FEATURE

HIV/AIDS explosion in Russia triggers research boom

Several studies now underway aim to offer solutions to the HIV/AIDS crisis for Russian policy makers

With a reddening sun sinking below the skyline on a warm spring evening in the ramshackle Moscow suburb of Mitishi, more than 60 women, some from nearby apartment towers, but most from rural Russia, Ukraine, and Moldova, line up in a parking lot beside an eastbound highway for a "pokaz"—Russian for "show". Before a steady flow of men cruising by in their cars, the women, most wearing tight-fitting clothes and high heels, stood smoking, chatting, and smiling nervously in two lines, one for older women charging US$50 for sex, one for younger women charging $100. A few hundred metres down the road, another pokaz had also formed—just one more of Moscow's innumerable prostitution bazaars.

For Dima Cheumarev and Nadia Romanova, two psychologists gathering health data on sex workers for the Moscow office of AIDS Foundation East West, a Netherlands-based non-governmental organisation (NGO), it all added up to plenty of women to talk to. "We come for clues about the role of the sex trade in spreading HIV in Moscow", Romanova explained while scanning replies from 41 women who had agreed to answer rapid assessment questionnaires about their age, origin, access to medical care, and sexually transmitted infections (STIs). "We give them free condoms and information about STIs", Cheumarev said. "In return, they give us their medical secrets."

With Russia's HIV infection epidemic now thought to be exploding faster than anywhere else in the world—238 404 HIV cases are now officially registered, although Russia's top HIV officials say the real number should be doubled, maybe even quadrupled—the hunt for clues about the epidemic's causes, and how to curb it, has become a major focus for a growing number of Russian medical researchers, often working with international collaborators.

PA Photos

More cost-effective regimens for HIV/AIDS patients needed

"There's been an explosion in HIV/AIDS research in Russia", says Alexander Goliusov, who heads the Russia Ministry of Health's HIV Prevention Unit. "In fact", Goliusov warns, "with so much research underway, we worry researchers may soon be duplicating work that's already been done here". While a handful of researchers are pursuing specialised topics as diverse as computer modelling of the epidemic's potential economic and social implications, to genetic typing of HIV variants, and HIV vaccine development and clinical trials for new drugs, the vast majority of researchers are concentrating on studies of HIV transmission pathways, HIV prevalence, and methods of HIV prevention.

"We need to know a lot more about how the epidemic is spreading, both so we can focus our AIDS prevention programmes, and so we can help convince the Russian government the problem is big, but controllable through prevention and harm reduction strategies", explains Nelly Kamaletdinova, an epidemiologist with AIDS Foundation East West. Kamaletdinova currently has four studies underway using standardised, WHO-approved methods to track HIV risk-taking behaviour among 50 000 Russian sex workers, intravenous drug users, and prisoners.

Despite the dramatic growth in new research, information gaps on how HIV is spreading in Russia remain large, according to Françoise Hamers from the European Centre for the Epidemiological Monitoring of AIDS (Saint-Maurice, France). Hamers, who recently reviewed published and unpublished studies and reports to analyse HIV/AIDS surveillance data for Russia and 26 other former communist bloc nations (see *Lancet* 2003; **361:** 1035–44), says the general population's understanding of HIV transmission is poor and HIV prevention is rarely a priority: needle-sharing seems to be widespread, sexual promiscuity common, and use of condoms among sexually active adolescents in Russia low. In addition, several recent studies of Russian men who have sex with men indicate high levels of risk-taking and a high frequency of bisexuality, which has implications for rapid heterosexual HIV diffusion. "We need to know more on sexual networks, who has sex with who, and at what frequency", Hamers says.

More than a dozen studies focusing on determining how HIV is spreading in Russia are now underway, thanks to major new support for Russian HIV/AIDS research from international sources including the UK's Department for International Development (DfID), the US Agency for International Development (USAID), and the National Institutes for Health (NIH). As part of what DfID officials in Moscow term a "programmatic approach" towards "encouraging the Russian government to act on HIV prevention", DfID has committed £25 million

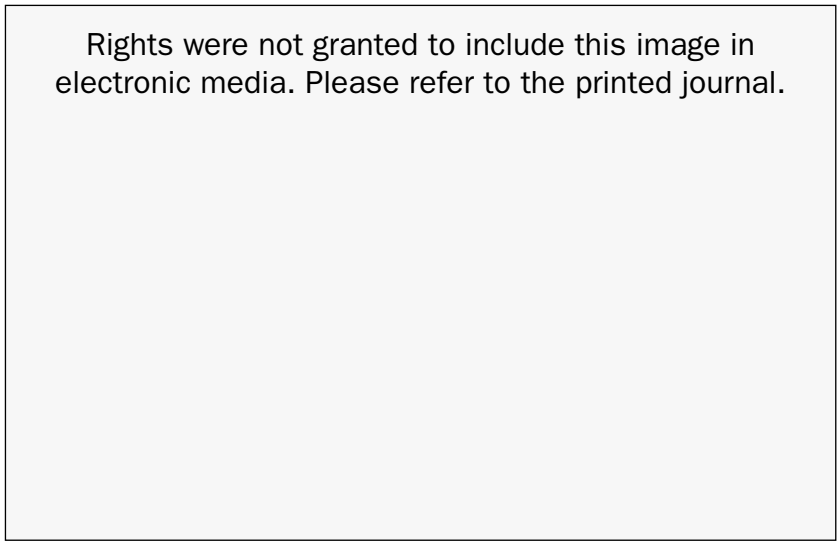
($42 million) for HIV/AIDS control programmes in Russia, with at least 10% of the funds earmarked for research led by London University's Imperial College of Medicine on how the disease is spreading and how it can be curbed among vulnerable populations, as well as research on its economic and social effects, and the costs of prevention programmes.

With the Russian Ministry of Health's HIV research budget totalling only $200 000, and Russia's overall federal HIV/AIDS control budget less than $5 million, foreign assistance for Russian research capacity is critically important.

Leading the effort in this area is the NIH's Fogarty International Centre (Bethesda, MD), which has awarded grants to nine US universities committed to accepting additional faculty and graduate students from St Petersburg State University with the aim of helping the university create a Masters of Public Health (MPH) programme, and, ultimately, a new research-capable school of public health. "We can assume that many of the MPH programme graduates will pursue research careers", says Michael Merson, who directs the programme from Yale University's Centre for Interdisciplinary Research on AIDS.

The NIH's emphasis on building Russian HIV/AIDS research capacity is already paying off for another team, based at the St Petersburg State University and the Russian BioMedical Centre (BMC), working with Yale-based researcher Robert Heimer to study the implications of the widespread use of liquid opiates by addicts in Russia for HIV transmission. BMC director Andrei Kozlov says his centre currently has more than $5 million in funding from the Russian Ministry of Science, the NIH, and the US State Department for research on an HIV vaccine, as well as for studies of prevention methods among opinion leaders and intravenous drug users.

In Moscow, NIH funds research by Chris Beyrer from Johns Hopkins University, working with the Russian NGO AIDS Infoshare, to further investigate HIV risks among women working in the Moscow sex industry, a population Beyrer describes as "dual risk", with high sexual risks and about 40% injecting heroin. The primary goals are to identify targets for HIV prevention, and to build the research infrastructure for HIV prevention research. In collaboration with Edward Karamov at the Russian Academy of Sciences' DI Ivanovsky Institute of Virology, Beyrer is also investigating the molecular epidemiology of HIV in this population, looking at the HIV-1 viral differences between women sexually and parenterally exposed.



Peter Power/Toronto Star

Female sex workers line up for a "pokaz" across a Moscow street

HIV vaccine research is also underway. The first programme in Russia began in 1997 at St Petersburg's BioMedical Centre, with funding from the Russian Ministry of Science, Industry, and Technology. Researchers are also studying vaccines at the State Research Center of Virology and Biotechnology in Novosibirsk. In addition, at the State Research Institute of Highly Pure Biopreparations in St Petersburg, the Moscow-based International Science and Technology Center, which receives funding from Western governments to retrain Russian bioweapons scientists for civilian research, currently sponsors three HIV vaccine studies.

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As work goes forward in Russian labs on HIV vaccine development, work by molecular biologist Alexei Bobkin at the Ivanovsky Institute in Moscow tracking variants among Russian HIV-1 subtypes may prove instrumental in matching possible future vaccines to Russian HIV patients, most of whom Bobkin says are infected with subtype A, in contrast with western Europe, where subtype B dominates. Bobkin is currently researching transmission rates as well as the biological and genetic characteristics of subtypes A, B, and a recombinant form of A and B which was first found in Kaliningrad, Russia's enclave between Lithuania and Poland. "We're particularly interested in populations of people who are exposed to HIV but resist infection", he says.

Although other examples of basic research on HIV/AIDS can be found in Russian labs, funding is limited. Many of the country's most experienced researchers rely on income from clinical trials for foreign pharmaceuticals, which must be tested in Russia before they are approved, to support basic medical needs. For example, at the Republican Clinical Infection Hospital in St Petersburg, a centre for HIV-infected pregnant women and children, Galina Korovina, who has published research on methods of molecular biology in clinical monitoring of HIV cases, relies on income from clinical trials to help subsidise diagnostic tests for her patients.

A different kind of clinical trial now getting underway at the Federal AIDS Centre, sponsored by the Canadian International Development Agency and the Russian Ministry of Health, will compare methods for enhancing patient compliance with two antiretroviral drug combinations. Project coordinator Vinay Saldanha says one combination costs patients $6500 annually. The other, which is currently recommended by the government, costs over $12 000. Saldanha hopes the trial will help Russia develop more cost-effective regimens for first-line therapy for HIV/AIDS patients. "While the prices of antiretroviral drugs in Russia are unconscionably high", Saldanha says. "Russia still may be able to double the number of patients receiving safe and clinically effective treatment for HIV/AIDS."

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