**THE TYRANNY OF EMPTY SHELVES: SCARCITY AND THE POLITICAL
MANUFACTURE OF ANTIRETROVIRAL STOCK-OUTS IN SOUTH KIVU,
THE DEMOCRATIC REPUBLIC OF THE CONGO**

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ABSTRACT

At the margins of the global scale-up of antiretroviral treatment for HIV, the Democratic Republic of the Congo has experienced severe regional stock-outs of essential medicines. Usually framed by global health actors as signs of technical, logistical, and professional deficiency, antiretroviral scarcity is – perhaps surprisingly – rarely considered to be an exceptional event. Attention to the local consequences of scarcity in the east of the country, however, suggests that stock-outs arise from far more than mere infrastructural failings. Drawing on an investigative ethnography conducted in the province of South Kivu between 2016 and 2018, this paper examines how stock-outs in the region have political functions rooted in the calculated denial of medicine to geopolitically significant communities and individuals. Informed by extant research the geopolitics of health, I begin by conceptually framing the geographical significance of stock-outs and locate in their origins and functions the discriminate use of scarcity as a biopolitical tool. Then, drawing on interviews and the analysis of previously unpublished and uncollated stock records, I demonstrate the

technical and political origins of stock-outs at six dispensaries in the province. The supply of essential medicines, I argue, has become weaponised and their denial represents a strategic gambit for armed actors seeking territorial footholds in the region. Focusing on the cases of two out-of-stock towns in the south of the province, I then examine patients' agonising experiences of stock-outs, the poisoning and distortion of local moral economies that scarcity gives rise to, and the profoundly ambiguous transformations of therapeutic citizenship birthed by denial of treatment. I conclude by returning to the scale-up of antiretroviral treatment and review the critical avenues opened up for health geographers by a focus on the provisioning, scarcity, and denial of essential medicines.

KEYWORDS: antiretroviral treatment, scarcity, stock-outs, HIV, global health, Democratic Republic of the Congo

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1. INTRODUCTION

Scale-up of access to treatment has enabled rapid and significant progress against HIV in many countries (UNAIDS, 2014). Underpinning this roll-out is a widely-held assumption: that it is possible – and even conceivable – to routinely deliver life-saving medicines to any person regardless of location (UNAIDS, 2015; WHO, 2016a). Despite recent progress in scaling up global access to antiretroviral treatment (ART), many countries continue to experience dramatic ‘stock-outs’ of ART. The World Health Organization (WHO) (2017, p. 13) defines a stock-out as “the complete absence of a required drug at a storage point for at least one day.” Stock-outs are moments when the presumptive ideal of social, political, and material progress around expanded global ART coverage is found lacking; those who expect medicines cannot access them and the ART distributors’ claims to universal coverage are undermined.

Stock-outs, however, are not rare events. A WHO (2016b, p. 35) report monitoring 1150 ART clinics in 59 countries found that 35.7 percent of facilities had at least one stock-out event over the reporting year, with performance in sub-Saharan Africa deemed to be particularly “concerning.” Such concerns stem from the growing body of evidence that indicates stock-outs have a detrimental effect on treatment retention and survival rates. Regardless of their high incidence, stock-outs are understood within public health circles as unfortunate logistical manifestations of fragile health systems. They are downplayed as the outcome of weak local infrastructure, insufficient programme budgets, or mismanaged stock levels (Schouten et al., 2011; Bateman, 2013).

This paper extends this literature in a new direction by examining the political determinants of stock-outs. There have been few attempts to unpick the political dimensions of stock-outs as they are seen as manifestations of health system weaknesses that are “difficult to localise” (Park 2012, p. 189) and hence interrogate. Developing on geographical engagements with the political economy of medicine (Jones 2009; Ingram, 2011; Craddock, 2012), the paper positions stock-outs at the intersection of global donor-driven efforts to expand ART treatment access and local socio-political conditions that condition and constrain treatment uptake. That some places and people receive treatment while others are routinely confronted by stock-outs is a fundamentally political issue that exposes where power is situated and in whose interest power is exercised. Identifying *where* stock-outs take place – localising them, in other words – is a first step in determining *who* is most affected and, importantly, permits us to ask *why* stock-outs occur in these locations.

Extending recent work on the politicisation of health systems (e.g. Fouad et al., 2017), I argue that while the *origins* of stock-outs are often linked to broader access and coverage concerns, stock-outs can also have rarely acknowledged *functions* rooted in the calculated, localised, and routinised denial of ART to individuals, medical facilities, and whole populations. In tracing the geography of stock-outs, it is possible to identify what I term the *political manufacture of stock-outs*. Countering the apolitical literature on stock-outs, I introduce this phrase to refer to deliberate and systematic attempts by state and non-state actors to initiate, manipulate, and exacerbate stock-outs to further their (geo)political goals.

This paper examines ART stock-outs in South Kivu, an eastern province of the Democratic Republic of the Congo (DRC). In this first study of ART stock-outs in DRC outside of Kinshasa, I draw upon 12 months of fieldwork among public health teams and pharmaceutical suppliers in the province. While periodic shortages of essential medicines are a perennial problem in DRC (MSF, 2017), I limit my focus to ART stock-outs that continue *in spite of* domestic provisioning reforms and significant international financing. I map the geography of stock-outs to reveal incidences of localised scarcity linked to the interplay of local armed conflict and global donor politics. Examining a four-month stock-out in the province, I show how the protracted absence of medicines at certain sites originates in military efforts to discipline dissenting individuals and populations. I explore, in other words, how the creation and promised relief of stock-outs by armed groups has become a means to secure the compliance of geopolitically strategic communities. In so doing, I make clear how the impact of stock-outs has been compounded, augmented, and magnified to achieve political ends, albeit while opening space for contestation and resistance (David, 2014; Reed, 2018).

Developing this study of the political manufacture of stock-outs, the paper makes two specific contributions to geographical literature. First, it adds to a small yet burgeoning geographical engagement with the *re-politicization of global health* (Brown et al., 2012; Taylor, 2016; Sparke, 2019). Expert-led interventions that have long prioritised market-based solutions to health problems, this work claims, stifle innovation, weaken domestic accountability, and even encourage the “fabrication of achievement” (Rajkotia, 2018). While the scale-up of ART is subject to growing

critique (e.g. Kenworthy, 2017; Reed, 2018), the targeted *denial* of ART within the “treat all” (WHO, 2016a) era has not yet been subject to geographical analysis. Second, it encourages health geographers to engage with the *weaponization of scarcity*. Here I am sympathetic to Herrick’s (2016, 2017) call for health geographers to broaden their focus away from a narrow set of biomedical spaces and subjects, but we must also consider how these same spaces and subjects are increasingly folded into political projects. As recent attacks on health facilities in Afghanistan and Syria attest (Benton & Atshan, 2016), healthcare is reorganised, targeted, and misappropriated under conflict conditions (Dewachi et al., 2014; Nott, 2019). It is essential that geographical analyses of these spaces of treatment and care be broadened to include their attrition, capture, and re-organisation in geo-strategic operations.

2. TOWARDS A GEOGRAPHY OF STOCK-OUTS

A sizeable body of public health research has documented how stock-outs create burdens for patients; they may be sent to nearby facilities or told to return at a later date, and – in both situations – they may receive no medicines, fewer medicines, or inappropriate alternatives (Gils et al., 2018; Moriarty et al., 2018). Impacted patients frequently turn to different sources to find treatment, including traditional healers or less reliable black-market suppliers (Harries et al., 2001; Kohler et al., 2012; Mori & Owenya, 2014). While software seeks to better forecast future demand of medicines, *existing* stock levels in the majority of sub-Saharan African supply chains are based solely on paper-based estimates with varying degrees of accuracy (Githinji et al., 2013; Global Fund, 2016). In sum, stock-outs impact the health of individuals and

communities, cause widespread frustration, and lead to loss of confidence in health systems.

Anthropologists have begun to excavate the intersecting biomedical, social, and technical concerns that lie at the heart of pharmaceutical provisioning (Biehl, 2009; Whyte et al., 2013; Pfeiffer, 2013). Much of this work is rooted in ethnographic accounts of the “intensely social character of accessing treatment and staying alive” (Whyte, 2014, p. 17; David, 2014). A prominent set of voices expose how stock-outs arise from poorly coordinated interactions between ‘vertical,’ pharmaceutical-centred global health programmes and frequently fragmented ‘horizontal’ health systems (Biehl, 2006; Sullivan, 2011; Muyinda & Mugisha, 2015). Whyte *et al.* (2013), for example, document stock-outs in Uganda arising at the interstices of a patchwork landscape of “projectified” donor-funded interventions where lack of coordination and heterogeneity are notable. Umlauf and Park (2018) connect perennial pharmaceutical stock-outs in the same country to supply-chain interruptions arising in an under-funded health system reliant upon improvisation and bricolage (see Livingston, 2012; Zhou, 2019). Others suggest that stock-outs are instantiations of more mundane problems, such as limited accessibility, corruption, or staff incompetence (Schouten et al., 2011; Bateman, 2013).

Common to the accounts above is the assumption that stock-outs are unfortunate and ultimately preventable events; they could be avoided with *more* professional foresight, *greater* coordination between donors, or *increased* system-wide funding. In short, stock-outs are said to be caused by *deficiency*: lack of trained staff, limited stock visibility, and shortfalls in finance. The explanatory neatness of this deficit-centred

account of stock-outs occludes the broader interrogation of deficiency itself as not merely an unfortunate consequence of incompetence, inefficiency, or graft, but rather as a *desired* outcome. Lack of medicines, staff, and strategic oversight can be the result of deliberate decisions and denials that further other political agendas, as research on health systems undermined by austerity regimes has suggested (Pfeiffer et al., 2017; Sparke, 2017). Likewise, research on the targeting of healthcare infrastructure in conflict-zones concludes that medical supply chains have been deliberately targeted to strategically deny care to those nearby (Fouad et al., 2017). Stock-outs, in other words, have “dehumanizing effects” (Kalofonos, 2010, p. 364) and the calculated denial of medicines is a powerful means to breed overwhelming need, competition, and even death in targeted communities. Framing stock-outs solely as a deficiency problem, I caution, promotes deployment of technical interventions to counter lack – more technology, experts, and forecasting systems - rather than drawing attention to how lack itself can be politically expedient.

The provision of treatment is increasingly wrapped up in geopolitical and geoeconomic calculations (Brown et al., 2012; Herrick, 2016, 2017; Taylor, 2016; Sparke, 2019). Indeed, the supply and denial of vital resources played a catalytic role in legitimising and birthing modern rationalities of rule (Nally, 2011; Kearns, 2014). Much of this work is inspired by Foucault’s (2007) attentiveness to eighteenth century liberal thought in which modern political economy transformed *scarcity* into a calculable event rather than a collective misfortune. The management of grain provision by the state, for instance, became a disciplinary mechanism through which virtuous practices were rewarded and aberrant forces could be eliminated. Foucault

(2003, p. 247) saw in this move a switch from the exercise of sovereign power towards the exercise of biopower focused on what he described as “making live and letting die.” This calculated management of life is not only concerned with the *tout court* improvement of population health but “supposes implicit or sometimes explicit choices over who shall live what sort of life and for how long” (Fassin 2009, p. 53).

The provisioning of vital resources is, therefore, an irredeemably political mechanism through which a caesura is drawn to distinguish those deemed worthy of life from those to be abandoned to death. In his work on food provisioning, for example, Nally (2011, p. 40) argues that from the eighteenth century onwards “scarcity and hunger [were] permissible in so far as their presence provokes a desirable social or economic change” with the consequence that incidences of scarcity “have *functions* as well as causes.” Provisioning, then, is not merely a technical exercise – overcoming deficiency to satisfy the needs of all – but is a mechanism through which particular political, geo-strategic, or ideological goals can be accomplished through the calculated supply or denial of resources necessary for life.

ART has long been embroiled in biopolitical interventions. ART scarcity was once a normalised condition, originally as the first prohibitively expensive treatment regimens were triaged among desperate patients in the 1990s (Nguyen, 2010) and, then, on the grounds of maintaining strict allocative and cost-effectiveness criteria needed to efficiently tackle an “exceptional” epidemic (Benton, 2015). A second wave of ART scale-up, initiated in the mid- to late-2000s and culminating in the commencement of the “treat all” era (WHO, 2016a), re-framed access to ART as a right and, later, an entitlement (Jones, 2009; Ingram, 2013). Donor-led, resource-intensive

treatment projects have been rolled out to satisfy these entitlements in eager recipient countries, while others with desultory treatment plans – including DRC – are labelled “fast-track” nations requiring “catch-up” interventions as their roll-outs are “yet to be optimal” (UNAIDS 2017a, p. 6).

This “politics of reciprocity,” Kenworthy (2017, p. 148) argues, has “shifted government accountability away from citizens and toward external nonstate entities.” The spectre of scarcity, however, still haunts these “new political geographies of scale-up” (Kenworthy 2017, p. 72) as donors impose – or ‘fast-track’ – market rationalities onto recipient states who, in turn, take these interventions as “premises for the rationalization of welfare, reciprocity, and citizenship” (Ingram 2013, p. 13). A highly selective treatment apparatus emerges here – built upon the roll-out of neoliberal governmental practices (Sparke, 2019) – that denies ART to those deemed undeserving, irresponsible, or incompetent, and allocates it instead to clients deemed worthy, adherent, and supplicant (Whyte et al., 2013; Reed, 2018; Zhou, 2019).

It is essential that the micro-politics of ART scarcity is also examined as the political consequences of reciprocity arise and are contested in place. Donor-funded HIV clinics often “enact an economy of scarcity” (Sullivan 2011, p. 204) as well-stocked “archipelagos of treatment” (Prince & Otieno 2014, p. 928) distort local healthcare access, facilities, and priorities through vertical, disease-specific, selective investments. The beneficial impacts of such interventions are not experienced evenly. “The extent to which [...] scarcity is experienced and deeply felt,” Benton *et al.* (2017, p. 4) argue, “is linked to social hierarchies of nationality, class, gender, and/or race.” These axes of difference gain a political salience in place and it is along these lines of

differentiation that the allocation and denial of vital resources is decided. Here, once again, we see the limitations of the deficiency-based, technical account of stock-outs. Frequently, the scandal of empty pharmacy shelves originates not in the haphazard, tortuous, and disorganised scale-up of access to treatment, but arises as a consequence of the calculated, rationalised, and clandestine denial of treatment to *particular* people, populations, and places. This political manufacture of stock-outs becomes a means to hasten the abandonment of certain populations to the slow violence of untreated illness and death.

3. AN INVESTIGATIVE ETHNOGRAPHY OF ART STOCK-OUTS IN SOUTH KIVU

DRC has a low HIV prevalence rate and low levels of investment in HIV screening and treatment services. The national HIV prevalence rate, estimated at 1.2 percent, ranks as one of the lowest in sub-Saharan Africa (PNMLS, 2018a). National “test and start” guidelines adopted in 2016, and rolled out during 2017, stipulate that ART should be initiated on the same day as a positive HIV test regardless of CD4 cell count (PNMLS, 2018b; WHO, 2016a). Despite this, only an estimated half of people infected with HIV know their status and a mere 33 percent of those diagnosed are able to access ART (PNMLS, 2018a). Several factors explain why rates of testing, treatment, and adherence are so low in the country. There remains a strong social stigma linked to HIV (Whembolua et al., 2019). While ART has nominally been provided without charge since 2008, patients at underfunded public facilities pay unnecessarily for testing (MSF, 2017). These prohibitive factors to seeking care are aggravated by the

lack of governmental prioritisation and resourcing that stems from a low prevalence rate (UNAIDS, 2017a).

The incidence of HIV across the country is highly varied, and what was once primarily an urban disease has now become entrenched in many rural communities (Carrel et al., 2016). HIV prevalence is high in South Kivu, where 1.9 percent of the 4.6 million population is estimated to be HIV positive (PNMLS, 2018a, p. 16). The province itself has been ravaged by protracted conflict between a fissiparous array of armed groups since the mid-1990s and still suffers from widespread insecurity (Stearns, 2013a). In June 2017, for example, a broad alliance of local militias called the National People's Coalition for the Sovereignty of the Congo (*Coalition Nationale pour la Souveraineté du Congo* [CNPSC]), angered by the autocratic rule of President Joseph Kabila, launched an offensive in Fizi territory that captured strategic villages and led to an audacious naval raid on the city of Uvira. The region is strategically important because of its international mining operations and also because of the trade routes that traverse these borderlands and cross into neighbouring Rwanda, Burundi, and Tanzania. Both the national armed forces (*Forces Armées de la République Démocratique du Congo* [FARDC]) and loosely networked militias routinely attack civilians (via looting, physical violence, or rape) they accuse of collaborating with their enemies. Infrastructure and health facilities have been deliberately targeted by warring groups in the area, with leading Kivutian medical practitioners – including Panzi-based gynaecologist and 2018 Nobel Peace Prize laureate Denis Mukwege – earmarked for assassination by both government-aligned and militia forces for using their prominent platforms to publicise ongoing violence in the region.

In the rest of the paper, I draw from site visits and 46 interviews conducted between June 2016 and February 2018 with patients and staff at six ART facilities in South Kivu (see Figure 1). I was a participant observer for several weeks at a time in these facilities, each of which was selected to ensure a mixture of operating regimes and distances from supply facilities. Three sites were in the provincial capital of Bukavu: a government-funded hospital; a Global Fund-backed ART clinic in the north of the city; and an opportunistic infections clinic in the south of the city. I also conducted research at a government-funded hospital in Katana, a town 40 kilometres north of Bukavu; a government-funded hospital in Uvira, 130 kilometres south of Bukavu; and a donor-supported hospital in the town of Baraka, 220 kilometres south of Uvira.

At and between these sites, I conducted what Ballvé (2019) has termed an “investigative ethnography.” This ethnographic stance has an epistemological approach rooted in prioritisation of fact-finding as a means to develop meaningful understandings of violent spaces in which misunderstanding, confusion, and deception prevent the disclosure and confirmation of basic empirical facts. To uncover the obfuscated origins and impacts of stock-outs, I followed staff on their daily rounds, interviewed pharmacists about their dispensing and logistics procedures, and observed meetings with patients at counselling and adherence meetings. I also collected unpublished data on the duration, severity, and impact of stock-outs by examining stock records at each site. I conducted further interviews with patients navigating South Kivu’s violent economies – particularly those in areas under recent

armed occupation – as well as staff from the Ministry of Health, international organisations, and representatives of logistics companies operating in the province.¹

4. FRAGMENTATION OF ART PROVISION

Investigation into ART provisioning in DRC reveals a constantly shifting terrain of operations in which accountability is difficult to discern. The Global Fund to Fight AIDS, Tuberculosis, and Malaria, and the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) operate parallel ART importation, warehousing, and distribution systems. Prior to reforms introduced in 2016, both donors supplied ART across DRC, and this led to significant confusion and duplication of effort. A schematic representation of this system, unofficially known as “the spiderweb,” was deprecated by health professionals for its labyrinthine complexity. The 2016 reforms allocated each donor a set of health zones across the country in which they had sole responsibility for the provision of ART.² Far from strengthening provision, however, the disorganised nature of this reorganisation led to short-term disruption as projects were mothballed, patients transferred between donors, and logistics financing adjusted. Critics of similar partitioning elsewhere have likened the apportionment of territories of control to a contemporary “scramble for Africa” in which global health

¹ Permission to conduct the study was obtained from the Ministry of Health in Kinshasa and the provincial health director in Bukavu. Institutional ethical approval was granted by [BLINDED]. Written informed consent was obtained from all participants in this project. Interviews were conducted in English, French, and Kiswahili, recorded, and then translated by trained field assistants.

² DRC is divided, based on population and geography, into 515 *zones de santé* which are sub-provincial, decentralised, administrative zones serving 100-200,000 people and consisting of at least one reference hospital (*hôpital général de référence*) and chief doctor. Health zone facilities are variable in staffing and capability to deliver specialist care.

actors undermine local sovereignties while offering limited short-term medical care (Nguyen, 2010; Crane, 2013; Mitchell & Sparke, 2016).

The Global Fund is responsible for all ART provisioning in all South Kivu health zones.³ The Geneva-based Fund provides financial and logistical support from a distance, with day-to-day operations overseen by Congolese grant recipients. Primary grant recipients - the Catholic Organization for Relief and Development Aid (CORDAID) and the Protestant Church of Congo's Rural Health Program (*Soins de Santé Primaires en milieu rural* [SANRU]) - oversee ART ordering, stock management, and delivery. For South Kivu, CORDAID and SANRU draw stocks on a quarterly basis from a third-party regional warehouse in Goma, North Kivu province. There is no regular organised transport between the provincial warehouse in Bukavu and health zones. Due to the sporadic telecommunication network, orders are regularly held-up while warehouse staff await the five paper validations required to release stock. The Global Fund provides a financial allowance per health zone and per facility to stimulate pick-ups from warehouses, but this small sum has proven insufficient to guarantee coordinated and regular distribution. ART crosses the (metaphorical) 'last mile' through pick-ups often organised by dispensary staff to coincide with workshops in Bukavu, or via the commandeering of vehicles used by international organisations within the health zone. Roads and rivers are, however, frequently impassable during the rainy season, with staff transporting bulky stock using multiple

³ In 2017, the Global Fund operated in 354 health zones and funded more than 700 staff positions across DRC (Global Fund, 2016). PEPFAR has recently scaled-back operations in DRC, withdrawing from South Kivu in 2013, and has pivoted toward work in Kinshasa and in high prevalence health zones containing key transport corridors and/or military bases (see Ingram, 2011).

forms of transportation (including motorcycle, van, boat, and canoe) on the same journey.

Given the distributed nature of ART provisioning, it is unsurprising that supply across the province is sporadic and uneven. Drawing upon unpublished paper records held at the facilities I visited, I was able to document the incidence, severity, and geography of ART stock-outs over a four-month period (June-September 2017). Table 1 records the incidence of ART stock-outs at each facility over the period. Global Fund-supported facilities are expected to maintain a buffer of one month's total supplies at all times. However, five of the six facilities had at least one ART stock-out over the period; most reported more stock-outs of adult ART than paediatric regimens and those targeting prevention of mother-to-child transmission (PMTCT). The length and severity of each stock-out varied. Table 2 presents the estimated impact of stock-outs of frontline regimens on patients registered at the same facilities. The preferred first-line fixed-dose adult ART combination (Tenofovir/Lamivudine/Efavirenz) had the greatest cumulative stock-out impact on patients. Stock-outs of Zidovudine/Lamivudine/Nevirapine, used as a cheaper first-line option, also had a large impact due to the high number of patients prescribed this formulation. An estimated 4,200 patient facility visits ended without dispensing due to a stock-out of prescribed medication and this equates to more than 36,000 drug days lost. The longest stock-outs were in facilities furthest away from the Bukavu warehouse. Facilities nearest to the provincial stockpile re-stocked quickly, or sought supplies at proximate facilities, while distant facilities waited longer for re-supply.

A small number of facilities, the data suggest, are most frequently impacted by stock-outs and bear a disproportionate burden. The regional warehouses are, on the whole, well-stocked and closely monitored using approved software. In other words, the stock-outs in the province do not originate in a lack of drugs *per se*, but rather arise in their provisioning to different parts of the province. Both technical *and* political reasons for this uneven distribution emerged from interviews.

The first reason given for the above pattern of stock-outs was limited oversight of stocks in dispensing facilities. The paper-based ordering process for ART is complicated, time intensive, and unmanageable given staff capacity. Logistics data ought to be routinely captured at health facilities using the standardised *Registre d'Utilisation des Médicaments Essentiels et des Recettes* form and then aggregated for submission to the next 'layer' of the national public health system. Only a small number of health zone facilities have received the necessary investment or training to use digital or mHealth systems. This means data capture is not conducted in a harmonized manner. For example, five facilities documented at least one stock-out arising from the incorrect quantification of need with staff only commencing the lengthy and bureaucratic process of ordering ART once the facility was already out-of-stock. Order lead times are often up to two days due to the long distance between facilities and regional warehouses. "Sometimes we have to blame ourselves," the hospital manager in Katana noted, "particularly when simple things like anticipating the need for re-stock is absent." Stock records are infrequently used and rarely kept up-to-date, with limited availability of historical records making it difficult to anticipate future need. The post-2016 spatial separation of Global Fund and PEPFAR

operations also limited opportunities to ‘borrow’ stock from other providers to cover shortfalls.

Following a spate of incorrect shipments from Bukavu, a Global Fund auditor identified several facilities where staff regularly under- and over-accounted consumption of medicines in monthly stock reports. Since August 2011, Global Fund investment in DRC has been managed under the organisation’s Additional Safeguards Policy (ASP). ASP is invoked in “challenging operational environments” where lack of financial safeguards mean that investments are potentially in jeopardy (Global Fund 2016, p. 4). Regular audit and enhanced oversight are a condition of receiving funding under ASP. CORDAID has previously been criticised for inadequate stock management through a convoluted register system; supplies of certain ART regimens fell short of requirements by 40 percent while other seldom-used drugs were over-stocked by 2,000 percent (*ibid.*, p. 17-18). A previous provincial ASP audit concluded that supply chain controls were ineffective, and that 31 percent of drugs released from the warehouse could not be traced at receiving health facilities (Global Fund, 2016, p. 8). The auditor described the problem in the following way:

“Think about the logistical operation required to transport these pills from Europe or Asia to central Africa via boat, rail, or road. To then have them sat in a warehouse because someone in a facility has not been trained to log stock is frustrating for everyone. It’s classic Congo.”

The phrase “classic Congo” repeats a colonial-era stereotype of the Congolese as incompetent, lazy, and feckless that has long been used to legitimate paternalistic intervention in the country (Auteserre, 2012). Grant recipients claimed that provisioning problems arose from staff inaction and that consequently this made it difficult to determine if stock-outs were due to the unavailability of drugs, delivery disruption, or delays in ordering. However, the bureaucratic management of ART also arises from the forced adoption of burdensome “monitoring and evaluation” (M&E) systems imposed by the Global Fund; the extension of onerous surveillance systems like ASP, often without adequate local investment in M&E infrastructure, suggests a paternalistic lack of confidence that national health systems can be trusted to deliver desired returns on investment.

A second reason given for the stock-outs was common to the three facilities outside of Bukavu: insecurity. Staff at these facilities, countering their stereotyping as lackadaisical, complained that the CORDAID and SANRU distribution model – supported through successive Global Fund grants – placed too much emphasis on over-stretched staff to personally collect ART. Staff took days to travel to Bukavu and faced risk of violence as they travelled through areas contested by the “rebel kaleidoscope of the Kivus” (Stearns, 2013a, p. 52). The head of the Uvira hospital was quick to single out insecurity as a major concern:

“How am I meant to organise the supply of drugs to the clinic when there is so little money to even pay the *motards* (motor-taxi drivers) or for gasoline? I will have

to pay tolls or protection money at roadblocks on the way too – none of that comes with a receipt for reimbursement.”

CORDAID and SANRU do not deliver goods to health zone level on security grounds, instead relying on the informal and rarely documented transfer of ART to third-party couriers. Regular movements, they claimed, increased the likelihood of banditry, kidnap, and robbery at the hands of profiteering FARDC or militia forces. “In other countries you might move shipments every third Monday,” a Global Fund logistics consultant told me, “but in insecure environments, regularity means that you are asking to be hijacked.” Global Fund risk assessments limit how far into the provincial interior their staff and primary recipients can travel from the relative safety of Bukavu. The Katana hospital manager claimed this led to “stock-out by risk assessment,” with limitations on deliveries arising from a “false sense of *insecurity*” propagated by risk averse, distant managers who were unaware of the fluid nature of on-the-ground risks. Risks arising from insecurity, for example, frequently restricted the provisioning of ART into the remote Shabunda and Fizi *territoires*. Once again, we see how donor agendas – here epitomised in underinvestment in human resources, wariness to strengthen national health systems, and unwillingness to sponsor infrastructure projects – create conditions in which stock-outs arise.

Finally, staff in Uvira and Baraka linked long stock-outs not to health systems weaknesses or bureaucratic politics but to what one pharmacist termed the “deliberate denial” of ART by FARDC forces. “Frequently there are roadblocks that we cannot pass because we are in a marked health van,” a pharmacist in Uvira commented, “and

they are denying us passage because they think our supplies will treat rebels or at least might fall into their hands.” The use of violence to restrict or deny access to care is in direct contradiction of the minimum core obligations of the right to health and those protections afforded to humanitarian and medical assistance via the Geneva Conventions and subsequent additional protocols (Breitegger, 2013). Those who had been transporting ART through contested territory spoke about FARDC soldiers looting vehicles of medical supplies and preventing shipments from urban centres to rural satellite clinics. In one instance, a health zone van was forced opened by FARDC soldiers who threw medicines down a road-side crevasse. According to staff in Bukavu, the justifications given for the deliberate targeting of medical supplies were clear: “full boxes look like we are supplying the enemy” and “the FARDC would rather [villagers] learn that giving up [rebels] will keep sick people alive.” While the shifting nature of conflict in the area means attributing blame and motives to armed actors is difficult, stories of FARDC deliberately disrupting humanitarian logistical suggest a clear and coordinated rationale of ART denial – operating above and beyond technical limits to provisioning in the province – intended to punish or undermine populations in strategic areas through the *manufacture* of stock-outs.

5. TURNING THE SCREW: EXPERIENCING DENIAL

In September 2017, I travelled into the mountainous Fizi territory with a convoy of vehicles delivering ART to the hospital in Baraka and the remote clinics in the provincial interior along the Baraka-Fizi-Lulimba road through the *Moyens Plateaux*.

On the journey southwards from Uvira, we passed settlements that bore the scars of recent conflict: bullet holes peppered walls, burnt joists jutted from the ground where homes once stood, and scorched vehicles lay crumpled by the roadside.

In mid-2017, as the records in Table 1 suggested, the supply of ART to the region collapsed as a result of an unsuccessful FARDC counter-offensive against CNPSC militias. At the satellite clinics *en route*, dependent on supplies from Uvira or Baraka, medical supplies had not been allowed to enter or leave by order of FARDC. Supply chains were frozen indefinitely, with vehicles seized purely on the grounds of their cargo. In some clinics, first-line ART regimens had been out-of-stock for four months. Speaking to residents in the settlements along the Lake Tanganyika shoreline, those four months had been desperate; nobody knew when the next supply of ART and diagnostic tests would arrive or, indeed, when the lengthy stock-out in Baraka itself would end. This punitive temporal regime was characterised by anxiety arising from attempts to manage the “mundane transformations” (Le Marcis, 2012, p. 490) of HIV without *urgent* medicines. In many instances, individuals’ long and forlorn wait for treatment was prefigured by past experiences of underfunded targeted interventions, shifting and ephemeral donor commitments, and governmental abandonment. This stance was most often linked to previous participation in short-lived, donor-funded projects – linked to health systems, employment, and civil society strengthening – that were, before attention and funding moved elsewhere, considered the fruits of democratisation and peacebuilding efforts following the First (1996-1997) and Second (1998-2003) Congo Wars. When the convoy arrived in Baraka, stories about the local

experience of the stock-out emerged and, despite the evident relief that supplies brought, it remained unclear when the *next* stocks would arrive.

In April 2017, FARDC forces established roadblocks along the main routes into Fizi territory as part of a counterinsurgency operation against the CNPSC and villages believed to be supporting them. These restrictions curtailed the movement of medicines into the territory. The Baraka hospital director reported that FARDC leaders told him that this policy was “necessary to flush out [CNPSC] by making them weak, so that we can punish them.” The denial of ART to the hospital meant that pharmacists had to initially ration stocks (see Livingston, 2012; Zhou, 2019). To make every pill *count*, pharmacists dispensed first-line antiretrovirals sufficient for two weeks use instead of the usual full month. “If the intention of the FARDC was to block access to the drugs,” the Baraka dispenser commented, “then the only way to fight back was to make our existing drugs last as long as possible.” As the stock-out deepened, staff improvised alternative regimens to keep viral loads suppressed. Efavirenz, for example, is meant to be administered with Tenofovir/Lamivudine as a fixed-dose combination, but pharmacists were forced to dispense packs of Tenofovir/Lamivudine without Efavirenz. Patients were told to return a week after the initial disbursement to see if new supplies had arrived, with those who took the time to do so left disappointed. “We will be the silent casualties of this war,” one patient told me, “dying not by a bullet but rather at home, in the dark, because we have no medicines.”

The clinical officer at the hospital told me that the FARDC blockade had introduced an ethical dilemma into the heart of treatment. By interrupting therapy for

an indefinite period of time, hospital staff risked attenuating patient treatment adherence. Patients were warned on a routine basis that forgetting even a *single* dose could enable forms of drug resistance that would unleash “antiretroviral anarchy” (Harries et al., 2001). Adherence, however, is “an achievement more than a routine” (Whyte, 2014, p. 22). In contexts of scarcity, replicable routines – and the support networks that make them possible – are frequently replaced by survival imperatives. “Not only am I told we are supporting rebels,” a mother of two in the town said, “but that I am also a bad patient and a bad mother because I am not treating my illness.” During the stock-out, patients were frightened and often asked hospital staff if they were going to die as a result of poor adherence. A doctor in Baraka told me:

“We are in an impossible situation. Give no medicines and people are angry, upset, and become fatalistic. Give something, even though we know it will hasten the victory of the virus, and they leave thinking they have hope and that the FARDC have not yet strangled life from the province. It is a horrible situation.”

This rationing of ART is reflective of the extensive and ongoing bricolage required to maintain an ART programme in “the shadowlands” (Prince & Otieno 2014, p. 941) at the margins of global scale-up efforts. In this case, however, improvisation had fundamentally political roots that originated in the discriminate disruption and denial of ART supply to a strategically significant town as a deliberate strategy of weakening pro-CNSPC resolve. “Why waste bullets,” one doctor said wryly, “when they [FARDC] can sit back as sick people in the villages die or turn on themselves?”

Patients in the mountains beyond Baraka found themselves caught between FARDC and CNSPC positions. Patients at clinics along the road to Lulimba had been unable to access ART for three months as a consequence of restrictions placed on vehicle movements. Like the pharmacists in Baraka, they borrowed and shared pills to assemble a piecemeal regimen. Everyday solidarity and reciprocity, a safety net commonly depended upon during times of scarcity, occurred within social networks – of neighbours, friends, or kin – and often took the form of individuals using ‘spares’ left over (and expired) after a patient graduated from one regimen to another. A local pastor told me that “despite government efforts to crush them, the old systems of support and care survive.” Those who deviated from the prescribed regimen were reminded daily by peers – espousing the common script of adherence classes – that they were damaging their own health through non-adherence. Fearing being labelled as irresponsible “clients” (Whyte et al., 2013), many took their pills every two days until they ran out.

Even by borrowing pills, many could not weather the stock-out with sufficient drugs. A minority, however, were able to overcome local stock-outs by pre-emptively accumulating personal drug stockpiles by refilling prescriptions before the stock-out deepened. In other words, those most concerned with the management of their own medication reserves were rewarded, although this individual security came at the cost of speeding up the onset of the stock-out for others by disrupting facility-level stock calculations. Stories emerging from the out-of-stock villages suggest they became what Bourgois (2005, p. 102) terms “morally ambiguous spaces” within which

“survival imperatives overcome human solidarity as individuals jockey desperately for a shred of advantage.” One village chief (*chef de localité*), for example, told me:

“The greedy sit on their piles of medicine while their neighbours waste away. They are the people with full stomachs and healthy faces. The rest of us are thin and tired. The government has won, we have turned on our kin ... the battle is still happening, but we are dead anyway.”

Well-stocked individuals sold or bartered part of their reserves to other patients, using this stockpile as a means to make “a living” from medicines that prolong life (Marsland 2012, p. 477) or to “peddle influence” (*traffic d’influence*) in the local community. Local forms of solidarity were undermined in the search for ART, with increased competition and disillusionment characterising this pathological form of sociality akin to a “bio-tribalism” (Nguyen 2010, p. 177) that distorts and poisons local moral economies.

In the face of mounting medicine scarcity, many villages gave up passive or active resistance to FARDC as a means of re-opening supply chains. In several instances, village-based “local defence forces” (*balala rondo*) – heavily-armed groups of young male volunteers receiving “financial inducement” (*motivation*) and orders from the *chef de localité* – arbitrarily seized marginalised or disgraced young men from villages on the false pretence that they were CNPSC infiltrators. The transfer of these ‘alleged’ CNPSC bush fighters (*maquisards*) to FARDC commanders was often enough for operations to be eased in these villages and, as a consequence, medicines and supplies

once more reached stocked-out clinics. These barely accountable youths also acted as clandestine guns-for-hire and were involved in the settling of local conflicts, assassinations, and lynching of supposed sorcerers (*balozi*), most notably those who had aroused anger as a result of their stockpiling during the stock-out period. Village leaders confronted by scarcity – and the loss of personal influence this implied – fell back on a politics of fear, violence, and intimidation as a means to end the denial of medicines by FARDC. ART stock-outs, as demonstrated in Baraka and its environs, were not secondary consequences of grand strategy but rather a key means of ultimately accomplishing military objectives.

6. CONTESTATIONS OF DENIAL

My presence in the treatment facilities brought me into regular contact with patients' *collective* efforts to resist individualising logics of scarcity while also navigating the everyday consequences of ART denial. In this final section, I focus on one moment where those collective efforts exposed and challenged the political manufacture of ART stock-outs in South Kivu: protests led by residents in the town of Fizi during January 2018 as FARDC suppressed access to this rugged part of the province as part of their "Kamatakamata" pacification operation against Bembe warlord William Amuri Yakutumba's CNPSC-allied Mai-Mai Yakutumba militia (see Stearns, 2013b).

As the stock-out first emerged in Fizi, patients at the small hospital in the town protested at the shuttered dispensary. Patients in the queue, two-thirds of them women with children, told me of the problems that they faced integrating further uncertainty into their daily practices of ART: the losses arising from transport costs to

make repeated (and pointless) trips to the pharmacy; the pain from walking long distances to the town; and the time wasted in the queue that could have been spent generating income. Newly diagnosed patients, eligible to commence ART, received the news of stock-outs badly and accused doctors of selling medicines on the black market. This anger was revealing of the dismay experienced by patients encountering what was – in many incidences – *another* stock-out, but also the feelings of confusion and annoyance directed towards those seen to be both representatives of a failing health system and those considered likeliest to be taking personal advantage of it (Marsland, 2012).

In contrast to the reprisals arising from the Baraka stock-out, anger at the absence of medicines in Fizi was directed at the Global Fund, the Kinshasa government, and the local FARDC command. A doctor based at the hospital wrote an angry letter to the provincial government and Kinshasa-based Global Fund representatives that claimed drug resistance would increase as a result of treatment interruption. The doctor described the letter as:

“... a wake-up call to the invisible state and the international organisations that have allowed Kabila to absolve himself from investing in public services. The Global Fund takes credit in the media for the lives they have saved, but what about the lives lost or harmed through their silence in the face of this military operation?”

In these words, the international community is accused of standing idly by as government-backed soldiers disrupted the functioning of health systems.

Obliviousness, or silent acquiescence, in the face of this action is singled out for particular scorn. Kabila's time in power was, after all, associated with violent kleptocracy in which all levels of government were impacted by state capture and cronyism. In 2015, for example, a “mafia network” of senior officials siphoned off US\$11.8 million from the health ministry's salary budget as clinics across the country struggled to pay staff (Radio Okapi, 2015). FARDC played a key role in the Kabila project, with their violence used to prevent or silence dissent, but rumours persisted that eastern FARDC commanders operated a shadow command structure that made it difficult to discern if day-to-day operations were conducted with the knowledge or consent of Kabila as commander-in-chief.

Even though the doctor's scathing attempts to undermine the prevailing humanitarian discourse of lives saved through the Global Fund's ART roll-out were not made public, the remarks circulated rapidly in the town via the pavement rumour mill (*radio trottoir*) and SMS. “It is now the resistance that will kill us,” a local HIV social mobiliser noted, and statements such as this gained traction among patients repeatedly told that treatment interruption leads to death. Discussion of the stock-out was common among men and women congregating in the town and informal street networks acted as a conduit for the dissemination of information, rumours, and grievances in the absence of independent media and civil society organisations.

As anger at the stock-out grew, the provincial FARDC commander issued an ultimatum discouraging patients from protesting in the town. Patients and doctors resoundingly condemned this injunction and, in a joint statement delivered from the hospital gates, said: “We prefer to be killed by bullets rather than die slowly with no

medication.” A demonstration march was organised through the town in February 2018, starting from the hospital and ending within sight of the first FARDC positions on the road leading to Baraka; it was from these same checkpoints in January 2011 that FARDC soldiers had launched a campaign of looting and rape in the town to avenge the killing of a soldier. As the protest wound through the streets, there was talk of taking the Kabila government to court for failing to reign in FARDC actions and for breaches of the patients’ rights to treatment. One protestor told me:

“Our daily lives are a struggle to survive. I have little in reserve to help my family when times are hard, and I rely on others to make ends meet. That is why this [denial of medicines] is a crime. It punishes the vulnerable more, but we cannot take more pain. It is time for us to stand up, time for the people to take responsibility.”

Following these protests, the FARDC commander agreed to a meeting with demonstrators – a process expedited by an anxious phone-call from the provincial governor reportedly at the request of the Kabila government and Global Fund – and promised that his forces would facilitate the delivery of medicines in the following days as the campaign against Yakutumba pivoted to the nearby Ubwari peninsula. In so doing, the protestors accomplished a notable climb-down and a commitment to ending the denial of medicines in the town. This direct action temporarily returned delivery of ART to areas denied it for several weeks. The Fizi protest highlights how the discursive power of drug resistance, the politicisation of donors’ global health

metrics, and the threat of spiralling unrest seem to have opened new possibilities for contesting ART denial.

This protest also recalled other breaches of the Kinshasa government's responsibilities concerning the welfare of the population and the normalised outsourcing of health provision to international organisations that International Crisis Group (2013) describes as "governance by substitution." The explosive potential of protests on the streets, while rarely leading to substantive change, forced FARDC commanders to reconsider the biopolitical logic of their military strategy in South Kivu, and to – at least momentarily – acknowledge their role in fulfilling the state's commitments to people living with HIV. The repercussions of ART denial, particularly the motivation of patient organisations to threaten the Kabila government with larger protests, sheds new light on what Nguyen (2010, p. 187) has called "government-by-exception." This term describes the use of exceptional interventions to save lives in a state of emergency, and the resultant governance of populations newly called-into-being via medical, psychological, and administrative technologies. Overcoming ART stock-outs in this instance by appeal to the Global Fund and provincial representatives, patients were *fleetingly* able to access further exceptional support when the state was unwilling to meet its treatment commitments due to strategic decisions made by FARDC. But *at the same time*, the opening up of access to ART ultimately arose from the antagonistic yet enabling recognition, by local patients and doctors alike, of the distant state and its armed representatives as facilitators of their access to vital resources. We see in Fizi that the acknowledgement of sovereignty (via the articulation of an exceedingly thin national political citizenship) is a necessary

yet humbling step toward claiming, experiencing, and embodying a fragile therapeutic citizenship enacted under the portends of scarcity. This contradictory moment reveals the profound political ambiguities embedded within the provision of ART and unsettles a celebratory tendency around the relief of stock-outs and the ‘empowerment’ of citizens that is oblivious to their ultimate subjugative function.

7. CONCLUSION

Global health actors see stock-outs as unexceptional events rooted in error, miscalculation, and ineptitude. My investigative ethnography in South Kivu encountered stock-outs of ART that, despite an abundance of international expertise, originated in technical and geographical limits to treatment access. However, I also encountered stock-outs in Baraka and Fizi that had political functions. In these instances, stock-outs arose not from haphazard scale-up but because it was politically and militarily advantageous for medicines to be denied to geopolitically significant communities. It is essential that the ‘black box’ of scarcity be opened in order to identify, denounce, and politicise those functions of denial that are hidden behind the presumptuous and technocratic rhetoric of ever-expanding access. In resuscitating critique of ART provisioning, I have sought to unsettle the “reassuringly consensual” (Hunsmann, 2016, p. 799) discussion of stock-outs currently sedimented within global health practice.

Three aspects of the stock-outs discussed here act as departure points for future geographical research. First, I have argued for a greater attentiveness to the *functions*

of global health crises and interventions. Despite frequent recourse to expert-led technical projects, global health is not an apolitical field and it is essential that geographers make visible the situated political dynamics behind interventions into the lives of others. Such interventions create “another type of politics,” Ticktin (2006, p. 34) notes, “even while being labelled *apolitical*.” Too often, practitioners see provisioning gaps and propose technical solutions to ‘fill’ them without questioning the expedient function that these gaps may play in local politics. Second, there is a need for a closer interrogation of armed actors’ roles within and around the spaces of global health intervention. “Fear and terror,” Watts (2005, p. 100) reminds us, “are the bedfellows of scarcity.” The FARDC denial of ART provoked such affective responses in CNPSC-leaning populations and drew medicine supply into the geo-strategic sphere. This under-investigated weaponization of scarcity warrants further geographical interrogation in both international and non-international armed conflicts (see Loyd, 2009). Third, it is important that geographers focus on the lived experiences of scarcity in the context of health systems strengthening. Informed insight into the everyday spaces of struggle, compromise, and defeat that accompany the search for essential treatment is necessary if we are to understand what happens when the clinic – a traditional locus of global health research – is found to be empty (yet again).

Ongoing discussions about the international community’s commitment to ending the AIDS pandemic present a timely opportunity to consider how stock-outs can be approached differently. The 2016 UN Political Declaration on HIV and AIDS mandates the Joint United Nations Programme on HIV/ AIDS (UNAIDS) to support

countries in developing national treatment programmes. Zero-tolerance to ART stock-outs remains a key commitment, but UNAIDS has so far only developed stock-out indicators that flag deficient procurement procedures. Indeed, UNAIDS (2017b, p. 48) concludes that their monitoring “does not provide information on why stock-out problems occur, which antiretroviral medicines are or were out of stock, how long the stock-out lasted or the quality of antiretroviral medicine storage, delivery and distribution.” An entire monitoring framework has been published, tellingly, that does not make visible why, when, and – importantly – *where* stock-outs occur. The absence of data collection that may even hint at the localised political origins and functions of stock-outs is characteristic of “miserly thinking” (Doel, 2009) that refuses to see stock-outs as anything other than unexceptional events rooted in deficiency. If the international community is committed to the vexation of stock-outs, then the political dimensions of ART scarcity must first be made *thinkable* and then made visible. Investigative ethnography, as I have documented here, provides one avenue for geographical work that combines illustration, explanation, and even accusation in pursuit of such an unabridged account of the contested spatialities of ART provisioning.

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Figure 1: A map of South Kivu province, the Democratic Republic of the Congo

Table 1: A matrix of sampled facilities reporting an incidence of stock-out of key ART commodities (June-September 2017)

	FACILITIES					
ART COMMODITIES	Bukavu (Hospital)	Bukavu (North)	Bukavu (South)	Katana	Uvira	Baraka
All ARVs	-	STOCK-OUT	STOCK-OUT	STOCK-OUT	STOCK-OUT	STOCK-OUT
Adult ARVs	-	STOCK-OUT	STOCK-OUT	STOCK-OUT	STOCK-OUT	STOCK-OUT
- First line	-	STOCK-OUT	STOCK-OUT	STOCK-OUT	STOCK-OUT	STOCK-OUT
- Second line	-	-	-	STOCK-OUT	STOCK-OUT	STOCK-OUT
Paediatric ARVs	-	-	-	-	STOCK-OUT	STOCK-OUT
- First line	-	-	-	-	-	STOCK-OUT
- Second line	-	-	-	-	STOCK-OUT	STOCK-OUT
PMCTT syrup	-	-	-	-	-	STOCK-OUT
Cotrimaxazole	-	-	-	-	-	STOCK-OUT
Determine test	-	-	-	-	STOCK-OUT	STOCK-OUT