HIV and Incarceration in the Caribbean: The Experiences of Puerto Rico and Jamaica

Carlos E. Rodríguez-Díaz, PhD, MPHE, CHES, CCHP*; Katherine Andrinopoulos, PhD, MHS†

Worldwide, HIV has disproportionally affected incarcerated populations since early in the epidemic. Current trends in the Caribbean demonstrate that correctional facilities house most at-risk individuals. The experience of incarceration and the HIV epidemic in the Caribbean are as diverse as the region. In this paper we present descriptive information from Puerto Rico and Jamaica as two unique examples of current efforts to address HIV among prisoners. While different, these countries provide a comparison of correctional health care in a sexually driven epidemic versus one where injecting drug use plays a major role, bridging cultural differences, and contrasting approaches in the provision of HIV services relevant for other Caribbean countries. While the evidence of effective interventions within correctional facilities in the Caribbean is limited, the knowledge gained through the services implemented and research completed in different countries can facilitate the process of developing and testing new interventions. The experience of these islands and coordinating lessons learned and innovations from throughout the region can assist in developing a resourceful way forward. [*P R Health Sci J 2012;3:161-169*]

Key words: HIV, Incarceration, Prison, Caribbean, Jamaica, Puerto Rico

In the Caribbean and globally prevalence estimates for HIV are consistently higher among prisoners than the general population (1). This fact serves as the justification for increased attention to HIV services during incarceration (2) and a human rights approach towards understanding and decreasing the disproportionate disease burden among this group. However, outside of prevalence disparities, there is limited published information available to assist in situating incarcerated populations in the context of national and regional epidemics in low and middle income settings. As countries strive to follow the Joint United Nations Programme on HIV/AIDS (UNAIDS) recommendation to adopt a "know your epidemic, know your response" (3, 4) approach, this lack of clarity may lead to a missed opportunity to affect a high risk and accessible population that overlaps with other populations at increased risk including injection drug users, sex workers, men who have sex with men (MSM), as well as men and women who engage in risky sexual practices.

The diversity in culture, demography, and economics across island nations, republics, and land bound countries in the Caribbean is also present in the patterning of HIV and AIDS (5, 6). In most countries sexual activity is the dominant mode of transmission (6). However, injection drug use (IDU) is a major driver of the epidemic in Puerto Rico (PR) and Bermuda (6, 7). In these different epidemic contexts, the pathways linking incarceration and HIV may also differ and merit a distinct response. Similarly, differences in the size of the general population, prison population, and the rate of incarceration in each country may also suggest different approaches to addressing the higher prevalence of HIV among incarcerated individuals.

While HIV epidemics and the role of incarcerated populations across the Caribbean may differ, there is substantial evidence that the HIV prevalence is higher among persons who are incarcerated compared to the general population, and that there is much to be gained through the sharing of experiences working with this population in different countries. To date a number of HIV programs have been introduced in prisons regionally, but most published and widely available literature is limited to HIV sero-prevalence studies (8, 9, 10). Coordinating lessons learned and innovations from throughout the region can assist in developing a cohesive and efficient way forward. The importance of this type of approach became evident at the 2011 HIV Caribbean Conference that included several panels on prisons and HIV (11, 12).

In this paper we present descriptive information from PR and Jamaica as two unique examples of current efforts to address

*Graduate School of Public Health, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico; †Department of Global Health Systems and Development, Tulane University School of Public Health and Tropical Medicine, New Orleans, Louisiana, United States of America

The authors have no conflict of interest to disclose.

Address correspondence to: Carlos E. Rodríguez-Díaz, PhD, PO Box 365067, San Juan, PR 00936-5067. Email: carlos.rodriguez64@upr.edu

HIV among persons who are incarcerated in the Caribbean. These countries were selected for several reasons. First and foremost, the nature of the HIV epidemic differs allowing for the comparison of prison programming in a sexually driven epidemic (Jamaica) versus one where IDU plays an important role (PR). Secondly, inclusion of these two countries bridges the English-speaking and Spanish-speaking Caribbean, and acknowledges regional cultural differences symbolized by language but also related to colonial history and present day ties to Europe and the United States of America (US). Lastly, differences in the organization of healthcare systems and prison healthcare in particular between countries allows for the contrast of distinct approaches in the provision of HIV services relevant for other Caribbean countries.

Overview of correctional facilities and HIV among incarcerated populations in the Caribbean

In general, facilities for incarceration in the Caribbean are overpopulated (13) and some are known to be substandard overall in terms of basic conditions for human living (14, 15, 16). Notwithstanding these conditions, these facilities offer a unique opportunity to address the HIV-related needs of populations that may not have access to services in their communities (17). The Caribbean region has one of the highest prison populations rates in the world estimated at 357.5 per 100,000 compared to a world prison rate of 146 per 100,000 people (13). Within the region, this rate varies significantly from country to country, and is influenced by small overall population sizes in some countries. Out of the 12 countries and territories with the highest prison rates in the world, eight are in the Caribbean with the highest regional rate in the US Virgin islands at 539 per 100,000 of the national population, followed by St. Kitts and Nevis (495), the British Virgin Islands (468), Belize (439), Dominica (431), Bermuda (428), Grenada (423), and Curacao (422). According to the most recent available data, the country with the largest number of people held in prisons regionally is the Dominican Republic (21,050) followed by PR (12,130), Haiti (5,331), Jamaica (4,709), and Trinidad and Tobago (3,591). However, it should be noted that data was not available for Cuba during the most recent reporting for the World Prison List (13), and that in previous years Cuba had the largest prison population in the region estimated at 60,000 people incarcerated in 2008 (18).

Most available date on HIV in prisons in the Caribbean is limited to special studies rather than ongoing surveillance (20, 21, 22, 23). These include a study conducted in 2004-2005 in six islands of the Organization of Eastern Caribbean States (including Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines) (9), a study conducted in 2005 in Belize (10), a study conducted in 2006 in Jamaica (8), and a profile developed in PR in 2008 (19). In addition to these published studies, behavioral surveillance and sero-prevalence studies have been conducted in the Dominican Republic (21), Guyana (22) , and Suriname (23) with HIV sero-prevalence results included in the United Nations General Assembly Special Session (UNGASS) reporting. Based on a review of all UNGASS reports in the region for 2008 and 2010, only one country, the Bahamas, reports data from their HIV testing and counseling program for prison inmates as part of their report (20). It is difficult to establish if the lack of consistent reporting is a result of intermittent provision of HIV testing in correctional settings regionally, or if disaggregation of testing venue as a correctional facility is not possible through national HIV monitoring and evaluation systems.

Table 1 presents an overview of HIV prevalence among incarcerated populations in the Caribbean compared to national HIV prevalence estimates. Only countries where data on HIV prevalence among the incarcerated population could be found are included in the table. The country with the highest HIV prevalence rate among persons who are incarcerated is PR, with an estimated prevalence of HIV of 6.9% among the incarcerated population, compared to an overall population estimate of 1.1% (24). After PR, Guyana (5.2%) reports the second highest HIV prevalence rate among the incarcerated population followed by Trinidad and Tobago (4.9%), Saint Vincent and the Grenadines (4.1%), Belize (4.0%), and Jamaica (3.3%). In most countries the prevalence estimate among the incarcerated population is double the national prevalence estimate for HIV. The Bahamas is the only country reporting a lower HIV prevalence among the incarcerated population estimated at 2.0% in 2010 although a previous estimate for this country from testing conducted in 1992 reported a 10% HIV prevalence rate among prisoners (20). There is a clear need for improved country reporting on HIV prevalence and risk behaviors among incarcerated populations regionally. Nevertheless, the data available suggests a higher prevalence of HIV among persons who are incarcerated compared to national estimates, and supports a focus on incarcerated populations to address this disproportionate burden and for strategic case identification as part of the regional HIV strategy.

Puerto Rico: A paradise behind bars?

PR presents one of the most unique and challenging geographical locations to understand the HIV epidemic. While part of the Caribbean islands, its colonial history with Spain and current sociopolitical relationship with the US creates a unique context within which to understand the epidemic. Due to the current political status with the US, most of the documents on HIV/AIDS trends at the global and regional level often do not include information about PR. Rather, as a territory of the US, epidemiological information about HIV from the island is generally presented as part of the US data. These limitations may also be mediated by linguistic and perhaps cultural barriers defined by the fact that, different to most of the countries in the Caribbean and the US, the main language in PR is Spanish and by

Table 1. Overview of incarceration and HIV prevalence among prisoners in the Caribbean by country

Country	National population estimate*	Estimated No. of people incarcerated*	Prison population rate (per 100,000)*	HIV prevalence population estimate^	HIV prevalence among prisoners^^	No. tested (n) and year for HIV prevalence estimate^^
Antigua and Barbuda	89,500	295	330	0.1%	3.0%	n=100; 2004/2005
Bahamas	346,000	1,322	382	3.1%	2.0%	n=NA; 2009
Belize	318,000	1,396	439	2.4%	4.0%	n=623; 2005
Dominica	67,000	289	431	0.8%	2.6%	n=191; 2004/ 2005
Dominican Republic	9.9m	21,050	213	0.9%	2.2%	n=3700; 2006/2007
Grenada	104,000	440	423	0.6%	2.2%	n=137; 2004/2005
Guyana	761,000	2,122	284	1.2%	5.2%	n=NA; 2007
Jamaica	2.7m	4,709	174	1.7%	3.3%	n=1,017; 2006
Puerto Rico	4.0m	12,130	303	1.1%	6.9%	n=NA; 2012
St. Kitts and Nevis	52,500	260	495	0.5%	2.4%	n=169; 2004/2005
St. Lucia	175,000	551	315	0.3%	2.0%	n=347; 2004/2005
St. Vincent and the Grenadines	109,000	413	379	0.4%	4.1%	n=344; 2004/ 2005
Suriname	522,000	915	175	1.1%	2.2%	n=404; 2008/2009
Trinidad and Tobago	1.3m	3,590	276	1.5%	4.9%	n=NA; 1997

*Walmsley 2011; ^UNGASS 2010 Country Reports; Puerto Rico, Perez et al 2010; ^^Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines (Boisson & Trotman 2009); Belize (Gough & Edwards 2009); Jamaica (Andrinopoulos et al 2010a); Puerto Rico, Rodríguez-Díaz et al 2011; Dominican Republic, UNGASS Country Report 2008; Bahamas and Guyana, UNGASS Country Reports 2010; Suriname (Bakboord 2009); Trinidad and Tobago (Lee, Edwards & Wagner 1997 in Dolan et al 2007).

the acculturation of Puerto Ricans to the US. These trends and relationships occur in the midst of migration and commercial patterns to and from US, PR and the rest of the Caribbean. PR has been documented to be a bridge to populations living with and at risk for HIV infection, and also as a location for drug trafficking and other determinants that may increase the risk for HIV transmission (25, 26).

The current HIV epidemic in PR may be characterized as generalized and in transition. The estimated life risk for HIV diagnosis in PR is 2.08% (one in 48); higher than the general population and Hispanic/Latinos in the US (1.92% or one in 52) (27). While most of the HIV transmission is associated with IDU (37%) followed by heterosexual transmission (32%) and MSM (15%), incidence rates are increasing among MSM (28). Published research on HIV in PR has targeted adolescents (30), women (30, 31), MSM (32), and sex workers (33). However, most of the attention evidenced in published work has been placed on IDU (34, 35). With some exceptions, very little attention has been placed on the understanding of the interconnection of different behavioral risks and social determinants associated with HIV transmission. As examples of the work in this area, Deren and colleagues (36) have explored the interconnection of risky sexual practices and drug use and Norman and colleagues (37) have explored risk reduction measures among people living in public housing developments. In terms of developing HIV prevention interventions, most of the work has been limited to IDU (34, 35) and MSM (38). More recently, researchers have initiated projects to address previously unmet areas and populations, including HIV-stigma (39, 40), and HIV-serodiscordant couples (41).

The current evidence shows that the people who pass through the correctional system in PR are at increased risk for HIV infection. However, this risk is not necessarily due to incarceration itself, but influenced by the sociobehavioral characteristics presented by those with history of imprisonment and by the implementation of punitive laws toward drugs. The Puerto Rican prison system houses over 10,500 men and 250 women in over 30 facilities. The current population rate is below the housing capacity of 14,345. Jails or intake centers and prisons are organized to house adults (>21 years), young adults (>18, but, <21), and women in separated facilities within the system (See Table 2 for details) (13, 19). By 2008 it was estimated that 6.9% of the correctional population in PR was diagnosed with HIV/AIDS. Incarcerated women were disproportionally affected by the epidemic with 14.3% of adult women living with HIV/AIDS. As a reflection of an epidemic mostly driven by IDU, 73.8% of the incarcerated population in PR has a history of using illicit drugs. The most commonly used illicit drugs reported by inmates with substance dependence were cocaine (36.2%), heroin (34.8%), and marijuana (25.6%). Also, about two thirds of the correctional population in PR had committed some offense associated with substance use (19).

The design of the correctional system in PR is modeled after the system in the US, including the healthcare provision. This is the result of a long-standing and ongoing law suit initiated by prisoners in PR for alleged civil rights violations caused by unsatisfactory conditions of incarceration, including overpopulation and limited provision of health services. As a result of this legal process, the current correctional health system in the island is funded by the government of the Commonwealth of PR, administered by Correctional Health Services Corporation (CHSC) -a non-profit organization explicitly created for this purpose-, and monitored by the US Federal Court.

Table 2. Comparison of the correctional system in Puerto Rico and Jamaica

	Puerto Rico*^	Jamaica*
Correctional population	12,130	4,709
Types of correctional facilities by security level	Minimum: 4 Medium: 20 (2 juvenile) Maximum: 5 (1 female)	Minimum: 2 (male only) Medium: 1 (male only) Maximum: 9 (5 adult and 4 juvenile)
Conviction type	23.4% violations of local laws related to illicit drugs 66.0% offenses related to substance use	22.3% Breach of dangerous drugs act 16.7% Minor offenses 13.0% Breach of firearm 10.6% Larceny 9.5% Felonious wounding
Annual average of people passing through the system	16,000	2,125
Health care system	Funded by the government and administered by a non-profit organization	Funded by the government and administered by the DCS as part of the MNS

*Walmsley 2011 and Department of Correctional Services 2007 Annual Report; ^Rodríguez-Díaz et al. 2011 and Walmsley 2011

As a response to the plaintiff and to the high prevalence of HIV and history of drug use among the incarcerated populations, the health care system provides a combination of approaches to treatment that facilitates the attention to both; HIV infection and problematic use of drugs. Different levels of treatment are available according to patient's needs and are free of charge to the prisoners. Every person admitted to a correctional facility goes through an intake center where a mandatory health assessment is completed upon arrival. Prisoners are referred to the appropriate health services based on their particular needs and health information is kept in a newly implemented electronic medical record system. These services take different models of care; from ambulatory to residential and including emergency or urgency rooms, ambulatory clinics, infirmary or secondary clinical care units, extended care units, and a psychiatric hospital (19).

HIV prevention and care services are comprehensive and available for prisoners upon arrival to and through their stay in the correctional system. A local law in PR requires mandatory HIV screening for all sentenced incarcerated individuals. As a result, more than 85% of the pre-trial individuals and relatively all the cases of sentenced prisoners undergo HIV counseling and testing (HCT) upon arrival. HIV prevention interventions are provided by health educators and tailored to the different needs of the population. Nonetheless, HIV prevention measures such as access to condoms, clean needles, or materials for safe tattooing are not in place. HIV-positive prisoners receive appropriate care, including antiretroviral therapies that are available in pharmacies located in each correctional facility. As of 2008, of those incarcerated individuals living with HIV and with clinical criteria for treatment (55%), most were in anti-retroviral therapy. Basically, all treatments recommended by the US Department of Health and Human Services are available to prisoners and these services are provided independent of sex, age, length of stay in prison, security level, or if the prisoner is pretrial or sentenced (19).

Similarly, services for drug use and dependence are well developed and include residential and ambulatory detoxification units. All these correctional healthcare services are provided by a specialized staff of hundreds of health professionals hired and under the supervision of CHSC. The cadre of healthcare providers includes over 50 physicians, 20 internal medicine specialists, 10 psychiatrists, 20 psychologists, 40 social workers, as well as dentists, nurses, health educators, and pharmacists. Health care services that cannot be provided within the correctional system are coordinated with community health care providers (19). All these services used to be supported by a specially trained cadre of correctional officers who received compensation for this additional task. However, as part of the decisions and evolution of the legal requirements imposed to the system, this specialized staff was eliminated and currently all correctional officers are expected to support the healthcare provision services although no particular training or compensation for this matter is provided.

The current health services for incarcerated populations in PR have been possible to articulate in part by the nature of the system as a third party provider that facilitates an expedited response to the different healthcare needs of these men and women. This provision of service is framed by the policies developed by the local Department of Corrections and Rehabilitation and the Department of Health which at the same time are influenced by the regulations established in the US. Therefore, it is not a surprise that this approach to service provision is challenged by the bureaucracy inherent in partnership between multiple agencies, including governmental and non-governmental agencies for the provision of healthcare. As an evidence of this, a recent study demonstrated how - although inmates may have access to HIV care while imprisoned - the transition to the community is delayed (42).

Despite the significant improvements in the provision of healthcare for incarcerated populations, challenges persist for a comprehensive approach to halt the HIV epidemic in PR as a whole. Services in the correctional system in PR are not perfect and further analyses and improvements are necessary to ensure its sustainability, cost-effectiveness, and efficiency. A major challenge that requires urgent attention is the fine-tuning of activities that sustain services under the synergistic interaction of multiple local governmental agencies, a non-for-profit organization, regulations for health care services

established by the US, and the supervision of the US Federal Court. Furthermore, there is a clear need to articulate the efforts between correctional facilities and community services. From a policy perspective, the implementation of mechanisms for bridging services for population at risk of incarceration, HIV infection, and drug use required further attention. Services are urged to consider evidence-based interventions for HIV prevention and treatment, including continuity of care in the community as well as harm reduction strategies such as condom distribution, syringes exchange, and safe tattooing practices. Considering the amount professionals and the intensity of health services provided to incarcerated populations in PR, institutions of higher education that form healthcare providers are called to incorporate to their curricula the unique needs presented by prisoners. Consistent with the epidemiology of HIV and drug use in PR, current research and services are aimed to understand the role of drug treatment (43, 44) and to increase the retention in HIV care among those being released from the correctional system (42). Further approaches are needed to address the interconnection of drug use, sexual practices, and HIV – including treatment adherence and biomedical prevention strategies - among incarcerated men and women in PR.

Jamaica: HIV and incarceration on the rock

Like most countries in the Caribbean, HIV transmission in Jamaica occurs almost exclusively through sexual contact, with less than 1% of HIV cases reporting IDU (45). Yet the prevalence of HIV among prisoners 3.3% (8, 46) is higher than the national prevalence estimate of 1.7% among adults 15-49 (45). The HIV prevalence estimate among prisoners is similar to that reported in Jamaican national statistics for sex workers and informal entertainment workers (4.9%), and crack cocaine users (4.5%) (45). It is substantially lower than the 31% HIV prevalence estimate among MSM, (47) although this estimate is similar to the estimate from a 2006 study that documented a 25% (95% CI 13.64 – 39.60) HIV prevalence among prisoners housed on the section where men labeled as homosexual are separated. To some degree, it is possible that the higher prevalence is in part a result of a higher percentage of male prisoners, while national estimates are derived from prenatal screening among women. Although regionally, the percentage of women living with HIV exceeds that of men (6) in Jamaica, 66% of people living with HIV are men (47). The fact remains that targeted HCT and HIV treatment in prisons is an effective and feasible strategy for increased case identification, even in the context of a sexually driven epidemic. It is notable that the prevalence is also high among new admissions (8, 46), suggesting a selection effect of higher risk persons entering prisons. This selection effect has also been noted among persons incarcerated in Belize (10).

The Jamaican prison system houses approximately 4,709 people in 12 facilities including seven male and one female adult correctional center, and three male and one female juvenile correctional center (See Table 2 for details) (13, 48). Prior to emancipation, the two largest institutions served as structures used to hold and sell slaves. While the facilities have been transformed from trading centers to prison facilities, they remain tangible reminders of the indelible link between historical subjugation and contemporary marginalization, crime, and incarceration. Amenities within the institutions remain sparse. The two largest male institutions house approximately 63% of all inmates on the island (48). There is neither running water nor electricity in cells in these facilities, where inmates are confined for 20 hours on a typical day. The task of providing the basic services of food and security to inmates is an immense challenge, especially given the low correctional staff to inmate ratio (48). Despite these challenges, the Department of Correctional Services (DCS) has demonstrated a continuous commitment to the provision and prioritization of medical services for inmates.

In Jamaica, the DCS under the Ministry of National Security (MNS) is the primary agency responsible for the healthcare of inmates. The majority of health services are provided by civilian clinical staff contracted by the DCS, and correctional officers with training in emergency and basic palliative care, who receive a modest additional stipend for serving in this capacity. Civilian medical staff includes four full-time and four part-time general practitioners, one full-time dentist, four part-time psychiatrists, two psychologists, one registered nurse, and one pharmacy technician (46). Hospital dormitories are located in the two larger male institutions. Public hospitals and clinics run by the Ministry of Health (MOH) also provide services to inmates when they are referred outside the correctional system for healthcare. However, the security personnel required to transport inmates limits their ability to receive care in public MOH facilities. Additional support for medical services is provided by donor groups including annual mission trips from foreign visiting health teams (49), and philanthropic groups both foreign and domestic. Most pharmaceuticals are sourced by the DCS.

In contrast to the standard structure for providing healthcare to inmates, the HIV program in prisons is funded directly by the MOH. The focus of the program is on HCT. There is one full time HIV counselor employed by the MOH who provides HCT, oversees procurement of test kits and laboratory supplies, and conducts program reporting. An additional MOH counselor is responsible for release planning to link inmates living with HIV. The director of medical services for the DCS is also a practicing clinician who specializes in HIV care and assists with the transitioning of inmates living with HIV to the community. Medical supplies for HCT and antiretroviral therapy are supplied by the MOH but prescribed and administered by DCS medical personnel.

The genesis for the structure of the current program is based on a demonstration project conducted in 2006 in response to a

national effort to increase testing and treatment given increased availability of antiretroviral therapy free of cost through the Global Fund. Intermittent support for inmates living with HIV and occasional testing events in correctional facilities were facilitated by the MOH before that time. The largest all male adult maximum security prison served as the site for the demonstration project. At the time of the demonstration project, infrastructure improvements to the medical unit of the institution were also made through support from both; the MOH and DCS, and through donations. This included the renovation of counseling rooms and establishment of an on-site laboratory with basic equipment for phlebotomy, HIV and syphilis testing, and safe storage and transport of blood and urine samples with oversight and training provided by the national public laboratory.

The goal of the 2006 demonstration project was to determine the feasibility of an HIV testing and treatment program. The project included a sero-prevalence study, qualitative in-depth interviews with inmates and correctional personnel, and a social and behavioral survey administered to inmates prior to pre-test counseling (8, 50, 51). The prevalence of HIV among the 1,017 adult men tested during the demonstration project was 3.3% (95% CI 2.33-4.64) (8, 50, 51). Testing uptake was 63% for inmates offered voluntary testing. Of the 298 inmates participating in the survey 41% reported a previous sexually transmitted infection (STI), 54% reported daily marijuana use, the median age was 30 (range 18-68) and the median number of lifetime sexual partners was 20 (range 1-300). No injection drug use was reported. Notably, 71% of the inmates testing for HIV who also participated in the survey were testing for HIV for the first time, suggesting that HIV testing in prison is a feasible strategy for reaching new testers. This is similar to findings from a study conducted in Grenada among 137 male inmates in 2005 that reported 77% of men testing for HIV during incarceration to be new testers (52). Data from the survey and the in-depth interviews in Jamaica also indicated that inmates' perceived ability to cope with a positive diagnosis of HIV, along with stigma related to testing, social support, knowledge and perceived risk for HIV influenced their decision to test for HIV in prison. In addition to the research component, a program of peer education for HIV prevention and to reduce stigma was implemented by the non-governmental organization, Children's First, with financial support from the MNS.

Following the demonstration project, the MOH shifted the focus of HCT to all incoming inmates. The prison HIV counselor currently prioritizes services at the three main intake institutions, including the woman's facility, with occasional outreach to the smaller institutions geographically dispersed across the island. According to data from 2010 program report, 4.8% of the 1,022 inmates tested in the previous year were positive for HIV (5.4% among male inmates and 2.3% among female inmates) (53). Given the focus on HCT at intake, the group tested represents mostly new admissions. The laboratory established in the largest prison for HIV/STI testing is also used to collect specimens for CD4 tests and other health conditions. The benefit of the on-site laboratory and transport of additional samples to the national public laboratory by the HIV testing counselor has clear health service benefits outside the HIV program.

Challenges remain in establishing a system of reporting for the prison HIV program so that it aligns with the national monitoring evaluation system for HIV. This is the case for testing services, as well as the monitoring of care, treatment and adherence outcomes for people living with HIV in prison and after release. Currently, there is not standard reporting of treatment and adherence outcomes for inmates living with HIV, nor on linkage to care after release. In an effort to move towards improved program monitoring a computer for data collection is now available in the largest institution. Coordination in reporting between the MOH and the DCS personnel responsible for treatment, including clear roles and responsibilities for data entry and reporting of key program outcomes are important next steps. This type of information is needed to promote ongoing adaptation and improvement, and to ensure sustainability of the program in the current climate of reduced donor funding for HIV. An additional challenge remains the limitation of prevention services to HCT and education during incarceration, with access to condoms restricted by DCS policy.

In moving forward, it is clear that there is a need to address the misconception that prisoners are separate from other key populations for HIV and disconnected from the wider HIV epidemic because of their incarceration. Prison populations are composed of and connected to other key populations for HIV. Most inmates cycle through prison facilities in a short time period. In Jamaica, 76% of annual admissions serve sentences less than 2 years in length, and approximately 2,125 inmates are released annually (48). The hidden potential of using the criminal justice system as a way to gain access to a higher risk group is partly due to the more distal link between incarceration and HIV transmission in a sexually driven epidemic versus one where IDU plays a more prominent role. However, there are several ways that public health programmers can capitalize on access to prisoners as a higher risk group in addition to the basic provision of HCT, HIV treatment, and education during incarceration. For example, it may be possible to use the social relationships of people leaving prison to gain entrance into higher risk social and sexual networks for HCT and prevention activities through a network referral strategy (54). The period after release from prison may also be targeted for prevention services as a period with potentially higher risk behavior (55-58). The prison itself can also be used as an outreach venue, with HCT and prevention services provided to persons visiting people who are incarcerated (59-60).

In Jamaica, several recent activities were conducted to explore the feasibility of these new approaches to HIV service provision

through correctional settings. The MOH has included prison visitor centers as venues for condom distribution and HCT. A pilot study was also conducted to determine the feasibility of following persons released from prison to support HIV risk reduction during the post-release period and to engage former inmates' social and sexual networks in HIV/STI testing and prevention activities (61). Retention of inmates was 80% at one month and 76% at three months after release from prison. An incentivized coupon referral system was used to recruit sexual partners and social friends of former inmates. Of the coupons distributed, 35% coupons distributed to sexual partners and 63% of coupons distributed to social friends resulted in successful referrals to the project. All participants in the project except for one former inmate reported that they would participate in HIV and STI testing if it was offered through a similar program. It is clear that there are promising opportunities for addressing HIV among prisoners, and the communities to which they return in Jamaica, and other Caribbean contexts with similar epidemics. It is also important to note that by focusing on the period after release from prison, these interventions offer a way to reach prison populations in countries where it might not yet be possible to gain entry to correctional facilities.

Gates of opportunities

Based on the evidence included in technical reports and research findings previously discussed, it is evident that correctional facilities in the Caribbean often house populations disproportionally effected by HIV/AIDS. While many researchers and health professionals are targeting efforts to address the HIV epidemic in the region to most at risk groups and to people living with HIV/AIDS at the community level, correctional facilities have been waiting for too long to serve as venues to extend our responses. Prison and jails in the Caribbean provide a way to address multiple groups as these facilities house people from various key populations. While the evidence of effective interventions within correctional facilities in the Caribbean is limited, the experience of the work and research done in different countries can facilitate the process of developing and testing interventions. For example, the experience of Jamaica of including prison visitor centers as venues for condom distribution and HCT may help in extending the prevention responses in other correctional systems where these types of targeted strategies have not been explored. In this way, correctional facilities can be used as an opportunity to reach high risk persons who are incarcerated. Similarly, the strategies implemented in PR to identify and treat prisoners with HIV and problematic use of drugs may represent opportunities for other countries in the region to strengthen their systems in a way that will engage HIV-positive individuals in care and reduce risk practices. These efforts may help in reducing mortality and morbidity among people with HIV. Also, based on HIV modeling, early and sustained enrollment in care when coupled with high rates of treatment compliance may contribute to significant reductions in circulating virus and eventually to reduction in HIV incidence in the community (62, 63).

While healthcare provision to incarcerated populations in the region may take many forms, this same diversity may serve to better understand the feasibility and cost-effectiveness of interventions among incarcerated populations. Important differences to consider in developing interventions include the relative size of the incarcerated population, the feasibility of partnering with the correctional systems to gain access to the population, the overall structure of the healthcare system including prison healthcare as part of the larger system, the nature of the wider HIV epidemic, and the overlap of incarcerated populations with other key populations at risk. Moreover, current recommendations to address HIV at the community level can be explored within the correctional facilities, including for example, linking HIV treatment to the care of non-communicable diseases, a key recommendation explored during the 2011 HIV Caribbean conference to support sustainability (64). Continuity of care for incarcerated populations upon release is an imperative in the Caribbean region and different ways of addressing this in different healthcare systems and correctional systems must be explored.

To achieve the regional goal of reducing HIV incidence, several mechanisms can be implemented. However, it is critical that the appropriate information is strategically gathered and made available to inform program and policy decisions towards reaching this goal. Incorporating standard reporting of surveillance from programs in correctional centers to national monitoring and evaluation systems is one step towards this goal. Collecting information about previous incarceration as part of behavioral data collected for persons who present for HCT and HIV treatment, as well as other STI services, might also be considered. This type of data would help determine important trends among this population related to sexual health. This surveillance could then be complemented with more in-depth special studies among this group. In recognition of the importance of the wide dissemination of this type of information, UNAIDS recently developed an open access repository for data on HIV and incarceration in the Latin American and Caribbean region (65). It is important that countries in the Caribbean are active in shaping the discourse about HIV and incarceration through this globally recognized forum.

To attain the aforementioned goals, there is a call to engage non-healthcare organizations, such as regional correctional associations as well as rehabilitation and human rights groups, as part of a multi-sectorial response. Through collaboration and with the commitment of integrated efforts from correctional systems and the community, our populations in the Caribbean would be in a better position to solve one of our most threatening challenges and to achieve the goal of a generation without HIV.

Resumen

En todo el mundo el VIH ha afectado a poblaciones encarceladas desde el inicio de la epidemia. Las tendencias actuales en el Caribe demuestran cómo las instituciones correccionales alojan a personas a riesgo. La experiencia de encarcelamiento y la epidemia de VIH en el Caribe son tan diversas como la región misma. En este artículo presentamos información descriptiva de Puerto Rico y Jamaica como dos ejemplos particulares de los esfuerzos actuales para atender el VIH entre personas encarceladas. Aunque diferentes, estas naciones proveen un marco para la comparación del cuidado de salud en las facilidades correccionales ante una epidemia principalmente caracterizada por transmisión sexual versus una en la que el uso de drogas juega un rol principal, que permite enlazar las diferencias culturales y contrastar los acercamientos para la provisión de servicios de VIH, relevantes para otras naciones en el Caribe. Aunque la evidencia de intervenciones efectivas con poblaciones correccionales en el Caribe es limitada, el conocimiento ganado a través de los servicios implementados y la investigación completada en diferentes países puede facilitar el proceso de desarrollar y probar nuevas intervenciones. Las experiencias de estas islas y la coordinación a partir de las lecciones aprendidas y las innovaciones producidas a través de la región pueden ayudar al desarrollo de acciones futuras.

References

1. Dolan K, Kite B, Black E, Aceijas C, Stimson GV. HIV in prison in low-income and middle-income countries. Lancet Infect Dis 2007;7:32-41.
2. United Nations Office on Drugs and Crime. HIV and AIDS in places of detention: A toolkit for policymakers, programme managers, prison officers and health care providers in prison settings. 2008. Available at: Url: http://www.unodc.org/documents/hiv-aids/V0855768.pdf. Accessed March 22, 2012.
3. Joint United Nations Programme on HIV/AIDS. Practical guidelines for Intensifying HIV prevention: Towards universal access. 2007. Available at: Url: http://data.unaids.org/pub/Manual/2007/20070306_Prevention_Guidelines_Towards_Universal_Access_en.pdf. Accessed March 22, 2012.
4. Wilson D, Halperin D. "Know your epidemic, know your response": A useful approach, if we get it right. Lancet 2008;372:423-6.
5. Figueroa JP. The HIV epidemic in the Caribbean. Proceeding of the 2011 HIV Caribbean Conference; 2011: The Bahamas.
6. Joint United Nations Programme on HIV/AIDS. The status of HIV in the Caribbean. 2010. Available at: Url: http://www.unaids.org/en/media/unaids/contentassets/documents/countryreport/2010/2010_HIVInCaribbean_en.pdf. Accessed March 22, 2012.
7. Inciardi JA, Syvertsen JL, Surrat HL. HIV/AIDS in the Caribbean basin. AIDS Care 2005;17(suppl 1):S9-S25.
8. Andrinopoulos K, Kerrigan D, Figueroa JP, Reese R, Gaydos C, Bennett L, Bloomfield B, Plunkett L, Maru C, Ellen JM. (2010a). Establishment of an HIV/sexually transmitted disease programme and prevalence of infection among incarcerated men in Jamaica. Int J STD AIDS 2010;21:114-9.
9. Boisson EV, Trotman C. HIV Seroprevalence among male prison inmates in the six countries of the Organization of Eastern Caribbean Stats in the Caribbean. WIMJ 2009;58:106-11.
10. Gough E, Edwards P. HIV seroprevalence and associated risk factors among male inmates at the Belize Central Prison. Pan Am J Public Health 2009;25:292-9.
11. Andrinopoulos K, Day M, Fernandes C, Rodriguez-Diaz C. (2011). Panel: From prison to community. Proceeding of the 2011 HIV Caribbean Conference; 2011: The Bahamas.
12. Day M, Andrinopoulos K, Rodríguez-Díaz C. Panel: HIV behind the wall. Proceeding of the 2011 HIV Caribbean Conference; 2011: The Bahamas.
13. Walmsley R. World prison list (Ninth edition). International Centre for Prison Studies. 2011. Available at: Url: http://www.idcr.org.uk/wp-content/uploads/2010/09/WPPL-9-22.pdf. Accessed: March 22, 2012.
14. Fernandes C. Recollections of an MSM sex worker who was incarcerated for 9 years in Guyana. Proceeding of the 2011 HIV Caribbean Conference; 2011: The Bahamas.
15. May JP, Joseph P, Pape JW, Binswanger I. Health care for prisoner in Haiti. Ann Intern Med 2010;153:407-10.
16. Morris PK. Imprisioned in Jamiaca: an exploratory study of inmate experiences and differential responses to prison life in a developing country. Int Crim Justice Rev 2008;18:435-54.
17. Jürgens R, Nowak M, Day M. HIV and incarceration: Prisons and detention. J Int AIDS Soc 2011;14:1-17.
18. Walmsley R. World prison list (Eighth edition). International Centre for Prison Studies. 2008. Available at: Url: http://www.prisonstudies.org/info/downloads/wppl-8th_41.pdf. Accessed: March 22, 2012.
19. Rodriguez-Diaz CE, Reece M, Rivera-Alonso B, Laureano-Landrón I, Dodge B, Malow R. Behind the bars of paradise: HIV and substance use among incarcerated populations. J Int Assoc Physicians AIDS Care 2011;10:266-72.
20. The Commonwealth of The Bahamas. Monitoring the Declaration of Commitment on HIV and AIDS. UNGASS Country Report 2010. Available at: Url: http://www.unaids.org/en/dataanalysis/monitoringcountryprogress/progressreports/2010countries/bahamas_2010_country_progress_report_en.pdf. Accessed: March 22, 2012.
21. Dominican Republic. Seguimiento y monitoreo de aplicación a la declaración de UNGASS sobre VIH y SIDA: Informe de Progreso del Periodo 2006-2007.Consejo Presidencial del SIDA. Available at: Url: http://data.unaids.org/pub/Report/2008/dominican_republic_2008_country_progress_report_sp_es.pdf. Accessed: March 22, 2012.
22. Guyana. UNGASS Country Progress Report 2010. Presidential Commission on HIV and AIDS. Available at: Url: http://www.unaids.org/en/dataanalysis/monitoringcountryprogress/progressreports/2010countries/guyana_2010_country_progress_report_en.pdf. Accessed: March 22, 2012.
23. Bakboord C. Sexual behaviour and sero -prevalence study in prisons in Suriname, Paramaribo and Nickerie. 2009.
24. Pérez CM, Marrero E, Meléndez M, Adrovet S, Colón H, Ortiz AP, Soto-Salgado M, Albizu C, Torres E, Suárez E. Seroepidemiology of viral hepatitis, HIV and herpes simplex type 2 in the household population aged 21-64 years in Puerto Rico. BMC Infec Dis 2010;10:76.
25. Deren S, Kang SY, Colón HM, Robles RR. The Puerto Rico-New York airbridge for drug users: Description and relationship to HIV risk behaviors. J Urban Health 2007;84:243-54.
26. United Nations Office on Drugs and Crime. Illicit drug markets in the Caribbean, 2000-2001. Available at: Url: http://www.unodc.org/pdf/barbados/caribbean_trends_2000-2001.pdf. Accessed March 28, 2012
27. Centers for Disease Control and Prevention. Estimated lifetime risk for diagnosis of HIV infection among Hispanics/Latinos-37 states and Puerto Rico. MMWR 2010;59:1297-1301.
28. Puerto Rico Department of Health. HIV/AIDS Surveillance System. 2012.
29. Fernández Santos DM, Figueroa-Cosme WI, Gómez Mde L, Maysonet-Cruz J, Miranda-Díaz C, Septúlveda-Santiago M, Ríos-Olivares E, Hunter-Mellado RF. Changes in developmental factors and HIV risk behaviors among early adolescents in Puerto Rico. Ethn Dis 2010;20(1 Suppl 1):S1-122-6.

30. Rivero-Méndez M, Dawson-Rose CS, Solís-Báez SS. A qualitative study of providers' perception of adherence of women living with HIV/AIDS in Puerto Rico. Qual Rep 2010;15:232-251.
31. Zorrilla CD, Tamayo Agrait V, Febo I, Santiago LE, Díaz C, Salabarría I, Pérez E, Hillyer GV. Reduction in the perinatal HIV transmission: The experience at the Maternal Infant Studies Center and Gamma Projects at the University of Puerto Rico School of Medicine. P R Health Sci J 2007;26:329-35.
32. Colón-López V, Rodríguez-Díaz CE, Ortiz AP, Soto-Salgado M, Suárez E, Pérez CM. HIV-related risk behaviors among a sample of men who have sex with men in Puerto Rico: An overview of substance use and sexual practices. P R Health Sci J 2011;30:65-8.
33. Alegría M, Vera M, Freeman DH Jr, Robles R, Santos MC, Rivera CL. HIV infection, risk behaviors, and depressive symptoms among Puerto Rican sex workers. Am J Public Health 1994;84:2000-2.
34. Colón HM, Finlinson HA, Negron J, Sosa I, Rios-Olivares E, Robles RR. Pilot trial of an intervention aimed at modifying drug preparation practices among injection drug users in Puerto Rico. AIDS Behav 2009;13:523-31.
35. Robles RR, Reyes JC, Colón HM, Sahai H, Marrero CA, Matos TD, Calderón JM, Shepard EW. Effects of combined consoling and case management to reduce HIV risk behaviors among Hispanic drug injectors in Puerto Rico: A randomized controlled study. J Subst Abuse Treat 2004;27:145-52.
36. Deren S, Strauss S, Kang SY, Colón HM, Robles RR.Sex risk behaviors of drug users: A dual site study of predictors over time. AIDS Educ Prev 2008;20:325-37.
37. Norman LR, Garriga CA, Cintron L. Condom-use patterns among women who live in public housing developments in Ponce, Puerto Rico. J Health Care Poor Underserved 2011;22(4 Suppl):122-45.
38. Toro-Alfonso J, Varas-Díaz N, Andújar-Bello I. Evaluation of an HIV/AIDS prevention intervention targeting Latino gay men and men who have sex with men in Puerto Rico. AIDS Educ Prev 2002;14:445-56.
39. Jimenez JC, Puig M, Ramos JC, Morales M, Asencio G, Sala AC, Castro E, Vélez-Santori C, Santiago L, Zorrilla C. Measuring HIV felt stigma: A culturally adapted scale targeting PLWHA in Puerto Rico. AIDS Care 2010;22:1314-22.
40. Varas-Díaz N, Serrano-García I, Toro-Alfonso J. AIDS-related stigma and social interaction: Puerto Ricans living with HIV/AIDS. Qual Health Res 2005;15:169-87.
41. Pérez-Jiménez D, Orengo-Aguayo RE. Qualitative analysis of an educational intervention with HIV-discordant heterosexual Latino couples. PR Health Sci J 2011;30:188-94.
42. Clatts MC, Rodríguez-Díaz CE, García H, Vargas Molina RL, Jovet-Toledo GG, Goldsamt L. Preliminary evidence of significant gaps in continuity of HIV care among excarcerated populations in Puerto Rico. J Int Assoc Physicians AIDS Care 2011;10:339-41.
43. Albizu-Garcia C, Caraballo-Correa G, Hernandez-Viver A, et al. Buprenorphine-naloxone treatment for pre-release opioiddependent inmates in Puerto Rico. J Addic Med 2007;1:126-132.
44. Heimer R, Catania H, Newman RG, Zambrano J, Brunet A, Marti-Ortiz A. Methadone maintenance program in prison: Evaluation of a pilot program in Puerto Rico. Drug Alcohol Depend 2006;83:122-129.
45. Jamaica. UNGASS Country Progress Report 2010. Jamaica National HIV/STI Programme. Available at: Url: http://www.unaids.org/en/dataanalysis/monitoringcountryprogress/progressreports/2010countries/jamaica_2010_country_progress_report_en.pdf Accessed: March 22, 2012.
46. Department of Correctional Services, Jamaica. Annual Report Medical Unit 2009. Ministry of National Security. 2010.
47. Figueroa, JP. High HIV rates among men who have sex with men in Jamaica despite increased prevention efforts. Proceeding of the 2011 HIV Caribbean Conference; 2011: The Bahamas.
48. Department of Correctional Services, Jamaica. Annual Report 2007. Ministry of National Security. 2007.
49. Health Through Walls: Sustainable prison healthcare in developing countries. Organization overview. Available at: Url: http://www.unaids.org/en/dataanalysis/monitoringcountryprogress/progressreports/2010countries/jamaica_2010_country_progress_report_en.pdf. Accessed: March 22, 2012.
50. Andrinopoulos K, Kerrigan D, Figueroa JP, Reese R, Ellen JM. HIV coping self-efficacy: A key to understanding stigma and HIV test acceptance among incarcerated men in Jamaica. AIDS Care 2010;22:339-47.
51. Andrinopoulos K, Figueroa JP, Kerrigan D, Ellen JM. (2010c). Homophobia, stigma and HIV in Jamaican prisons. Cult Health Sex 2011;13:187-200.
52. Grenada. UNGASS Country Report 2010. Available at: Url: http://www.unaids.org/en/dataanalysis/monitoringcountryprogress/progressreports/2010countries/grenada_2010_country_progress_report_en.pdf Accessed: March 22, 2012.
53. Royer-Powe DM. Treatment and prevention partnerships in correctional facilities. Presentation to the Jamaican Ministry of Health and Department of Correctional Services. 2011.
54. Halkitis P, Kupprat S, McCree D, Simons S, Jabouin R, Hampton M, Gillen S. Evaluation of the relative effectiveness of three HIV testing strategies targeting African American men who have sex with men. Ann Behav Med 2011;42:361-9.
55. Grinstead O, Zack B, Faigeles, B, Grossman N, Blea L. Reducing postrelease HIV risk among male prison inmates: A peer-led intervention. Crim Justice Behav 1999;26:453-65.
56. Grinstead O, Zack B, Faigeles B. Reducing postrelease risk behavior among HIV seropositive prison inmates: The Health Promotion Program. AIDS Educ Prev 2001;13:109-19.
57. Grinstead O, Faigeles B, Comfort M, Seal D, Nealey-Moore J, Belcher L, Morrow K. HIV, STD, and hepatitis risk to primary female partners of men being released from prison. Women Health 2005;41:63-80.
58. Wolitski RJ. Relative efficacy of a multisession sexual risk-reduction intervention for young men released from prisons in 4 States. Am J Public Health 2006;96:1854-1861.
59. Comfort M, Grinstead O, Faigeles B, Zack B. Reducing HIV risk among women visiting their incarcerated male partners. Crim Justice Behav 2000;27:57-71.
60. Comfort M, Grinstead O, McCartney K. "You can't do nothing in this damn place": Sex and intimacy among couples with an incarcerated male partner. J Sex Res 2005;42:3-12.
61. Andrinopoulos K, Dally N. Project RECONCILE Study Closure Report. 2011.
62. Anema A, Wood E, Montaner J. The use of highly active retroviral therapy to reduce HIV incidence at the population level. CMAJ 2008;179:13-14.
63. De Cook K, Gilks C, Ying-Ru Lo, Guerma T. Can antiretroviral therapy eliminate HIV transmission? Lancet 2009;373:7-9.
64. Theodore K. The required financing model for a sustainable response to the Caribbean epidemic. Proceeding of the 2011 HIV Caribbean Conference; 2011: The Bahamas.
65. Joint United Nations Programme on HIV/AIDS. New monitoring centre helps tackle HIV in prisons in Latin American and the Caribbean. 2011. Available at: Url: http://www.unaids.org/en/resources/presscentre/featurestories/2011/april/20110420unodc/. Accessed: March 23, 2012.