Street-based adolescents at high risk of HIV in Ukraine

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ABSTRACT
Background Ukraine has the highest HIV prevalence in Europe, with young people disproportionately represented among populations at high risk. One particularly vulnerable group comprises adolescents who live or work on the streets. This study aimed to measure the extent and distribution of HIV risk behaviours among street-based adolescents in four Ukrainian cities as part of a regional UNICEF HIV prevention programme for most-at-risk adolescents.

Methods A cross-sectional behavioural survey was conducted of 805 adolescents (aged 10–19 years) in the cities of Kiev, Donetsk, Dnepropetrovsk and Nikolaev. Using location-based network and convenience sampling, 200 adolescents were reached in each site and were administered a standardised questionnaire on drug use, sexual behaviour, condom use, HIV knowledge, access to prevention services, experience of violence and contact with state institutions and police.

Results Considerable levels of HIV risk behaviour were found, including injecting drug use among 15.5% of the sample. Almost three-quarters of adolescents had experienced sexual debut, most before the age of 15 years. Male-to-male sexual behaviour was reported by just under 10% of boys. Condom use was low although varied by partner type. There were high rates of forced sex, and 75.5% of respondents reported police harassment.

Conclusions Street-based adolescents in Ukraine are at significant risk of contracting HIV due to involvement in injecting drug use and unprotected sex in personal and commercial exchanges, including male-to-male sex. This group initiates risk behaviours at early ages, and does not appear to have good access to prevention and other health services.

Following the collapse of the Soviet Union, Ukraine experienced many of the social and economic upheavals that have been implicated in the region’s worsening population health,1 2 including a rise in risk behaviours for HIV transmission.3 Ukraine now has the highest HIV prevalence in Europe, estimated at 1.63% of adults aged 15–49 years.4 HIV remains concentrated among most-at-risk populations, namely injecting drug users (IDU), female sex workers (FSW) and men who have sex with men (MSM), but infection rates vary significantly between regions.5 6

Adolescents are disproportionately represented among populations at risk; 19% of HIV infections occur among those aged 15–19 years.6 7 In the 2007 Behavioural Surveillance survey, adolescents aged 15–19 years comprised 6% IDU, 18% FSW and 12% MSM (age 15+ years).8–10 Studies from both Ukraine and other settings have shown that younger members of these populations engage in more risk behaviours than their older counterparts.7 11 12 The growing visibility of adolescents living without parental care in the region has led to increased concern for this group’s vulnerability to HIV.13 14 The numbers of street-based adolescents in Ukraine are unavailable, although one estimate from 2005 put the figure at approximately 50,000.15 Non-governmental organisation (NGO) and United Nations agency needs assessments suggest street-based youth are a neglected risk group for HIV in Ukraine,16 particularly as a recent survey of over 300 street youth in St Petersburg, Russia, found 57.4% HIV prevalence.17

Globally, homeless and street-based adolescents are particularly vulnerable and experience multiple adverse health outcomes, including high concentrations of HIV risk.18 19 Studies have found associations with injecting drug use,20 exchange of sex for money, shelter, drugs and other goods,21 22 frequent sexual activity with a higher number of sexual partners than the general population of young people,23 low condom use in both personal and commercial sexual encounters24 and elevated exposure to physical and sexual violence,25 including by the police.25 26

This study aimed to measure the extent and distribution of HIV risk behaviours among street-based adolescents aged 10–19 years in four Ukrainian cities, a group assumed to be at high risk despite the lack of any behavioural data or HIV/sexually transmitted infection prevalence rates. This research formed part of UNICEF’s first HIV prevention programme that explicitly defined and targeted most-at-risk adolescents. It was conducted in seven countries of East Europe with funding from Irish Aid. The programme’s objectives were to increase the availability of data on at-risk adolescent populations, implement evidence-based interventions and evaluate their outcomes.

METHODS
We conducted a cross-sectional survey using a combination of location-based convenience and network sampling in the cities of Kiev, Donetsk, Dnepropetrovsk and Nikolaev. These sites were selected in order to reflect regional diversity, and because they had sizeable populations of street-based adolescents, links had been made to organisations interested in developing follow-up interventions, and local authorities were supportive of the research.

Key informants and local NGO assisted in mapping locations where street-based adolescents congregate. Formative research suggested they
often cluster in small groups with an identified, frequently older, leader. Fieldworkers approached individuals or groups, introduced the research, and recruited eligible participants. Each respondent was asked to refer other members from his/her network and adolescents perceived to be group leaders were particularly encouraged to refer peers, especially those who might not be easily identified or frequent the same venues.

Interviews lasted between 30 min and an hour and took place on the street, or in a local café or NGO office, particularly during adverse weather conditions (data collection took place during early winter). Fieldworkers administered the questionnaire and took care to ensure as much privacy as possible; respondents were compensated with a ‘gift pack’ worth approximately US$5 and containing a mix of personal items and snacks that varied by site (eg, shampoo, warm socks, juice box, piece of fruit, etc.)

We aimed to reach 200 youth in each city, including a target of 60 girls at each site to ensure adequate numbers to disaggregate the data by sex; this reflects available data suggesting a 2:1 male to female ratio among IDU and street youth in Ukraine. For purposes of this study, being ‘street-based’ was defined as spending at least 50% of the time on the streets and not attending school or being engaged in employment; respondents were eligible if they were aged 10–19 years, reported being ‘on the streets’ for at least 3 months, and if they appeared sober and capable of granting informed consent.

We used a standardised questionnaire developed for the UNICEF programme containing core modules on drug use, sexual behaviour, condom use, HIV knowledge and access to prevention services (NGO or state clinics, needle exchange programmes and outreach workers). Further sections were added on violence, institutionalisation in juvenile justice or social care facilities and interaction with police. The questionnaire was organised into 15 sections containing a maximum of 80 questions, although in reality most respondents answered far fewer due to screening questions and skip patterns. Questionnaires were translated into Russian and Ukrainian, pilot tested, and simplified for use by very young adolescents. Ethical approval was obtained from the Sociological Association of Ukraine. All analyses were conducted using STATA 10. χ² tests were performed to assess the association between variables.

RESULTS
We recruited 805 adolescents. The median age for both sexes was 15 years and 81.5% were younger than 18 years and were thus minors under Ukrainian law. Most were Ukrainian, with a significant minority reporting Russian ethnicity. Less than a third (28.5%) of under-18s were currently enrolled in school; educational attainment was low at every age. Although 41.4% of the sample reported living with a parent or other adult relative, 62.7% of boys and 43.8% of girls (p<0.001) had been institutionalised within the care system at some point. Table 1 presents data on respondents’ demographic background, social characteristics and behavioural risk profiles.

### Drug use
Injecting drugs was reported by 125 respondents (15.5%), the majority of whom initiated injecting between the ages of 14 and 16 years and now inject at least weekly. Among respondents who reported injecting drugs in the past month, most (72.7%) stated they had used sterile injecting equipment the last time they injected, but close to half (44.1%) shared needles at least once in the month before the interview.

Most obtain needles at the street-based locations where they inject with others (alleyways, stairwells, basements), with

| Table 1 Characteristics of adolescents | Total n | % |
|---------------------------------------|--------|---|
| **Demographic background** | | |
| **Sex** | | |
| Male | 585 | 70.2 |
| Female | 240 | 29.8 |
| **Age, years** | | |
| 10–14 | 305 | 37.9 |
| 15–17 | 351 | 43.6 |
| 18–19 | 149 | 18.5 |
| **Ethnicity** | | |
| Ukrainian | 551 | 68.4 |
| Russian | 143 | 17.8 |
| Other/ I don’t know | 111 | 13.8 |
| **Living arrangement** | | |
| Never attended school | 30 | 3.9 |
| Up to full elementary | 154 | 19.4 |
| Up to basic secondary | 585 | 73.8 |
| Full secondary | 24 | 3.0 |
| **Educational level** | | |
| Double orphan* | 269 | 33.4 |
| Single orphan | 352 | 43.7 |
| Not an orphan | 184 | 22.9 |
| Ever experienced police harassment | 608 | 75.5 |
| Ever institutionalised in care facility | 459 | 57.0 |
| **HIV risk and sexual health** | | |
| IDU injecting in the past month | 125 | 15.5 |
| Ever had vaginal sex | 585 | 73.5 |
| Ever had anal sex between men (among boys) | 54 | 6.8 |
| Ever had anal sex between men (among boys) | 54 | 6.8 |
| Ever had an abortion (among girls) | 30 | 12.5 |
| **Use of services** | | |
| IDU obtaining needles from pharmacy | 69 | 55.2 |
| IDU obtaining needles from needle exchange or outreach | 14 | 11.2 |
| Ever had an HIV test | 179 | 22.3 |
| Ever experienced police harassment | 608 | 75.5 |
| Ever institutionalised in care facility | 459 | 57.0 |
| **Condom use at last MSM sex** | | |
| Condom use at last casual sex | 161 | 20.0 |
| Condom use at last commercial sex | 85 | 10.8 |
| Ever had an abortion (among girls) | 30 | 12.5 |
| Ever received condoms from an outreach worker | 40 | 5.0 |

*Numbers may not add up to 100% when multiple responses or ‘no answer’ were options.

68.8% reporting receiving equipment from IDU friends. Approximately a quarter inject with a pre-filled syringe; other sources include sexual partners (26.4%), picking used needles/syringes off the street (18.4%) and theft (11.2%). Only 8.9% have used a needles exchange programme in the past year; contact with outreach workers was reported by just seven individuals. Over half (55.2%), however, are able to purchase clean needles from pharmacies.

### Sexual activity and condom use
Overall, 75.8% of the sample reported ever having vaginal sex. There are notable variations by age and sex, with 42.9% of respondents aged 10–14 years reporting vaginal sex compared
with all but two 18–19 year olds. Among sexually active respondents, 76.1% experienced sexual debut before the age of 15 years and the rate of partner accumulation is high, with boys reporting a mean of 4.7 partners and girls 4.9 partners in the past 12 months. Two hundred and eight (26.3%) respondents reported ever having anal sex, and 54 boys (9.8%) reported anal sex with a man or boy (MSM). Among boys reporting MSM sex, the mean number of partners in the past year was 5.2.

Table 2 summarises some of the key gender differences in behaviour and exposure to HIV risk. Both boys and girls have exchanged sex for money, gifts or drugs, although the figure is higher among girls. The majority of girls who reported receiving a reward for sex did this for the first time between the ages of 12 and 16 years; however, reports of girls as young as 9 and 10 years old receiving rewards for sex were recorded.

Overall, 53.3% of the sample reported unprotected sex at last intercourse with a casual partner. Young people obtain condoms from newsstands (35.2%), pharmacies, shops or petrol stations (31.9%) or friends (28.9%). Almost half (48.8%) of girls also get condoms from sexual partners, while only 29.7% of boys do so (p < 0.001). Girls exhibit better access to prevention services, with higher proportions both receiving condoms from outreach services and having ever had an HIV test. On the other hand, among sexually active girls, 18.3% have ever been pregnant and 68.2% of these obtained an abortion.

Violence
Among girls, overall 52.2% reported having ever experienced forced sex, among whom 70.9% had been forced in the past year. Although a significantly smaller proportion of boys reported forced sex, this figure rises to 49.0% among those reporting MSM behaviours.

Over 600 (75.5%) respondents had been stopped or harassed by the police in the past, 328 of them over three times in the past year and 62 of them more than 21 times. Boys experienced police harassment and incarceration at significantly higher rates than girls.

Overlapping risks
There were clear associations between risk behaviours, particularly selling sex and injecting drugs. Among female IDU, 75.8% also reported exchanging sex for money, gifts, or drugs; among boys the figure is 22.3%. Among all the girls who have exchanged sex, 18.4% also inject drugs. Of the 54 boys reporting MSM, 16 were also IDU (29.6%).

Knowledge of HIV
We assessed knowledge of HIV through the five-question scale used to compile UNGASS indicators for young people and most-at-risk populations, as well as additional knowledge questions specific to IDU transmission. Overall, 15.3% respondents correctly identified ways of preventing sexual transmission of HIV and rejected major misconceptions, with significant differences between boys (11.7%) and girls (17.1%; p < 0.05). The low knowledge scores are mainly due to the prevalence of misconceptions; fewer than half knew that HIV could not be spread through mosquito bites (41.4%), or sharing crockery (57.4%). The majority of both boys and girls knew that using condoms at each sex act reduced HIV risk (65.8%), and that using clean injecting equipment did so (61.2%). The subsample of IDU demonstrated slightly better levels of knowledge, with 68.8% replying correctly that HIV could be prevented through the use of clean, unused needles and 75.2% by consistent condom use.

DISCUSSION
This cross-sectional survey of 805 street-based adolescents in four Ukrainian cities found high levels of HIV risk-related behaviours, particularly for sexual transmission. Three-quarters of respondents were sexually active, including 42.9% of the youngest age group. Sexual debut occurred before the age of 15 years for most, a frequently used indicator of elevated social and biological vulnerability.

A range of different types of sexual partners was reported. The majority of girls (56.7%) and 16.5% of boys reported receiving money, gifts or drugs in exchange for sex, and 7.4% of boys reported paying for sex. Condom use is inconsistent. As expected, condoms were most likely to be used during commercial sex and less so with casual or steady partners, in which a personal relationship may be established.

For MSM, condom use at last sex was low at between 36% and 39% for all partner categories. Low condom use probably reflects the disempowered status of adolescents vis-à-vis adult sexual partners; on the other hand, that condom use was reported at all suggests street-based youth are motivated to protect themselves from HIV, other sexually transmitted infections, and/or pregnancy, perhaps particularly during sexual relationships with other young people. As few respondents received condoms free of charge from services, but rather purchased them from pharmacies or other outlets, there is clear scope for improving condom availability for this group. The availability of other means of contraception should also be prioritised to address the high rate of unwanted pregnancies among street-based girls.

Although a minority of this sample inject drugs, they nonetheless exhibit a higher rate of injecting than many other street-based adolescent populations for whom the cost of heroin proves prohibitive, although studies in the USA have found even higher rates among homeless youth. In Ukraine, however, IDU inject locally or home-produced substances, including poppy straw extract, cooked amphetamines and, as recently reported, methcathinone made from cold medications containing phenylpropanolamine, referred to as ‘boltushka’. In our study, most IDU reported sharing injecting equipment in the past month and did not access harm-reduction services. Just 11 ever visited a needle exchange, and almost none received needles from an outreach worker. Injecting drug use was also associated with other risk behaviours, including more frequent commercial sex. Knowledge levels seemed fairly low, although most knew that using condoms and clean injecting equipment were effective prevention measures.
Our results highlight the disturbing reality of regular violence, including by police. Nearly half of female respondents experienced forced sex and MSM were also at higher risk of sexual assault. Rather than providing protection, the police are perceived to pose an additional threat, as over three-quarters of the sample reported ever having been stopped or harassed; boys appear particularly vulnerable. This resonates with findings from both Brazil and Egypt, where street children are often explicitly targeted by authorities.25 26 Addressing HIV is unlikely to have any real effect until basic human rights are assured for street-based adolescents, as high levels of harassment make it unlikely they will trust authorities tasked with their care.

CONCLUSION
This research is among the first behavioural study conducted among most-at-risk adolescents in the region and clearly demonstrates that street-based adolescents in Ukraine are at significant risk of contracting HIV due to involvement in injecting drug use and unprotected sex in personal and commercial exchanges, including male-to-male sex. This group initiates risk behaviours at early ages, and does not appear to have good access to prevention and other health services. Since the completion of this study, a national HIV prevalence study among 15–24 year olds living or working on the street found 18.4% infection rates, further confirming the extreme vulnerability of the adolescents in this group.34 Careful design of appropriate services to increase contact and trust of street-based youth are imperative to provide them with harm reduction and child protection. Further research to explore which facilities are perceived as convenient and ‘user friendly’ by street-based adolescents should guide future programming. It may be possible to build on ‘entry points’ identified by this research, such as IDUs’ willingness to buy needles/syringes from pharmacies, and the fact that over 20% of the sample has ever tested for HIV. Similarly, the discovery of a fairly high rate of pregnancy among girls could also serve as an opportunity to reach some street-based adolescents, not only for reproductive and maternal health services, but as a means to establish positive contact. Programmes in other settings have found that girls who usually do not attend clinical services are more amenable to health-seeking during pregnancy, which can be used as a means to introduce other health promotion activities35 or even assist girls in re-evaluating their life choices.36

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Contributors JRB assisted in the study and provided support during fieldwork and analysis, and drafted the first version of the paper. OMB served as principal investigator throughout the research. AT provided technical assistance and coordinated stages of the research. TVB and YVS conducted statistical analysis and contributed to drafting subsequent versions of the paper. CM undertook additional statistical analysis. OS helped design and coordinate the research.

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