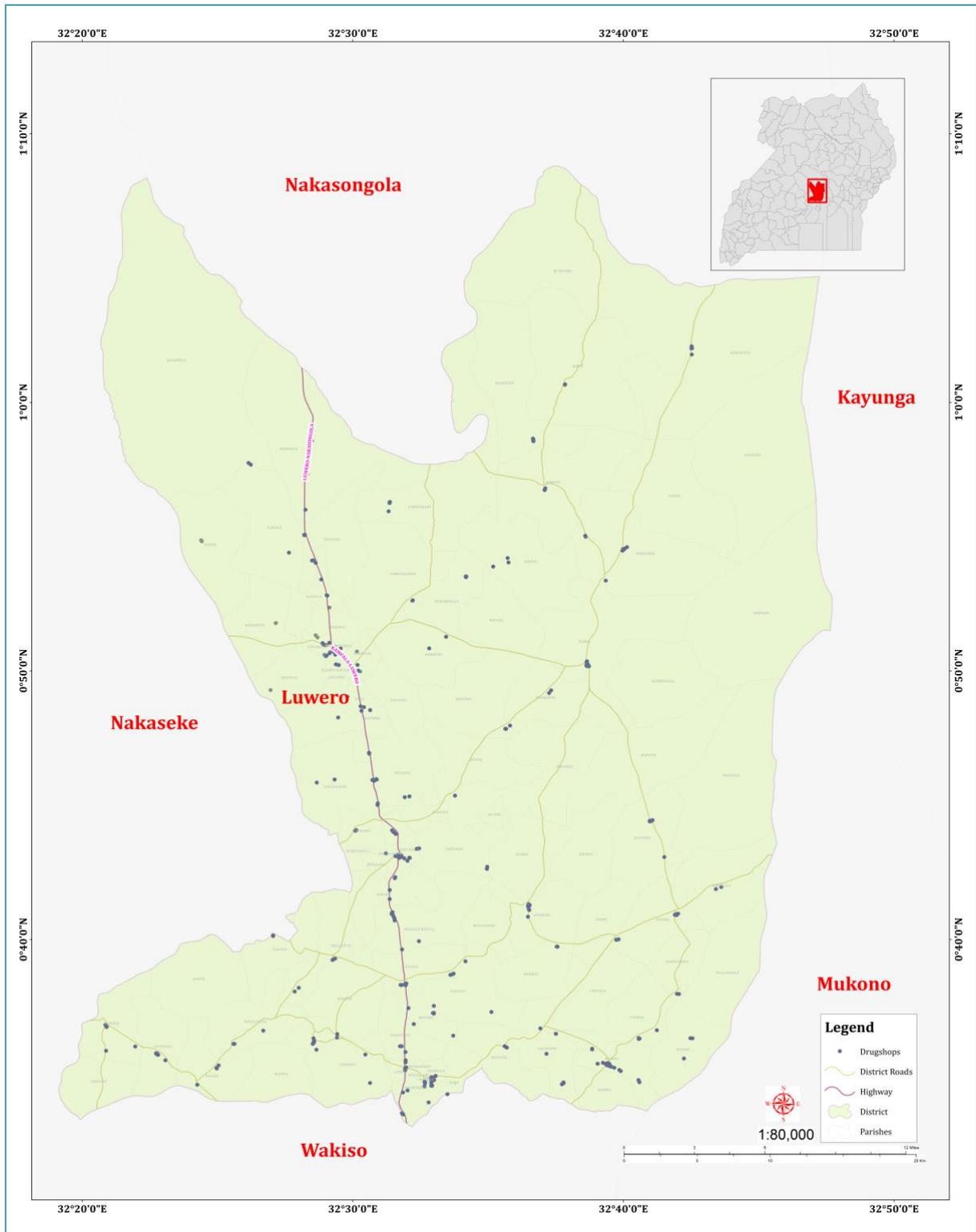


Source: The authors.

b) Medicine markets are saturated

The lack of governance over the licensing process means that there is little control over the number of drug shops in the district or over their distribution. Map 1 shows the location of the 366 drug shops. Although current rules stipulate that drug shops should not be established within 1.5 km of a pharmacy nor within 200 m of an existing drug shop that serves the community, we found many drug shops close to one another, clustered within the main town. In the map below, it is possible to see that the location of drug shops along the main road in Luwero district and around the main shopping area. This map challenges the dominant political discourse on drug shops in Uganda – that they mostly cater for rural populations.

Map 1. Drug shops in Luwero district in 2020

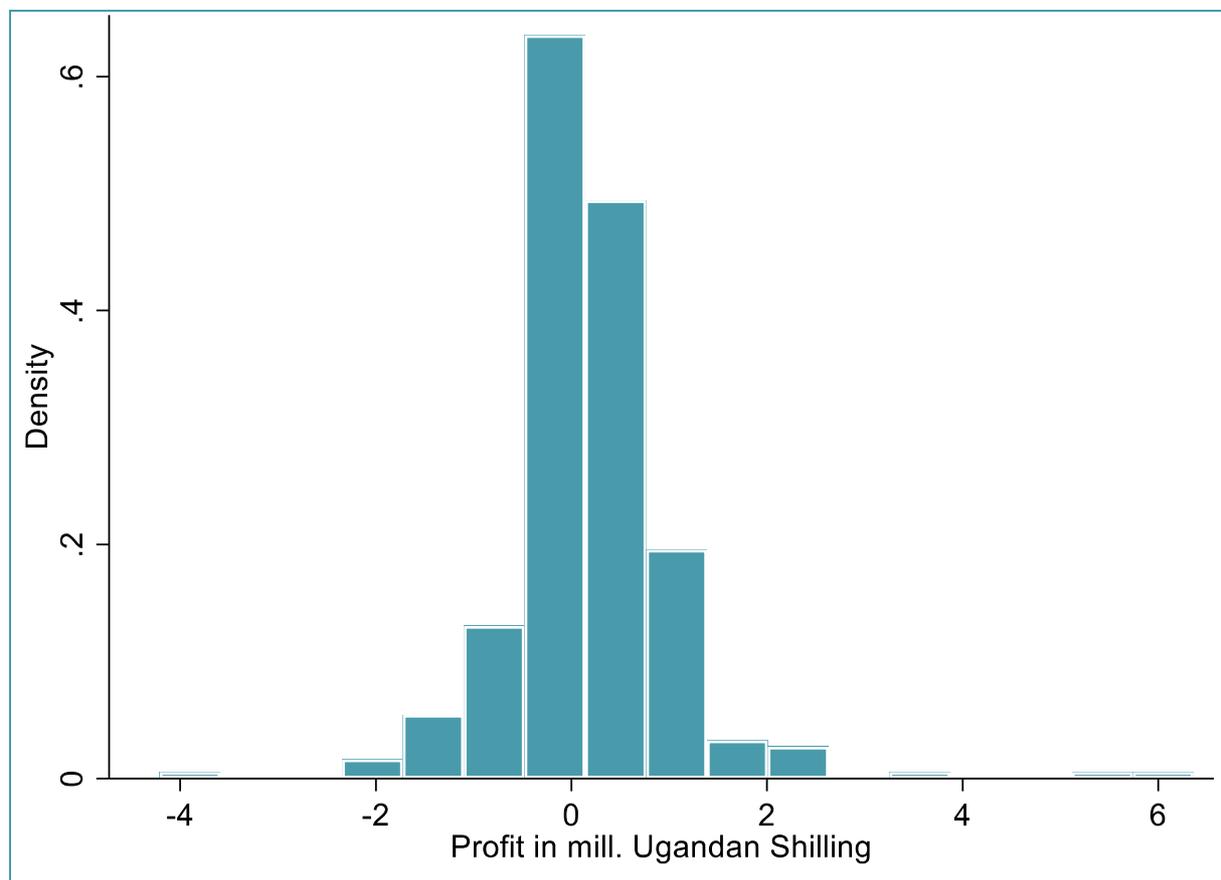


Source: the authors.

c) Saturated markets make it difficult to operate a profitable business

Most drug shops have rudimentary systems through which they record their sales and credit, usually a hand-written notebook. To calculate the profitability of drug shops we asked vendors to list their outgoings (rent, electricity, staff, water, purchasing of stock) for the previous month and compared this to the sales recorded. Of the 344 shops in which we conducted the survey, 296 were able to answer these questions and provide a record of sales and credit. From this, we calculated the mean profitability of the businesses in the calendar month before the survey as being very low at UGX 191,115 (US\$ 52) excluding credit and UGX 255,471 (US\$ 70) including credit (see Annex 2). There is, however, a large variation in the profits across drug shops. The histograms below show how many drug shops had a negative monthly profit: 118/296 (40%) if credits are excluded and 110/296 (37%) if credits are included.

Figure 2. Distribution of profit (including credit) among 296 drug shops in the calendar month before the survey (2020)



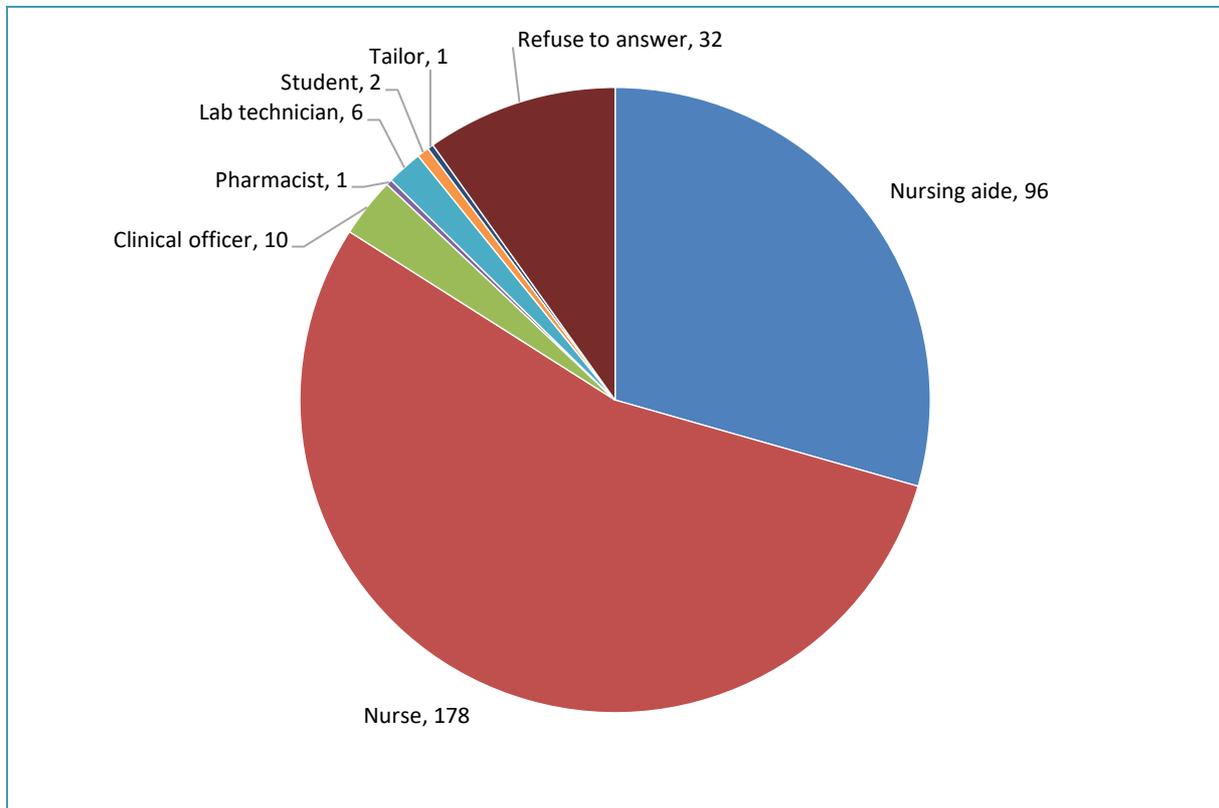
Source: The authors.

d) Poorly qualified DSVs continue to run some shops

Figure 3. Professional background shows the professional background of people working in the drug shops when we conducted our survey. Of importance here is the fact that most of the DSVs that we interviewed (58%) were nurses or clinical officers and 2% were laboratory technicians. This means that the majority of shops in our sample had the required expertise

to run the drug shop. The second largest group, however, is nursing aids (29%), who until 2014 were legally allowed to work in drug shops in Uganda. Our research suggests that in Luwero they continue to be present in the shops but that they no longer dominate in terms of cadre.

Figure 3. Professional background of drug shop personnel (%)



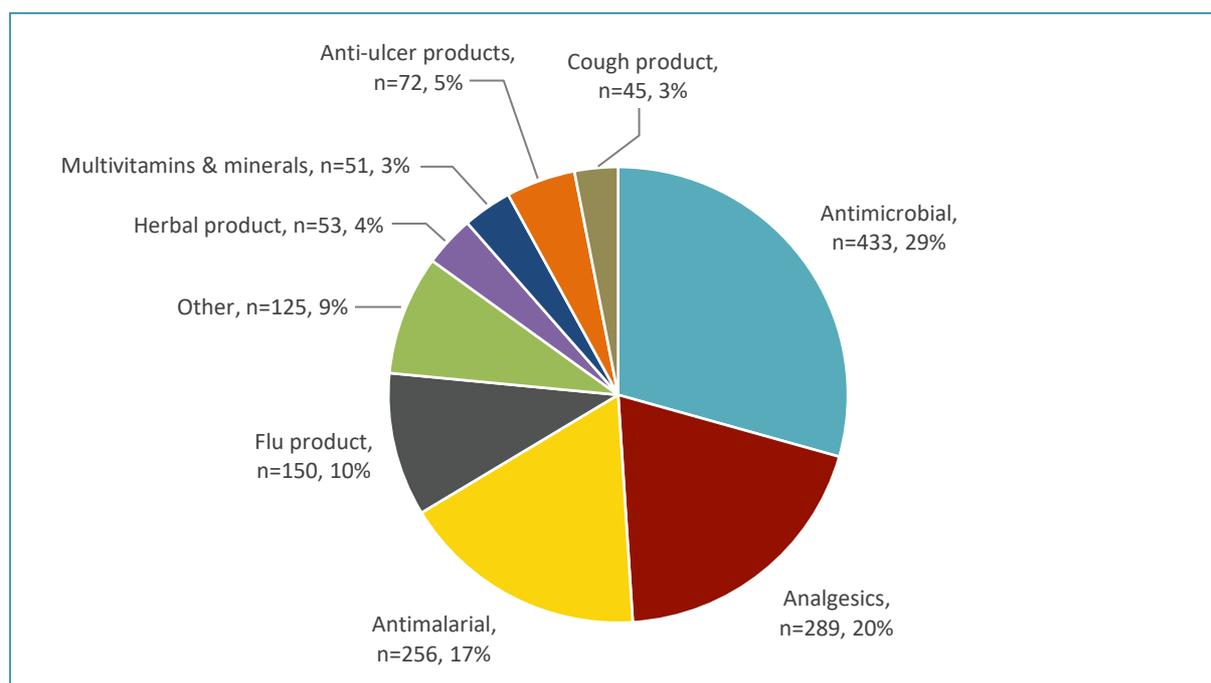
Source: The authors.

The majority of DSVs had up to three years of professional experience and over half (54%) had up to five years of experience.

e) Antibiotics are the most profitable medicines for drug shops

To explore the decision-making around sales of medicines in the shops we asked about profitability and most-sold medicines. For profitability, we asked each of the DSVs to list the five most profitable medicines that they sold (explaining profitability as the gap between the amount that the DSV paid for the medicine and the amount that they sold it for) (see Annex 3) and to show the researchers the packets of these medicines so that we could confirm this. We combined all five most profitable medicines to understand how these were distributed across different medicine classes. Antibiotics, which DSVs are not allowed to sell by law, were the most profitable medicines within the top-five most-sold medicines, followed by analgesics and antimalarial medicines.

Figure 4. Most profitable drugs by medicine category, as indicated by DSVs in Luwero district (2020)



Note: Each DSV interviewed was asked to list the top five most profitable drugs sold in their shop.

Source: The authors.

Of these most profitable medicines, just under a third are antibiotics (29%) – and 8.4% are antibiotics that are protected under the WHO AWaRe classification as being on the ‘watch list’ (see Annex 4). This classifies antibiotics into three groups: ‘reserve’ antibiotics are treated as medicines of last resort; ‘watch list’ antibiotics should be protected most under stewardship programmes; and ‘access’ antibiotics should be the most widely available and constitute 60% of those used in any country. The ‘access’ group includes antibiotics that act against a wide range of commonly encountered susceptible pathogens and show lower resistance potential than antibiotics in the other two groups (see WHO, 2019).

4.1.2. Conclusions

The existing institutional framework for governance and regulation of retail medicine markets in Uganda – including drug shops – is inadequate. Conflicts and contradictions among rules, norms and regulatory institutions create a challenge for governance. The data above describes common forms of regulatory corruption, which includes bribery as well as fake inspectors who seek payments from informal drug shops. It also shows that the poor governance structure creates markets in which there is little space for owners to make a profit, in which competition is intense, illegal sales of medicines dominate and customers are charged substantial mark-ups.

4.2. Making sense of heterogeneity in the medicine market

To create a horizontal approach to governance – which draws on the interests of those actors within the market who would support anti-corruption interventions – we need to understand the differences between DSVs. For this we used qualitative research, including the re-analysis of ethnographic research that we had conducted the year prior to the survey, IDIs and FGDs. This enabled us to create an initial typology of DSVs, following which we could analyse network charts to understand the actors working in the market. Our findings are described in the subsections below.

4.2.1. *Who is operating in the market? Initial typology of DSVs*

In the first round of ethnographic research undertaken for this project we explored the difference between DSVs using participant observation. We visited 10 drug shops that we had built relationships with during a previous course of research and categorised them into those that appeared to be traditional (e.g. with wooden shelves and handwritten signs), and those that were often difficult to distinguish from local pharmacies (e.g. with glass shelves, mirrored walls and printed signs). While it could be assumed that the traditional drug shops are less profitable, the range and volumes of medicines available (which we used as a proxy of the profitability of the shop) suggest that this is not necessarily the case. What was striking, however, was that all of the pharmacy-style drug shops were newer entrants to the market (i.e. they had established their shops within the last four years) and often they were aiming to grow their businesses so that they could upgrade to a pharmacy.

In addition to this month of observation, we also re-analysed field notes from a previous project to develop the initial typology (see Hutchinson et al., under review for a full description of the methods and analysis). We identified types of medicine sellers who had previously been prominent in the anthropology literature – namely, health workers who were supplementing their income by running a drug shop in the evening and also locally powerful but untrained DSVs who maintained their legitimacy in the market through social and political networks (Hutchinson et al., under review, Pinto, 2004). In addition, we identified a group of DSVs who had not yet been described in the literature and who were likely new entrants to the market – we labelled these ‘surplus health workers’. These are fully trained nurses who are unable to find work in the larger public, not-for-profit private or for-profit private health institutions. We found such health workers to be the owners/operators of drug shops and also employees working in these spaces. To summarise, our first round of observation and re-analysis of data identified the following groups of DSVs:

- Untrained DSVs from locally wealthy or powerful families.
- Trained DSVs working in the public sector who supplement their income by running or owning a drug shop. These shops often rely on untrained workers to run the shop for part of the day.
- Untrained businesswomen who employ trained health workers to run their drug shops.
- Trained health workers who work in their own drug shops (and not elsewhere).
- Trained health workers who work as employees in a drug shop (and not elsewhere).

Our ethnographic research suggests that the first two groups of DSVs struggle to maintain their position in the market, especially in urban areas where there is most regulatory activity (Hutchinson et al., under review).

4.2.2. Network charts: second typology of DSVs

We used purposive sampling for the qualitative research and interviewed DSVs from the high-, middle- and low-profitability drug shops. The proportions of trained health workers and untrained health workers reflect our findings in the survey. Of those interviewed, 16 (53%) were nurses, eight were nursing assistants (26%), three laboratory assistants (9%), two businesswomen (6%) and one clinical officer (3%). Of the trained health workers (nurses), we classified 14 out of 16 as 'surplus health workers', i.e. those who had never been able to find work in public- or private-sector health institutions and who had always worked in the medicines retail sector (in drug shops and pharmacies). Of the remaining two nurses, one had spent three months working in a not-for-profit private-sector hospital before she began working in a drug shop, and the other had worked for an NGO. The only person working in both the public sector and in a drug shop was a laboratory assistant, whose brother was well-known in the local area (see below) and who worked for two weeks each month at a health centre and two weeks at a drug shop in Luwero.

DSVs and local political networks

We established the format of the IDIs with the specific intent of identifying more powerful, better connected drug shops that we hoped would lead an anti-corruption strategy. What is striking is that, overall, DSVs are very poorly connected into political networks. In terms of national politics, one DSV had been married to a senior politician and had started her drug shop when she had left her abusive marriage and had no one to support her. Another DSV had an uncle who was a member of parliament and who provided her with money to set up her drug shop and re-stock when she had no more money to invest. Otherwise, he had not been involved in supporting her business.

Three DSVs from the middle range of drug shops described how the Local Council (LC1) chairmen had provided some support for their businesses. In the first, the LC1 chairman ran a wholesale business and encouraged a local nurse to set up a drug shop, providing business advice but never a loan or gift. A second DSV benefited as she was related to a local counsellor; her shop was in a building owned by the local LC1 chairman and when business was bad the chairman would not demand rent. In return, she provided support by representing him at local council meetings around the district. Through the LC1 chairman she also joined trainings for scaling up covid-19 activities, but the nurse did not think that her relationship with him impacted the success of her shop. The third shop owner (a laboratory technician who worked in a government health facility in a different district) benefited from the fact that her brother worked in Luwero district as an urban planner. He provided a building for her shop, initially without asking for rent, and she was able to gather customers because her brother was known in the district. Another shop, which was classified as high-income, was run by one of the few male DSVs who benefited from the help of a local policeman and LC1 chairman. They advertised the drug shop during community

meetings, telling people that instead of travelling far, the area now had their own health worker:

The policeman already had two drug shops, a bar and canteen. He had the experience, he knew some tricks which I didn't know. He helps me a lot. He told me to put some empty boxes on the display so that people know I have the drugs and also it makes the place look good. He connected me to people like at the NDA offices and helped me to look for the place here. He is the one who helped me because he had the connection with the chairman. Also, he connected me to someone who was selling them off from his drug shop. He still advises me. We met at school, he studied nursing, and then joined the police force.

(IDI 5, high-profit shop)

Aside from these instances, drug shops were largely owned and run by women who were not connected with politically powerful individuals. When we asked directly about whether local leaders and politicians offered support, DSVs often bemoaned the lack of interest – for example: 'Around here, I have not got any support from the community leaders' (DSV, high-profit shop).

Medical-entrepreneurial networks

In contrast to the lack of political networks, all except two drug shops were embedded within networks of entrepreneurial nurses and clinical officers who supported the businesses. These networks offered three important services to the DSVs: business advice and financial support; sharing of medical advice; and helping to navigate licensing rules and regulation. Business advice ranged from finding a good place to locate a shop, which medicines to buy, and where and how to establish oneself in the community. Some drug shops borrowed money from nurses that they had either trained with or worked for or from micro-credit schemes. One DSV who had started her working life as a drug shop employee described the support that she received from her former employer who helped her to save money so that she could eventually set up her own shop. Another DSV set up her shop with the support of a medical doctor who had previously employed her in his small private clinic. While these networks of medical entrepreneurs seemed to provide advice more so than finances, there were also groups of DSVs and clinic owners who had set up a Savings and Credit Cooperative Society (SACCO):

We also have a SACCO, it is called [X]. We are seven people and to join it, you must have a clinic. We advise each other, we save. The age group of members is 23 to 32.

Each week (on Sunday) we meet and save 35,000 UGX (US\$10). We also talk about loans, you can be stuck, needing money to pay your workers so you can ask to borrow like 1,000,000 UGX (US\$ 273) and when you are returning the money you add interest of 5%. (DSV, high-profit shop)

DSVs also reported that they were members of SACCOs that were not specific to the medicines retail sector. Mostly, DSVs borrowed money from the SACCOs to re-stock their shop and, although the DSV quoted above owned a drug shop that had high profits, five of the eight who mentioned SACCOs were from low-profit drug shops.

Familial networks

Familial networks were extremely important to all of the drug shops and they explain how so many businesses continue despite their inability to turn a profit. The family networks of DSVs provided funding to meet the start-up costs of 28 of the drug shops. Strikingly, 21 of the 30 DSVs in the low-profit and mid-profit category relied on family members to restock the shop. Some DSVs also had overlapping family and medical networks, and these were often the most profitable shops. One high-profit DSV, for example, had a father who was a doctor who owned two drug shops himself. Husbands and boyfriends also provided money for female DSVs, but we found no accounts of girlfriends or wives providing financial support for male DSVs.

Religious networks

Within the qualitative study, we found three respondents who were members of the same church, which was run by a doctor-turned-evangelical preacher and whose wife owned a pharmacy in the town. This church had five drug shops associated with it in the district: two owned by the preacher and his wife and three owned by poorly qualified women who had been encouraged by the church to come to the district to set up drug shops. The preacher and his wife provided the DSVs with medicines for the drug shops, business advice and spiritual support.

Regulators and the NDAI

Sixteen of the DSVs who filled in network charts identified the local DDI as being supportive and important to their businesses. Three drug shops also identified the NDAI as being important to the business. One described the way in which the NDAI had been important in challenging the attempt by the NDA to enforce regulations regarding the distance between drug shops and pharmacies:

It is a good thing NDAI came because I came in a time where there was a lot of issues; closing [drug shops] was the order of the day. NDAI has sincerely helped us. When it started and they invited us for the first time, we thought it was here to confuse us, the truth is we first got scared. You know, there are some things that start and later it is no more. It started with very little energy, but they kept telling us, don't worry, there are some men up there in parliament and they also own these drug shops, so they won't allow their drug shops to be destroyed. So, if their drug shops remain that means that even ours will remain. So, I saw that these people can fight for us. (DSV, high profit shop)

For the most part, drug shops in Luwero appear to be businesses established by women who have had few options offered to them by systems of political patronage and clientelism. Savings groups and family members support the drug shops and seem particularly important to those that were least profitable by purchasing stock when a business was unable to.

4.3. Support among the DSVs for new forms of regulation

In the final part of the research, when we conducted FGDs, we were seeking answers to the following questions: *which drug shop vendors are willing to become rule abiding? On what terms? And which drug shop vendors are willing to become involved in the regulation of markets?* We started from the position that drug shops that were run by nursing aids and people without medical qualifications could not become rule-abiding, and so we did not include these actors in the FGDs. Instead, we divided the trained DSVs into categories according to how well their businesses were doing. This was so we could understand the opinions of those for whom the market appeared to be doing well and those for whom it was not working. In the first group were DSVs who had shops with a high profit (n=5) and those with mid-range profits (n=3). In the second FGD we had DSVs with mid-level profits only (n=8) and in the third FGD (n=9) we had those with less profitable shops. We report on their analysis of the potential for change here.

All of the health workers in the FGDs were either nurses or midwives. None of them were involved in corruption through dual practice, where they held a public-sector role but devoted their time to working in or running a drug shop to generate income. However, in one FGD, suspicions were voiced that health-worker DSVs who worked in public facilities would bring pilfered medicines to sell cheaply:

Ever since I started, I got one drug shop near me. The owner works in government health facilities. As the owner was working in government hospital, he could get drugs for free and sells the drugs at any price he wants. (FGD 2, mid-profit shops)

4.3.1. Opinions on current rules and regulations

Across all three FGDs, the DSVs characterised the formal rules as unfair, out of date and impossible to abide by while having a profitable business. At the crux of their argument were changes that have occurred in the medicine market in the last decade. They recognised that, while previously many drug shops were owned by untrained individuals who had often learnt to impersonate medical personnel and nursing assistants, this was no longer the case.

Ok, like R 3 said, drug shops were initially owned by quacks, nursing assistants and those who learnt from their parents. You find somebody handling all sorts of illegal medicines and with quack practices but now we are qualified people. (FGD 2, mid-profit shops)

According to all of the FGD participants, these changes in the markets and the increase in the numbers of qualified nurses, midwives and clinical officers in drug shops were not recognised in the regulations and in particular in the ban on selling antibiotics. Many argued

that there was now a mismatch and an unfairness in the health system whereby nurses working in health centres were handling complex cases and prescribing antibiotics while nurses working in drug shops were not allowed to do so. This also created situations in which services could not be provided, despite the knowledge of the vendor. As the FGD participants argued:

Somebody working in a health facility can handle a complicated case of malaria but the rules that drug shops have to follow were made some time back when most DSVs were nursing assistants who could not conduct such procedures, so now it becomes a problem. (FGD 2, mid profit shops)

Somebody comes into your shop bleeding and you are not allowed to inject and control the bleeding, yet you know all the medicines to use to control the haemorrhage, you know what to do but you are limited to serve and as a health worker you feel the pain. I would save this mother, I have the ability to save this mother but I am limited. I cannot refer her, she will get problems on the way. You also feel it later. That is why we request depending on our capability and qualification they should widen the scope of services and also to help us compete in the world. (FGD 1, high profit shops)

In Uganda, the formal health system has been relying increasingly on community health workers to deliver medicines and rapid diagnostic tests. This has created a tension in the system in which untrained volunteers who work in Village Health Teams (VHTs) prescribe medicines that DSV nurses, midwives and clinical officers are not legally allowed to prescribe.

These VHTs are not even health workers, they are just people who are called up and trained on what to do. You find they are given Coartem, Paracetamol, Amoxicillin, Zinc and even malaria [rapid diagnostic tests]. They go back to the village, there somebody comes with malaria and they test for fever. Yet, somebody who is qualified here and can work in a health facility is not allowed to test for malaria using [rapid diagnostic tests]. They should revise the scope [of the policies]. We are qualified people, but these people have suppressed us, limiting us when we know how to do these things. (FGD 2, mid-profit shops)

4.3.2. Horizontal approaches to regulation – what appetite is there for self-regulation among DSVs?

In the first FGD, in which the most successful/profitable drug shops were present, the DSVs were interested in changing the rules so that they would be allowed to provide a wider range of medicine and services legally, but only one DSV expressed interest in improving regulation and governance of the markets more generally. Instead, most of these DSVs argued that having a successful business was a matter of luck and that each drug shop should be left to its own devices to create that luck and be able to profit from it.

This group described how there was considerable collective action in the market and that they were used to working with other drug shops to avoid the regulators. They made sure that other DSVs knew when officials from the NDA were visiting shops in the area and warned others that the 'capsule' (the sign of the NDA written on the side of their vehicles) was on the move and in the area to regulate the shops. For example:

R1: *We are united. We alert each other, you can call your colleague and ask, have you seen the 'capsule'?* [laughter]

R5: *What I like about the field that we are in, is that very few snitch on each other, to say that we could watch and snitch others, no.*

R3: *Snitching is not good, each of us should mind their business because we all know the rules, that is gossip and you are a peeping-Thomas. You find me injecting someone with injector plan, I get something little from it, it's up to the person injecting to be wise and be discreet.*

R5: *Unless the person is injecting expired drugs but if not, you ask them how they hide it.* [laughter]

R6: *It is not good whatsoever to report on other DSVs. Gossip is not good.*

(FGD 1, high profit shops)

These DSVs were also not concerned about those in other shops who provide medicines that are beyond their licence (especially antibiotics). As the conversation continued it also became clear that they were also not prepared to report smaller, informal drug shops to the regulators:

R5: *I don't see why you interfere with someone's luck. If it's about getting clients you will keep getting them. I found [an informal shop] there, they kept making money until eventually it collapsed and they left. The District Assistant Drug Inspector (DADI) would ask me, is there a drug shop around you here? I would direct her to a big drug shop and she would go away. Even if you don't betray this person you will keep making money and the more you wish people well, the more they will love you and they could even send you clients.*

R6: *I want to add on to what [R5] just said, there is a nursing aid in my neighbourhood; he works from his home and I found him already operating in this village. He is old, he has high blood pressure, diabetes. He has never had a licence. When I was asked, I didn't mention his drug shop.*

(FGD 1, high profit shops)

The DSVs in FGD 1 linked this lack of desire to be involved in governing the market to an understanding that increases in the number of businesses in the area had little negative impact on their profitability. Some in this first FGD thought that having many drug shops close to them was a means of attracting clients. As this was a group of larger shops with a more diverse stock of medicines and equipment (some of whom were also running clinics), they reported that the smaller shops often sent patients to their premises. As one participant explained:

R5: *Like I told you, when I came to Luwero there was one pharmacy but the more we have had new ones coming up, the more money we make. That drug shop close to you will be the first to send you clients, to ask 'sister help me cannulate this patient, I will give you some money', so you make money. (FGD 1, high profit shops)*

In FGDs 2 and 3, however, the attitude towards the growing number of drug shops in the town was markedly different. So too was the attitude towards changes in the governance of the market, including the potential to involve DSVs in governing other shops. Although the FGDs included some newcomers to the market ('*We are the new drug shops invading other drug shops*', FGD 3), many vendors recognised that the arrival of more drug shops in their areas had a negative impact on profits. For example:

R4: *There are some new drug shops that have come up, our daily sales do reduce. Because if all you have been selling is a packet of Panadol and competitors come, you will not manage to sell that whole packet. So, in one way or the other profits are being affected. Yeah profits are now lower down. (FGD 2, mid profit shops)*

R2: *Me according to my area, drug shops have continued to increase. It has affected me so much because if I see around as I have told you at first, we were two as I speak now we are seven. Trust me, even the people surrounding us is still the same population which means we have to divide them among the seven of us, which means income is affected. The money that I was getting I no longer get it. In terms of income, it has changed. (FGD 3, low profit shops)*

Coupled with this understanding that other drug shops in the area impact negatively on their profits, DSVs also offered a much more positive response to the idea of drug shops regulating one another. This discussion tended to revolve around stamping out poor practice and untrained quacks working in the market. Respondents also suggested involving local leaders such as the LC1 chairman to support new forms of regulation.

R3: *I think it is ok to regulate someone. You have to advise someone and you can't let somebody give out expired drugs, at least you have to advise them. Because if it is number 1, he is educated for sure, he will be aware that I am doing this in a wrong way, I should not do it because of money but now he has to revise it because he knows he is doing. (FGD 2, mid profit shops)*

R1: *Yeah, I think it is my responsibility because you may feel less concern that this does not concern you, but it could be your friend or relative who goes to such a quack and that quack does something weird and this person ends up dead. So, I think we are all entitled to see that this person works or gets money through the rightful ways. (FGD 2, mid profit shops)*

R4: *Talk to the person as your colleague in a quiet way, if the person doesn't change, the areas have leaders like chairman LC1 and others maybe if the chairman talks to this person he/she may improve practise. (FGD 3, low profit shops)*

By the time we ran the FGDs (November and December 2020), the NDAI had begun to campaign for DSVs to report informal drug shops that were operating in their area. Few of the DSVs in our FGDs were members of the NDAI, and not all of them knew about the NDAI and its campaigns. For those who did in FGD 2 and 3, there was support for the NDAI to be involved in regulation and to support DSVs by ensuring that informal drug shops were found and closed down. For example,

R5: *Professional bodies must prove that you are qualified and to get a licence from NDA to operate a drug shop you must have a certified copy of your document of qualification. So, both bodies have been governing to avoid the quacks in drug shops. Recently, we got an association, the National Drug Shop Advocacy Initiative. It is another body that has come up, I don't know if anyone else here is a member. So, they made sure that those taxes are removed because we already pay for licences and we pay NDA which is a government body. This advocacy initiative will help protect us against illegal eruption of drug shops and then we are all be legally operating. (FGD 2, mid-profit shops)*

5. Discussion and conclusions

This paper explores medicine markets in Uganda from the perspective of drug shops. Before considering potential interventions to improve governance in the medicine market, it is important to note certain limitations to the study. As well as drug shops, Luwero district also has clinics and pharmacies that supply medicines and therefore impact the profitability of shops. Although we think that these providers tend to supply a different and wealthier market, the way that they shape prices, and therefore the potential profitability of drug shops, is an important consideration.

We have also relied on the DSVs self-reporting their own records of medicine sales, which could be incomplete. It is possible, for example, that some DSVs did not declare their entire income as they may be reluctant to record income from informal in-patient services. Indeed, this could explain the group of low-profit drug shops that appeared to have lost considerable funds each month: if we had added their clinic services then their businesses might have appeared profitable. However, in this regard, we feel that the study has benefited from working with researchers who have been visiting the district for a number of years. This meant that many of the DSVs knew the people conducting the survey and trusted that they could tell them about their business activity. For instance, we know of at least two drug shops that did include clinic services in their estimates of profitability.

Our project is also limited by us working in one district in one country, although we still consider our findings to be useful for other countries that are considering how to manage their medicine markets. Additionally, our research highlights the importance of understanding the roles that health workers take on when they are unable to secure work in large, formal health institutions – indeed, there have been no reports to date on the work that these ‘surplus health workers’ undertake, so our study helps towards filling this knowledge gap and beginning a conversation about how their expertise can best be made use of.

In the first part of this paper we cited evidence about corruption within regulation of the medicines market in Uganda. Reports of corrupt regulators and inspectors are commonplace in the literature, but we provide evidence that details the wide range of problems with regulation, from the taking of bribes by legitimate regulators to demands for bribes by fake regulators and those who are meant to regulate pharmacies not drug shops. Respondents reported that fake regulators went to newer drug shops in the district, which suggests that they had access to local knowledge or possibly lists of drug shops from the District Assistant Drug Inspector. This level of detail about bribery and corruption has also not been provided in the literature before now.

As we explored the impact of such corrupt behaviour, we identified a group of drug shops that made no effort to licence their shops (36%), versus the majority that were either licensed (11%) or reported that their licences were in progress (53%). The proportion of shops that had made no effort to become licensed is slightly higher than those run by untrained staff (29%), further analysis of the data will show the extent to which these

unlicensed shops are owned and run by untrained health workers. Our survey data also identifies the most profitable medicines as being antibiotics, which by law are not meant to be sold by DSVs at all.

The second part of the paper presents our qualitative findings. It shows that, across all profit groups, the DSVs expressed their support for regulatory changes that would allow them to stock more medicines – and in some cases to provide additional services such as malaria rapid diagnostic tests and maternity services, given that many shops are run by trained health workers. This desire for authorisation to sell a broader range of drugs ties with the quantitative findings about the profitability of antibiotics, while the ability to offer certain clinical services reflects the skill levels of the surplus health workers who run many shops. Furthermore, the drug shops that were not highly profitable supported changes in regulation and were keen to involve the NDAI and local community leaders in the process too.

Our findings from the qualitative and quantitative research enable us to consider a new governance pathway for drugs retail outlets in Uganda. We know from the SOAS ACE framework (see Box 2; Khan et al., 2016) that corruption can only be tackled effectively if interventions “go with the grain” and work as part of the existing institutional, organisational framework and identify actors who recognize the benefits of improved regulation for their own businesses. For the context of this study, this means that interventions should “design for differences” by taking into account the heterogeneity of actors and identifying the DSVs who are likely to support effective forms of regulation. To this end, an effective anti-corruption strategy must build on the capacity of surplus health workers who rely on the medicines market to make a living, who have the professional capacity to provide a better service to customers and who appreciate that better regulation could increase their market share: *this group of DSVs are incentivised to abide by the rules and to self-regulate.*

While this group of actors are critical actors in the creation of horizontal forms of regulation, any anti-corruption strategy to reduce the rule violations and rent-seeking practices must address the gap between the unworkable formal policies of the NDA and the informal rules that govern many practices in drug shops currently. Improvements in drug shop regulation must be part of an overall strategy in which improvements are also made in the accessibility of access list antibiotics. Clearly antibiotics are a key part of the DSVs income. Drug shops are also critical actors distributing these medicines in Uganda and any policy that threatened the role that they play would undermine any essential medicines programme.

Finally, any changes in the medicines market have to be enacted very carefully. These markets provide essential medicines to the majority of Uganda's citizens and any unintended consequences must be identified through interventions and thought through carefully. The next step would be to design an intervention that relies on these findings, or a discrete choice experiment to determine among a larger group of DSVs and those working in different districts which interventions they would likely support.

Annex 1. NDA list of permitted drugs

The NDA permits drug shops to sell the following medicines.

Drug name	Dosage form	Class	Recommendation/ caution
Aceclofenac	Tablet	Non-steroidal anti-inflammatory drug (NSAID)	Low incidence of side-effects
Acetylsalicylic acid	Tablet	NSAID	
Activated charcoal	Tablet		Short-term relief of flatulence
Bisacodyl	Tablet	Stimulant laxative	Constipation
Cetirizine	Tablet	Antihistamine	Non-sedating anti-histamine
Chlorpheniramine maleate	Tablet/syrup	Antihistamine	Sedating antihistamine
Diclofenac	Tablet/ capsules/ suppositories	NSAID	Low incidence of gastro side-effects. Maximum daily dose should not exceed 75mg
Glycerol	Suppositories	Stimulant laxative	Constipation
Hyoscine	Tablets	Anti-emetic	When intended for use in travel sickness
Ibuprofen	Tablets/oral suspension	NSAID	Preferred NSAID as it has fewer side-effects
Ibuprofen in combination with pseudoephedrine/paracetamol/paracetamol+chlorzoxane/paracetamol+caffeine	Tablets	NSAID	Preparations should not contain more than 30mg ephedrine per tablet
Indomethacin	Capsule	NSAID	Use with caution because of high incidence of side-effects
Lactulose	Solution	Laxative	Faecal softener
Magnesium trisilicate	Tablet	Anti-acid	Treatment of dyspepsia
Mefenamic acid	Tablet/ suspension	NSAID	Management of dysmenorrhoea
Meloxicam	Tablets	NSAID	Short-term relief of acute pain in osteoarthritis
Nystatin	Tablet/ oral drops/ pessaries	Antifungal	Candidiasis
Paracetamol	Tablet/ suspension	Analgesic	Preferred analgesic for the elderly
Paracetamol in combination with caffeine/aceclofenac/chlorzoxane/pseudoephedrine+chlorpheniramine/ibuprofen+codeine phosphate/acetylsalicylic acid+caffeine	Tablet/ capsules	Analgesic	Preparations should contain not more than 10mg of codeine per tablet, not more than 30mg ephedrine per tablet
Piroxicam	Capsule	NSAID	Dose should not exceed more than 20mg daily and should be administered with a concomitant gastro-protective agent

Source: NDA 2021

Annex 2. Drug shop profits

	Ugandan Shilling			
	Mean	Median	St.dev	n
Profit	191,115	113,684	878,018	296
Profit incl. credit	255,471	165,750	890,139	296

Note: n = number of drug shops.

Source: The authors.

Annex 3. Frequency of reports among top-five most profitable medicines by category

Medicine category	Frequency of most profitable medicine category					Total
	First	Second	Third	Fourth	Fifth	
Antimicrobials (antibiotics and antifungal, not malaria medicine)	60	91	110	99	73	433
Analgesics	52	65	61	51	60	289
Antimalarial	120	56	29	31	20	256
Flu product	13	28	33	41	35	150
Other	13	20	22	31	39	125
Herbal product	7	9	10	11	16	53
Multivitamins & minerals	11	7	13	4	16	51
Anti-ulcer products	8	12	11	11	30	72
Cough product	11	7	6	15	6	45
Total	295	295	295	294	295	1474

Source: The authors.

Annex 4. Antibiotics listed among most profitable medicines in drug shops

	Number (frequency of reports by DSVs)	Percent of respondents	WHO AWaRe classification
Amoxicillin	59	4.0%	Access
Amoxicillin and Clavulanate	4	0.3%	Access
Ampicillin and Cloxacillin	124	8.4%	Access
Ampicillin	8	0.5%	Access
Azithromycin	29	2.0%	Watch
Benzylpenicillin	1	0.1%	Access
Cefalexin	4	0.3%	Access
Cefixime	7	0.5%	Watch
Ceftriaxone	9	0.6%	Watch
Chloramphenicol	3	0.2%	Access
Ciprofloxacin	47	3.2%	Watch
Clindamycin	1	0.1%	Access
Cloxacillin	1	0.1%	Access
Cotrimoxazole	26	1.8%	Access
Doxycycline	7	0.5%	Access
Erythromycin	25	1.7%	Watch
Flucloxacillin and Amoxicillin	2	0.1%	Access
Gentamycin	1	0.1%	Access
Levofloxacin	4	0.3%	Watch
Metronidazole	41	2.8%	Access
Ofloxacin	1	0.1%	Watch
Phenoxymethylpenicillin	3	0.2%	Access
Tetracycline	3	0.2%	Access
Acyclovir	1	0.1%	Antiviral
Fluconazole	11	0.7%	Antifungal
Griseofulvin	8	0.5%	Antifungal
Ketoconazole	1	0.1%	Antifungal
Nystatin	2	0.1%	Antifungal
Total		29%	

Note: Antibiotics coloured red are from the WHO AWaRe 'watch' list.

Source: The authors, based on WHO AWaRe drugs classification.

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