This is an unformatted version of the following article:
doi:10.1016/j.drugpo.2012.08.005

Bowring AL, Luhmann N, Pont S, Debaulieu C, Derozier S, Asouab F, Toufik A, van Gemert C, Dietze P, Stoové M
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International Journal of Drug Policy 2013 24(1):78-81

This article was published by Elsevier (http:// www.elsevier.com/locate/drugpo). Received 23 April 2012, Revised 16 August 2012, Accepted 27 August 2012, Available online 1 October 2012

An urgent need to scale-up injecting drug harm reduction services in Tanzania: Prevalence of blood-borne viruses among drug users in Temeke District, Dar-es-Salaam, 2011

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Abstract

Background: Injecting drug use (IDU) is a growing concern in Tanzania compounded by reports of highrisk injecting and sexual risk behaviours among people who inject drugs (PWID). These behaviours have implications for transmission of blood-borne viruses, including HIV and hepatitis C (HCV).

Methods: We recruited 267 PWID (87% male) from Temeke District, Dar-es-Salaam through snowball and targeted sampling. A behavioural survey was administered alongside repeated rapid HIV and

HCV antibody testing. HIV and HCV prevalence estimates with 95% confidence intervals (CIs) were calculated. Results: Among PWID, 34.8% (95%CI 29.1–40.9) tested HIV positive (29.9% of males and 66.7% of females); 27.7% (95%CI 22.0–34.0) tested HCV antibody positive. Almost all (97%) participants were aware of HIV and 34% of HCV. 45% of male and 64% of female PWID reported a previous HIV test; only five (2%) PWID reported a previous HCV test. Of HIV and HCV positive tests, 73% and 99%, respectively, represented newly diagnosed infections.

Conclusion: High prevalence of HIV and HCV were detected in this population of PWID. Rapid scale-up of targeted primary prevention and testing and treatment services for PWID in Tanzania is needed to prevent further transmission and consequent morbidities.

Introduction

Injecting drug use (IDU) is a growing concern in Tanzania and sub-Saharan Africa, adding a new dimension to HIV and other blood-borne virus (BBV) transmission in the region (McCurdy, Williams, Kilonzo, Ross, & Leshabari, 2005). A local market for heroin developed in the 1980s once East Africa was incorporated into international trafficking routes (UNODC, 1999). Initially only smoked or inhaled, IDU emerged in Tanzania after 1998 with market shifts from 'brown' to 'white' heroin, which is more readily injected (McCurdy et al., 2005). Tanzania has an estimated 25,000–50,000 people who inject drugs (PWID) (Nieburg & Carty, 2011).

Mainland Tanzania has a generalised HIV epidemic spread predominantly through heterosexual sex. HIV prevalence has stabilised at approximately 5.7% (TACAIDS, 2009), but gender, regional and urban-rural disparities in HIV exist. In Dar-es-Salaam city, HIV prevalence among males and females in the general population are 7.2% and 10.2%, respectively (TACAIDS, 2009). In contrast, in Zanzibar general prevalence is low (0.6–0.9%) and HIV is predominantly spread through male-to-male sex, IDU, and transactional sex, with a prevalence of around 25% in PWID (Dahoma et al., 2006). A small number of studies of PWID in mainland Tanzania report high risk injecting and sexual risk behaviours (e.g., McCurdy, Ross, Williams, Kilonzo, & Leshabari, 2010; Williams et al., 2009) with implications for HIV and hepatitis C (HCV) transmission. Studies report HIV prevalence among PWID in Dar-es-Salaam as high as 64% in women and 28% in men, with higher prevalence in females associated with sexual risk factors (e.g. Williams et al., 2009). No HCV prevalence estimates exist for PWID in mainland Tanzania, but Dahoma et al. (2006) reported 22% HCV prevalence among PWID in Zanzibar.

Despite increasing attention to IDU in Tanzania and calls for enhanced harm reduction responses (McCurdy, Kilonzo, Williams, & Kaaya, 2007), international and local HIV prevention policy responses are limited. The Tanzanian Drug Control Commission (DCC) developed a national strategic framework for 2010–2014 to support HIV prevention among PWID (Nieburg & Carty, 2011), which was signed by the Prime Minister in 2012. Nonetheless, involving local policymakers outside of public health has proved difficult, as exemplified by continued criminalisation of needle possession in some jurisdictions, discouraging safer injecting practices and impeding harm reduction service access (McCurdy et al., 2007). Non-government organisations (NGOs), community-based organisations and district health services run services for drug users in Tanzania (McCurdy et al., 2007). Most are geared towards counselling and rehabilitation, with little progress made to scaleup needle and syringe programmes (NSPs) and opioid substitution therapy (OST) services. OST only recently became available in Tanzania through a pilot project in the Muhimbili University Hospital. The French NGO Médecins du Monde-France (MdM-F) established a comprehensive harm reduction programme in Temeke District (the poorest of three urban Districts of Dar-es-Salaam where

drug use is highly visible) in 2010, focusing on community and peer-based delivery of NSPs, HIV and viral hepatitis voluntary counselling and testing (VCT), and HIV/AIDS care and treatment (Debaulieu & Luhmann, 2011).

This paper reports findings from a rapid assessment of HIV and HCV prevalence among drug users in Temeke District, Dar-es-Salaam. Designed and conducted by MdM-F, the study aimed to generate new data on HIV and especially HCV prevalence among drug users in Tanzania and assess risk behaviours to inform local harm reduction programmes. We discuss findings in the context of IDU harm reduction service scale-up in Tanzania and implications for BBV prevention, burden of disease and future responses. Upcoming reports will focus on gender and risk behaviours, with implications for HIV and HCV epidemiology and targeted prevention and treatment services.

Methods

Recruitment and data collection

Temeke District was mapped to estimate drug user numbers and locations of public drug using areas (camps) in Temeke district. Based on this information, the study aimed to include at least 200 PWID (including 20% female and 30% aged 25 years and under) and 100 non-injecting drug users (NIDUs) (25% female).

Current (past month) drug users were recruited through snowball and targeted sampling in June 2011. Based on their influential role in drug using networks, five male and three female seeds were selected and trained to refer drug users to the MdM drop-in centre for potential recruitment; referred participants subsequently referred other drug users. Demographics were assessed during recruitment and purposive sampling applied to ensure geographic diversity based on the mapping and quotas described above.

Inclusion criteria were reporting any IDU (PWID) or noninjecting heroin and/or cocaine use (NIDU) in the past month and residence in Temeke district. Participants received transport reimbursement, a food pack, and a safe injecting kit as incentives; female participants also received a mobile phone voucher.

Trained interviewers obtained written informed consent and administered (in Swahili) a quantitative questionnaire that assessed socio-demographics, drug use patterns, injecting risk behaviours, awareness and knowledge of HIV and HCV, and selfreported testing history and infection status. A trained nurse counselled and tested participants using repeated rapid diagnostic antibody tests for HIV (Determine® HIV 1/2 whole blood assay; SD Bioline®) and HCV (OraQuick® rapid antibody test HCV; SD Bioline® HCV) on fingerprick blood. Participants could opt to receive their test results and were referred to health care services if positive.

Data analysis

HIV and HCV antibody prevalence were determined as the percentage of sample testing positive and assessed by gender, mode of drug use, and overall; 95% confidence intervals were calculated using standard methods. Potential HIV/HCV coinfection was defined as testing both HIV and HCV antibody positive. Newly diagnosed infection was calculated as the proportion of those testing HIV or HCV antibody positive who self-reported as negative, unknown, or not previously tested. Descriptive analyses of mode of drug use, demographic factors, drug use patterns, and awareness and testing

history of HIV and HCV were assessed among PWID only. Analysis was conducted in Stata version 11 (College Station, TX, 2011).

Ethics

Ethical approval was granted by the National Institute for Medical Research of Tanzania.

Results

We recruited 267 PWID (87% male) and 163 NIDUs (77% male) (Table 1). The median age of PWID and NIDUs was 30 years (interquartile range [IQR] 26–34) and 29 years (IQR 25–34), respectively. All PWID reported injecting heroin, 264 (99%) daily; all NIDUs also reported heroin use. Median time since initiating daily heroin injection was 5 years (IQR 3–10) among male and four years (IQR 3–6.5) among female PWID. PWID also reported past month cannabis (53%), valium (7%), alcohol (27%), and crack/cocaine (1%) use.

Among PWID, 69 (30%) males and 24 (67%) females tested HIV

positive (Table 1); 51 males (74%) and 17 females (71%) were newly diagnosed. Among NIDUs, four (3%) males and 15 (41%) females tested HIV positive; 12 (63%) newly diagnosed.

Seventy-four (28%) PWID and three (8%) NIDUs were HCV antibody positive (Table 1); 99% newly diagnosed. Forty-five (17%) PWID were potentially HIV/HCV coinfected.

Almost all PWID (97%) had heard of HIV and 176 (66%) knew where to test for HIV, but 127 (56%) males and 13 (36%) females reported no previous test, with a further 23% of males and 25% of females last tested more than 2 years earlier. One-third of PWID (34%) had heard of HCV; only five (2%) reported a previous HCV test. Nearly half of PWID (46%) reported receiving clean needle and syringes from an NSP, peer educator or outreach in the previous 12 months.

Discussion

Just over a decade since the emergence of IDU in Tanzania, HIV prevalence among PWID in this sample well surpassed recent general population estimates in Dar-es-Salaam (2009). Females reporting only non-injecting drug use also had very high HIV prevalence, presumably because of increased susceptibility to infection through sexual risk behaviours and transactional sex (e.g. Williams et al., 2009). Notwithstanding the extreme BBV vulnerability within drug using populations, these data underscore the potential of injecting and other risk practices among drug users to contribute to HIV transmission in the general population.

To our knowledge, this is the first study to estimate HCV exposure among PWID in mainland Tanzania. Among PWID, HCV prevalence was 28%; similar to that reported in Zanzibar (22%) (Dahoma et al., 2006) but lower than the recent pooled estimate from Kenya (42%) (Nelson et al., 2011). Lower HCV than HIV prevalence (35%) contrasts with global epidemiology, whereby HCV prevalence usually exceeds HIV in PWID; this is likely explained by the relatively recent emergence of IDU in Tanzania and the concurrent generalised HIV epidemic.

Low HCV awareness and extremely low levels of communitybased testing has considerable implications for future HCV-related burden of disease, particularly given Tanzania's constrained

capacity and resources. Lack of awareness reduces PWID's capacity to modify behaviours and avoid transmission. HIV-positive PWID may selectively engage in risky injecting practices with other known HIV-infected PWID (Chakrapani, Newman, Shunmugam, & Dubrow, 2011), assuming no BBV transmission risk or consequences. In doing so they risk HIV/HCV coinfection, which is associated with heightened HCV transmission and morbidity, including reduced probability of spontaneous HCV clearance, accelerated progression of liver disease, and increased HCV vertical transmission risk (Rotman & Liang, 2009).

Few participants reported regular HIV testing, although 'ever tested' rates were similar to the general population in Dares-Salaam (TACAIDS, 2009). Epidemic modelling suggests that undiagnosed HIV disproportionately contributes to onward transmission (Wilson, Hoare, Regan, & Law, 2009); the current 'test and treat' paradigm highlights the importance of testing in HIV prevention globally (The Lancet, 2011). The high rate of newly diagnosed HIV in this sample underscores the necessity for high coverage and accessible VCT services for drug users in Tanzania, including referral to clinical services for timely commencement of antiretroviral therapy (ART). ART coverage in Tanzania is low (36% and 64% among males and females, respectively) (UNAIDS, 2010), meaning the structural changes and resources required to provide drug users with ART must occur within a broader investment in health services.

Nearly half of the participating PWID reported receiving a sterile needle and syringe in the previous 12 months. However, quantity and frequency of access among those who received injecting equipment (important determinants of coverage and service impact) remain unknown. Needles and syringes can be purchased legally from pharmacies (McCurdy, Ross, Kilonzo, Leshabari, & Williams, 2006), but currently no needle and syringe distribution beyond that provided by MdM-F occurs in Temeke. We may have overestimated receipt of needle and syringes by recruiting in an area serviced by MdM-F. Technical guidelines suggest that 100 syringes per PWID per year are required to reduce HIV transmission, and many more to reduce HCV transmission (WHO, UNODC, & UNAIDS, 2009). Clearly, this target is not being met for most PWID in Temeke. While some progress since the study's completion is evident, continued scaleup of NSP is vital, including secondary distribution through peers or outreach to extend access to hidden sub-populations. The data presented in this paper would support an appropriate contribution of recently committed funds for HIV prevention from PEPFAR and GFATM in Tanzania to support harm reduction programme scale-up. Advocacy, police cooperation, and education to discourage needle and other injecting equipment sharing are equally necessary to support NSP expansion.

Several study limitations exist. First, a non-probability sampling method was used so the sample's representativeness of drug users in Temeke district is unknown. The original sample size was based on approximate population size estimates and logistical and research constraints. Confidence intervals for HIV and HCV prevalence point estimates apply only to our sample and no adjustment for clustering was possible. While geographical and demographic diversity of the sample within Temeke district was achieved and overall recruitment exceeded expectations, recruitment of female and young PWID fell slightly short of targets. HIV and HCV were detected using rapid antibody testing which may have missed recently acquired infection. Finally, HCV antibody tests only indicate past exposure, and spontaneous clearance occurs in approximately 30% of cases (Amin et al., 2007); thus, our measurements of current HCV infection and HIV/HCV co-infection were not definitive.

Our findings of high HIV and HCV prevalence among drug users in Temeke district reiterate the urgent need for harm reduction responses in Tanzania and the region. Harm reduction services such as those developed by MdM-F and Muhimbili University should continue to be supported and expanded to ensure adequate and sustained coverage. While this is occurring, further commitment

is needed to curb the burgeoning HIV and HCV epidemic in this population and the associated escalating morbidity and pressure on the health care system. The Tanzanian government and international bodies are critical in coordinating and appropriately funding effective responses and creating a supportive policy environment for harm reduction scale-up (Sharma, Burrows, & Bluthenthal, 2008).

Acknowledgements

This study received funding from AFD, the French Agency for Development. The authors thank the participants of the study and gratefully acknowledge the help and support of the Tanzanian Ministry of Health and Social Welfare and the Temeke Municipal Council, and the contribution to this work of the Victorian Operational Infrastructure Support Program received by the Burnet Institute. PD is supported by an Australian Research Council Future Fellowship and MS is supported by funding from the National Health and Medical Research Council (10011444).

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Table 1
Prevalence of HIV and hepatitis C among PWID and NIDUs.

		HIV positive			HCV positive			HIV and HCV positive			Total
		n	%	(95% CI)	*n*	%	(95% CI)	*n*	%	(95% CI)	
PWID	Male	69	29.9	(24.0–36.2)	64	27.7	(22.0–34.0)	35	15.2	(10.8–20.4)	231
	Female	24	66.7	(49.0–81.4)	10	27.8	(14.2–45.2)	10	27.8	(14.2–45.2)	36
	All PWID	93	34.8	(29.1–40.9)	74	27.7	(22.4–33.5)	45	16.9	(12.6–21.9)	267
NIDUs	Male	4	3.2	(0.9–7.9)	0	0.0	(0.0–2.9)[a]	0	0.0	(0.0–2.9)[a]	126
	Female	15	40.5	(24.8–57.9)	3	8.1	(1.7–21.9)	2	5.4	(0.7–18.2)	37
	All NIDUs	19	11.7	(7.2–17.6)	3	1.8	(0.4–5.3)	2	1.2	(0.1–4.4)	163

[a] One-sided, 97.5% confidence interval; PWID, people who inject drugs; NIDU, non-injecting drug users; HIV, human immunodeficiency virus; HCV, hepatitis C virus.