Public Health Practice Behind Bars

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Michael H. Levy and Daniel Mogg

Introduction

The development of the prison as the unchallenged institution of punishment is relatively recent compared to other social institutions, such as the asylum, the workhouse, and the hospital (Morris & Rothman, 1995). In contrast to these other institutions, prisons have continued to grow. The Institute for Criminal Policy Research (University of London) estimates that three in four jurisdictions throughout the world are currently expanding their prison systems (Institute for Criminal Policy Research, 2018a).

In this situation, and with the downgrading of other institutions, the modern prison is taking on functions previously carried by others, such as the mental asylum (mental illness) (Rosen, 2006) and the poorhouse (welfare and accommodation). Such circumstances lend support to what has become known as Penrose's Law: the inverse relationship between the size of a nation's prison population and its mental health facility population (Penrose, 1939; Kalapos, 2016).

Incarceration is an institution of "unequal power," between the dominant social structure and the individual who is contained within. By its nature, a coercive institution, operating under the auspices of the state, framed in a paramilitary mold, the modern prison should function within a human rights and international legal framework. There is a rich body of international human rights instruments which direct signatory states to implement minimum standards for the care of persons deprived of their liberty. Of note, there are now 115 signatories to the United Nations' Optional Protocol to the UN Convention against Torture (OPCAT) (Association for the Prevention of Torture, 2020).

M. H. Levy (✉)
Australian National University, Canberra, Australia
e-mail: michael.levy@anu.edu.au

D. Mogg
Canberra Health Service, Canberra, Australia

R. B. Greifinger (ed.), *Public Health Behind Bars*, https://doi.org/10.1007/978-1-0716-1807-3_6

Human rights frameworks demand of governments that minimum standards are adhered to consistently. The principle of "due diligence" requires that when states know, or ought to know, about abuses of human rights, and fail to take appropriate steps to prevent violations, then the State bears responsibility for the consequences. Exercising due diligence includes steps to prevent abuses, including to investigate them when they occur, prosecute the alleged perpetrators and bring them to justice in fair proceedings, and ensure adequate reparation for the victims, including rehabilitation and redress.

Steps to prevent violence can be legal, educational, or practical (Amnesty International, 2004).

Apart from the ethical and philosophical issues implicit in this "relationship," the health consequences of incarceration can be extreme, not only on the individual, but also on the community from which the prisoner comes and will return (Heard, 2019; Kamarulzaman et al., 2019).

The medical profession, primarily through the World Medical Association, has enunciated standards of professional conduct for medical practitioners working in prisons (World Medical Association, 2017). While primarily directed toward ethical conduct, the principles also have relevance for public health practice.

Harm Minimization

Harm minimization is an approach to risks and hazards that takes into consideration the actual harms associated with the specific exposure. This approach weighs the range of potential harms of a particular risk and how these harms can be minimized or reduced. It recognizes that risk behaviors are, and will continue to be, a part of our society irrespective of the harms associated with their use (Harm Reduction International, 2019).

The United Nations has specifically recommended the implementation of harm reduction strategies as part of health protection efforts within prisons through the World Health Organization's *Madrid Recommendation: Health protection in prisons as an essential part of public health* (World Health Organization, 2010).

Harm minimization, in the context of prisoner health, has led to improved cooperation between the health, social, justice, and law enforcement services.

For example, needle syringe programs provide sterile equipment, information, and referral to other services, for people who use illegal drugs. These strategies are also effective in attracting drug users who may otherwise never have had contact with other drug treatment services, medical, legal, or social services. Extension of injecting equipment exchange programs into prisons has been implemented in only a number of a number of countries (Armenia, Canada, Germany, Kyrgyzstan, Luxembourg, Macedonia, Moldova, Spain, Switzerland, and Tajikistan) and in most of the cases, only in a small number of prisons within these countries (Stone & Shirley-Beavan, 2018). While the number of countries implementing this strategy is increasing, the coverage on a world scale is minimal, and still considered controversial—or not considered at all!

Drug and Alcohol Use

The convergence of drug and alcohol problems and the prisoner population is well described, because a crime may be commissioned while under the influence of a drug or alcohol and because some forms of drug use are criminalized in most countries. Additionally, harmful use of alcohol is disproportionately associated with community disorder, serious accidents, physical violence, and driving-related offences.

Coexistence of mental illness and drug and alcohol health problems is noted—either being a precipitator or because of self-medication in otherwise poorly compliant mentally ill individuals (Franke et al., 2019).

Much of the burgeoning in prison populations around the world is directly connected to the criminalization of drug use. As an important aspect of public health practice is regulatory, the issue of drug laws has direct relevance to examining incarceration through a public health lens.

Given so many prisoners are directly or indirectly incarcerated because of drug-related crimes, legalization of personal drug use has the potential of drastically decreasing prisoner populations and the associated health consequences of such. Drug law reform has been pursued most aggressively in Portugal and Spain, where decriminalization of personal drug use is complete and absolute (Gonçalves et al., 2015).

In the context of drug misuse and dependence, harm minimization encourages a change in attitudes toward people who use drugs, including those who are physically and psychologically dependent on drugs, such as heroin and cocaine. This approach moves away from stereotyping drug users as antisocial, requiring a criminal justice response, towards providing treatment services. The more complex relationships between the individual, their community, the drug, and the environment and circumstances in which they are using it, are considered. Rather than seeking to "treat" or "cure," this approach considers other problems associated with the person's harmful drug use, such as the availability of the drug in the community, the prevalence of their use, and how much is known about the drug and its effects and harms in the community. Harm minimization highlights that a range of physical and chemical exposures has the potential to cause harm, not just the illegal drugs. This is especially important when we consider that legal drugs, such as tobacco and alcohol, are responsible for the greatest social and economic harms.

Harm minimization works to reduce the harmful consequences of drug use through a variety of strategies: reducing the demand for drugs; the supply of drug; and the harms associated with drugs. Demand-reduction strategies work to discourage people from starting to use drugs and encourage those who do use drugs to use less or to stop. Evidence supports a combination of information and education, along with regulatory controls and financial penalties, to help to make drug use less attractive (European Monitoring Centre for Drugs and Drug Addiction).

Health workers can offer clients a range of options for their desired treatment outcomes, which encourages more people to participate in treatment and prevention programs. The harms associated with a client's drug use can be reduced or minimized simply by their participation in targeted treatment programs. It is instructive to reflect on the lack of control that prisoners have over-informed choices. As they relate to health risks, knowledge is far from sufficient—it has been said that prisoners are the most informed group in the population when it comes to risk assessment—but their capacity to respond appropriately is seriously impeded by the lack of options available to them.

Supply control strategies involve legislation, regulatory controls, and law enforcement. Supply reduction has received disproportionate support from custodial authorities, be it in boundary surveillance or interception of staff and visitors—generally with little proven effect (Australian National Council on Drugs, 2004).

Harm-reduction strategies have received little favor within the correctional environment—with some notable exceptions. Providing injecting drug users with access to clean equipment through needle syringe programs is a community standard in many countries but remains a rarity within prisons internationally. By reducing the risk of bloodborne infections such as hepatitis C, hepatitis B, and HIV being transmitted, the risks could be reduced for the individual prisoner, prison workers, and the community as a whole (Lazarus et al., 2018).

Tobacco Reduction

Prisoners tend to smoke tobacco at higher rates than the general population. For example, in 2015, almost three-quarters of Australian prisoners were current smokers, more than four times the rate in the general population (Australian Institute of Health and Welfare, 2015; Australian Institute of Health and Welfare, 2014). In an attempt to reduce tobacco smoking among prisoners, many jurisdictions have introduced smoking bans. Smoking bans can promote the development of a tobacco black market, leading to the usual problems associated with prohibition and require extra resources by authorities to eliminate that market (Butler et al., 2007; Butler & Yap, 2015). Some have even questioned the utility of such bans after finding 76% of prisoners continued to smoke in prisons where a ban was in place (Cropsey & Kristeller, 2005).

A review of policies across the United States (US), Australia, and Europe concluded that comprehensive policies that restrict where inmates can smoke, provide smoking cessation support to inmates and staff, and offer specialized training for health staff are needed to address smoking in prisons (Ritter et al., 2011). A more recent review of smoking bans in US prisons found that although their implementation was rarely associated with increased violence, bans should be accompanied by comprehensive support to assist smoking cessation (Kennedy et al., 2014).

Tools to help reduce or cease smoking include pharmacotherapies and Nicotine Replacement Therapy (NRT). All commercially available forms of NRTs have been found to increase the chance of success in those attempting to quit compared with those not using NRT (Stead et al., 2012). With respect to pharmacotherapies, a Cochrane review found high-quality evidence that bupropion increased long-term cessation, and moderate-quality evidence that nortriptyline increased long-term cessation when compared with not using either drug. In addition, both appear equally effective and of similar efficacy to NRTs. Some evidence shows that varenicline may be more effective than bupropion (Hughes).

There is limited evidence available on the use of pharmacotherapies or NRTs in prisons and longer term cessation of tobacco use. However, one systemic review found that cessation programs can increase the likelihood of quitting tobacco smoking in prisons and remaining abstinent post-release (de Andrade & Kinner, 2017).

Bloodborne Viruses

The high prevalence of bloodborne viruses in prisoner populations has been well documented in a number of countries (Kamarulzaman et al., 2016). Treatment opportunities benefit the individual prisoner, while public health concerns are focused on prevention, through education, and in isolated

prison systems through the provision of the means of prevention—condoms for protected male sexual activity, dental dams for protected female sexual activity, liquid bleach for the cleaning of injecting equipment, or sanctioned tattooing.

Notwithstanding the benefits of treating prisoners for bloodborne viruses, there is a debate as to how testing regimes are implemented with respect to consent. That is, testing programs can be opt-in or opt-out, which are both distinct from a mandatory testing approach. A review by Rumble et al. (2015) found reasonable rates of uptake for testing in opt-in programs and even more so in opt-out programs. The current community standard is that consent is sought non-coercively; no testing is performed without consent. Francis-Graham et al. (2019) note that opt-out programs have been used in the community elsewhere (e.g., organ donation). However, they caution that implementation needs to be carefully delivered by trained staff to ensure that such a testing regime does not become a quasi-mandatory program given the vulnerable state of many prisoners, particularly upon admission to prison, and the power imbalance they may experience within the prison system.

HIV

The World Health Organization has provided a framework for the response to HIV in prisons (World Health Organization and UNAIDS, 2006). The framework stresses a human rights approach to the diagnosis, care, and management of HIV in the prison setting, identifying issues such as stigma, discrimination, intersectoral work (i.e., health services working both beyond health while in prison and beyond the prison with the community), and workforce training (both health and custodial).

The prevalence of HIV among prisoners is typically four to five times that in the general community. Prison has a profound impact on the lived experience of too many persons living with HIV/AIDS: It has been reported that almost 17% of all HIV-positive individuals in the United States pass through a jail every year, although the estimate is higher when considering only racial minorities (Spaulding et al., 2009).

The public health risks that prisons pose have been highlighted by a number of epidemiological studies of HIV transmission (Dolan & Wodak, 1999; Goldberg et al., 1998; Jürgens et al., 2009; Perrett & Waite, 2019). The single documented case of HIV transmission to a prison guard has attracted much attention as an issue of occupational safety, and consequent vehement, yet unsubstantiated, denial of harm minimization measures (Jones, 1991).

Despite specific recommendations from the United Nations on interventions to be implemented (United Nations Office on Drugs and Crime et al., 2013), the responses of prison systems to HIV vary greatly (Resch et al., 2005; Rumble et al., 2015). Some systems have proven resistant to external pressures not to further discriminate against prisoners infected with HIV—western European and Scandinavian prisons operate under community standards of diagnosis, treatment, care, and respect for the confidentiality of inmates. Some countries have taken a different approach—including non-consented compulsory testing, and linkage to community HIV registers (Estonia), and segregation of known HIV-positive prisoners (Singapore and Cuba).

Hepatitis C

The strong associations between illicit drug use, injecting with contaminated equipment, the criminalization of drug use in most jurisdictions throughout the world, and incarceration lead to a collision between the dual "epidemics" of incarceration and hepatitis C. In countries that have assessed the prevalence of hepatitis C virus among their prisoner populations, in excess of 50% are infected.

More disturbing, for the public health, is that the incidence of infection is also extremely high. Prisons have been referred to as the "powerhouses" of the hepatitis C epidemic.

The management, treatment, and care of prisoners infected with hepatitis C virus (HCV) have seen unprecedented changes over the last 5 years. In 2014, a new group of drugs, called "direct-acting antivirals" (DAA), were licensed for the treatment of HCV. These medications are safe, expressing minimal side effects, and achieved cure rates in real-life trials in excess of 95%, irrespective of the virus genotype. Disease progression merely influences the *duration* of treatment (Jakobsen et al., 2017).

For the individual prisoner, the greatest facilitator, or obstacle, to receiving DAA treatment has been the custodial center's policy regarding access to these very expensive medications. Two general approaches to treatment access are described for prisoner patients:

1. Universal access for all with a confirmed active infection (Papaluca et al., 2019).
2. Disease-progression determined access, where the degree of hepatic cirrhosis determines the threshold for treatment initiation.

The universal access model acknowledges the public health and human rights imperatives for treatment. Persons infected with HCV can transmit the infection to others. In the absence of prison-based harm minimization programs (e.g., needle exchange, tattooing), the risks of transmission within prison are higher than in the general community. Human rights principles assert that prisoners should have the same access to life-saving treatments, as their community counterparts (Bielen et al., 2018).

The treating environment while in custody offers several important opportunities to the total societal effort to reduce the burden of infection of HCV. Treatments can be supervised by custodial health staff—usually an appreciated health intervention given the enormous cost of DAA treatments. Once-daily dosing is easily linked to opiate-replacement therapy, which is supervised concurrently. Side effects, which are rare and usually of a minor nature, are easily assessed. Most prisoners experience a period of regulation and safety while in prison—allowing for time-limited programs (8, 12, or 16 weeks) to be completed. Determination of eligibility for treatment (i.e., current infection and assessment of cirrhosis) can usually be completed with just two visits to the prison health center—for health education and initial pathology "take" at the first, and receipt of pathology results, decision about treatment choices, and initiation of treatment at the second.

Prison-based treatment programs have reported remarkable progress in reducing the burden of infection. However, a number of health services have reported reinfections with HCV following successful completion of treatment (Harkness et al., 2017). This should trigger a repeat treatment cycle. However, because of the cost of treatments, this may be more restricted in some prison health services.

Liver biopsy is no longer required—transient elastography and FibroScan® (EchoSens, Paris) have found a limited ancillary role in prison treatment programs.

Patients with pre-treatment cirrhosis must be enrolled in lifetime hepatic-cell carcinoma surveillance. Other patients require a single assessment for ongoing infection (i.e., treatment success or very rarely failure) 12 weeks after the completion of treatment—they can then be discharged from care, as they have demonstrated "cure" (Kim et al., 2018).

Evidence-Based Interventions

A range of initiatives aimed at minimizing the risks of transmission of bloodborne viruses have been introduced across the world, in response to the range of risk activities experienced in prisons:

Injecting drug use in prisons—there is a mounting body of evidence that injecting drug use continues within prisons (Griffin, 1994; Small et al., 2005; Seamark & Gaughwin, 1994; O'Sullivan et al., 2003). The response of different prison systems has been polarized to two relatively extreme positions—denial and acceptance, with introduction of injecting equipment exchange. The latter response has been implemented in Armenia, Canada, Germany, Kyrgyzstan, Luxembourg, Macedonia, Moldova, Spain, Switzerland, and Tajikistan, and even then, in only a few prisons in many of these countries (Stone & Shirley-Beavan, 2018; Jacob & Stover, 2000).

Health education—to address knowledge deficits and misconceptions, and to provide skills for peer education, of benefit during incarceration, and possibly once released into the community (Squires, 1996; Freudenberg & Heller, 2016). However, to advise/educate prisoners on the means to protect their health and the health of their fellow prisoners, and then not provide the means for protection could be considered "double jeopardy"!

Violence minimization—to minimize the harms of incarceration; not merely the physical injury, but also the normalization of antisocial behaviours (Rocheleau, 2013).

Pharmacotherapies—particularly useful for opiate dependence and addiction. Methadone has been utilized for more than 20 years in the prison environment; other pharmacotherapies include buprenorphine and naltrexone (Bi-Mohammed et al., 2017). Treatments for other drug dependencies are less well tested.

Conjugal visits—virtually no evidence supports intimate family visits as a measure to minimize harms associated with bloodborne viruses; however, a human rights focus would be strongly supportive (Carlson & Cervera, 1991; Albertie et al., 2017). A similar approach may apply to the issue of children in prisons—in some jurisdictions, children are allowed to stay with their mother, providing the mother is compliant with regulations (e.g., "drug free"). This dispensation is various for 12 months (e.g., Thailand) of school-entry age (Australia). Only one jurisdiction (Nepal) is known to allow male children to live with their fathers while imprisoned. In some South American prisons, entire families encamp within the prison perimeter. The intergenerational impacts of incarceration are intense, of public health interest (Quilty et al., 2004), and poorly addressed throughout the world.

Body piercing and tattooing—are highly prevalent, albeit risky activities in prisons (Arain et al., 2014; Tran et al., 2018). A tattoo parlor pilot was established in six federal Canadian prisons in 2005.

Canada

The Canadian federal prison system has trailed sanctioned tattooing over an 18-month period in 2005–2006. In six prisons, prisoner-artists are taught in detail the infection control skills necessary for safe tattooing. Prison authorities register the artwork. There are restrictions on types of tattoos that can be applied (e.g., gang symbols, hate symbols are prohibited). The infection control standards set for the prison pilots exceed those currently in the community. At this time, there is no skin piercing done officially in any prisons, worldwide.

Mental Illness

The links between institutions of mass incarceration and those for the mentally ill are diverse (Fazel et al., 2016; Fazel & Seewald, 2012).

Persons incarcerated can manifest mental illness at any stage of the criminal proceedings.

- On entry, the first connect, reconnect, to health services may reveal emerging or established (but neglected) mental illness.
- The stress associated with arrest and detention may "unmask" mental illness.
- Mental illness may be provoked by the stresses associated with social isolation of incarceration.
- Mental illness may be considered the critical element in the commissioning of a crime, with the person considered "criminally insane."

Regrettably, with the deinstitutionalization of mental asylums in the 1980s, secure accommodation for the mentally ill decreased, without a coincident increase in community-based housing. The prevalence of mental illness among prisoners exceeds that of the community (Baillargeon et al., 2009; Fazel et al., 2008). The links between prisoners, ex-prisoners, and persons in unstable accommodation have been convincingly made (Kushel et al., 2005).

Many jurisdictions have mental health legislation that recognizes differing levels of accountability for people with mental illness committing crimes—to the extreme position of "criminal insanity" where the commission of the crime is not admissible to the court.

Women

Overwhelmingly, the rate of male incarceration exceeds that for females. Typically, women account for 2–9% of the prisoner estate; in Hong Kong, over 20% of prisoners are female. However, the female prisoner population is increasing at a faster rate compared with male prisoners (Institute for Criminal Policy Research, 2017). In Australia, the number of incarcerated women has doubled in the last 10 years; from a low base, the proportion of elderly women (>45 years of age) has increased the highest; the crimes often relate to credit card fraud and gambling debts—they are rarely violent. Where violence is involved, too often it is an act of desperation within an abusive and violent relationship.

The public health issue beyond the disproportionate criminological issue is that mothers and grandmothers are the long-term carers of children of prisoners; conversely, fathers isolated from their partners by incarceration rarely act as long-term carers for affected children.

Female prisoners are consistently reported to be even more socially disadvantaged than their male counterparts. Compared with their male counterparts, they are more likely to have experienced physical and sexual violence and less likely to have had contact with a health service prior to imprisonment. In addition, they are also more likely to experience mental health and drug and alcohol issues, including injecting drugs as well self-harm and suicide while in prison (van den Bergh et al., 2011).

Women tend to receive shorter sentences but have higher reincarceration rates than males. The consequences for health service delivery are profound. Treatments tend to be more opportunistic and less successful when longer term compliance is demanded.

Prisoners from Sexual and Gender Minorities

There are little data available on the rates of incarceration of lesbian, gay, bisexual, transgender, intersex, and queer (LGBTIQ) prisoners. A study in the United States found that the incarceration rate for self-identified gay, lesbian, and bisexual prisoners was more than three times that of the general population. In addition, they found that these inmates were more likely to experience sexual victimization, solitary confinement, and current psychological distress compared with their heterosexual counterparts (Meyer et al., 2012).

Members of the LGBTIQ community are more likely to consider or attempt suicide, engage in self-harm, or experience a mental health condition compared with their heterosexual, cis-gender counterparts (National LGBTI Health Alliance, 2016). There is no reason to believe that members of this community within prison are any better off. In fact, this intersectionality is likely to mean their health outcomes are worse. Given the higher rates of incarceration among sexual and gender minorities and their disproportionate levels of health issues, it is essential that prison healthcare services operate in a way that is sensitive to the needs of these individuals.

The WHO's Global Health Workforce Alliance launched the Agenda for Zero Discrimination in Healthcare in 2016. Although developed with a focus of those who are HIV+ or at risk of such, the agenda calls on countries to set standards for, build the evidence base around, increase funding for and monitor, and evaluate discrimination-free health care for all vulnerable populations (Joint United Nations Programme on HIV/AIDS, 2016). The health care provided within prisons should also be subject to the same appeals.

Public Health and Corrections

Public health is the art and science of preventing disease and injury, prolonging life, and promoting health through the organized efforts of society. This approach is closely aligned to the World Health Organization's (1946) definition of health which is "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". Public health practice informs and empowers individuals and communities, and creates healthy environments through the use of evidence-based strategies and accountability mechanisms. The balance of health risks and health gains is the essential issue in considering the public health impacts of prisons (Glaser & Greifinger, 1993).

Loss of liberty carries with it diminished ability to control one's health. Prisons are crowded. Airborne, foodborne, and waterborne diseases have enhanced opportunities to be propagated; the prisoner (and to a lesser extent the prison worker) has little ability to control initial exposure and subsequent propagation of a range of diseases of public health importance. In the seventeenth century, typhus (also called "gaol fever"), along with smallpox, posed dangers to prison inmates, jailers, and court officers. In more recent times, the spread of tuberculosis from within former Russian prisons and its spread into the general community have been well described (Spradling et al., 2002), as has been the transmission of multi-drug-resistant tuberculosis between prisoners and prison guards (Valway et al., 1994). The propagation of hepatitis C within prisons has been substantiated (Stone et al., 2017), although the propagation into the community is yet to be elucidated.

Recognizing that the health of the broader community is directly linked to the health of its prison population, the World Health Organization (2007) developed its *Health In Prisons* guide for prison authorities on steps that can be taken to reduce the health risks associated with compulsory detention, care for prisoners, and promote good health among prisoners and prison staff.

The systematic management of risks in the correctional setting associated with air, food, and water, through the science of environmental health, has been poorly developed (Levy & Mogg, 2009).

Crowding within prisons is almost normative with prisoner numbers exceeding official prison capacity in at least 115 countries (Institute of Criminal Policy Research, 2018b). Overcrowding and the associated extreme lack of privacy are associated with increased physical violence, mental health problems, self-harm, suicide and compromises rehabilitation, educational, vocational, and recreational activities (Penal Reform International, 2018). Few countries limit the occupancy of their prisons to the actual bed capacity of their facilities. Norway and the Netherlands, notably, do not exceed their capacity, delaying entry to prison once a person is sentenced until there is adequate space for them (MacDonald, 2018).

Some prison systems are underpinned by complex transport systems for moving prisoners between prisons and between prisons and courthouses; this provides further conduits for disease transmission and propagation (Levy et al., 2003).

A key consideration for public health in correctional settings is adjusting to the demographic shift that has seen an increase in the number of older prisoners, commensurate with the ageing of the population in developed countries. Indeed, older prisoners are now making up the fastest growing demographic within a number of prison systems (Skarupski et al., 2018; Nowotny et al., 2018). This group is made up of those who were convicted young and "grown old" in prison, those who are repeat offenders into their old age, and those convicted for the first time as an older adult. Older prisoners are more likely to experience chronic health conditions such as diabetes and heart disease, more like to experience mental health and substance use problems and also more likely to experience difficulties performing activities of daily living (Skarupski et al., 2018; Haesen et al., 2019; Fazel et al., 2001). This will all place increasing and different challenges on the healthcare system within prisons.

Models of Health Care

All prison services would state that they provide some level of health care for their prisoners. The actual service delivery will depend on the legislative framework governing the correctional service, but rarely also the laws regulating the health service. Western European countries, additionally, apply a human rights framework to their prisons, and by extension, to the health services provided to prisoners. Internationally, in 1955, the United Nations published the Standard Minimum Rules for the Treatment of Prisoners (now known as "the Nelson Mandela Rules") which included basic requirements for the services provided in prison facilities (United Nations, 2015). Now, the United Nations Office on Drugs and Crime and the World Health Organization have advocated for the proper governance of prisoner health services (World Health Organization, 2013).

Five models of prisoner health care are identifiable:

1. The prison health authority is directly related to the custodial authority. In this model, the custodial authority employs the healthcare staff. In some prison systems, the trade union affiliation of custodial and health staff may be the same; in some systems, the same paramilitary structure applies to custodial and health staff. This is the most common model for the delivery of prisoner health services, worldwide.
2. A prison health authority is the primary healthcare provider. This service is either the community health service or a dedicated health authority for prisoners.
3. The prison health authority is a public or private entity that has been tendered by a central custodial/health authority.
4. Custodial officers or prisoners themselves are the health service provider. In this circumstance, former health workers who have subsequently been incarcerated are utilized as auxiliary health workers [this is observed in Myanmar (Burma)].

5. No health entity [inmates have to seek their own care, or there simply is no health care for prisoners (this has been observed in some prisons in Papua New Guinea)]; when nongovernment or missionary organizations may temporarily fill a "void", but usually there is no sustained care.

How Do Models of Care Impact on Public Health Practice Behind Bars?

The competent prison healthcare service needs to do much more than simply provide health care to persons in custody. If the health impacts of incarceration are to be minimized, it is essential that the prison healthcare service also assumes the additional roles:

- As the independent advocate for the health of prisoners (and their families) and.
- As the advocate for the public health.

The models of care adopted by the health service must consider the needs of different groups of detainees and the needs of the community.

Earlier in the incarceration process, the immediate health needs of prisoners will dominate. Newly received prisoners typically will have a burden of unmet health needs, as lack of compliance with treatment is a predictor of being arrested—particularly where drug misuse and mental illness are concerned. This is a time to offer resource-low and high-impact interventions, such as hepatitis B immunization, cervical screening, and vision testing.

As the stay in prisons extends, the health needs of a more chronic nature assume more importance, interspersed with prison-induced illness, and trauma.

Whether prisoner health services should be based on the principle of "equivalence" or "equity" (Levy, 1997) has been debated. Equivalence would require that inputs to the prisoner health service be on the same level as those provided in the community. The argument for "equity" states that the outputs, or health outcomes, of the service be the same. Noting that the health of prisoners is worse than a comparable group of free citizens, the inputs required for the same outcome to be achieved for prisoners would be greater than those allocated for the community.

Implementing Public Health Practice Behind Bars

The minimum principles for a prison health service are that it is an Independent Health Authority, with independent oversight (inspection) (Council of Europe, 2010), and has links to academic health organizations, with avenues open to teaching and research (Raimer & Stobo, 2004).

Applying a stronger evidence base to modern prisons could enhance the health of prisoners and the community through:

- Strengthening the independence of prisoner health services.
- Strengthening standards setting and independent review of the health service.
- Supporting diversion programs from the criminal justice system, using health-related criteria.
- Strengthening both prisoner and community health service provision, on entry to prison, in anticipation of the return, and on returning to the community.

- Applying all community standards for health protection to prison.
- Identifying opportunities for whole of community health improvement by targeting prisoner populations.

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