

THE PRISONER DILEMMA: A BIOETHICAL ANALYSIS OF THE ACCESS
TO HEALTHCARE OF INCARCERATED POPULATIONS

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ABSTRACT

Correctional populations account for about 2% of persons in the United States, who have a unique right to health care guaranteed by the Constitution per court decisions. However, the quality and breadth of this care is not standardized, and incarceration itself creates risk factors for one's health. A review of the literature was done to evaluate the health and access to care of prison populations. Prison populations are largely minorities from poor neighborhoods with low socioeconomic status who usually have limited engagement with health services prior to incarceration; there is a large amount of morbidity of chronic diseases in prisons, and prisoners are at increased risk for communicable diseases, substance abuse and mental illness. Former inmates are also at increased risk of death following release. While advances such as telemedicine help to bridge the gaps in correctional health, more research needs to be done to assess the needs of this population, and more education and linkage to care should be accomplished to do right by these populations and ensure they get the care they need. This will in turn lead to better health outcomes in this population and may have a beneficial effect on the communities from which these prisoners come.

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CHAPTER 1: INTRODUCTION

A forty-year-old patient came to the neurology office with their partner. A man in his mid-forties, his chief complaint was related to a history of leg cramping. He had been having this issue since his twenties, getting worse over time. He was referred to a neurologist with a presumptive diagnosis of multiple sclerosis (MS), a debilitating, demyelinating disease that can present in a myriad of transient neurologic dysfunction that worsen over time. There are therapies both for prevention of MS symptoms and for acute flares. The rest of this patient's session was devoted to explaining the disease, possible therapies and lab work that would need to be done prior to starting therapy. Having likely sustained permanent deficits, one might wonder why this patient waited so long to seek therapy. While there are many reasons why patients don't seek care, whether it is the ability to pay for insurance or medications or not being able to travel to a specialist, that was not the primary reason with this patient. This patient had been incarcerated throughout his twenties and thirties, the age range when MS typically presents.

Seeing this patient made me think for one of the first times about the access to care available to prisoners, including those like the patient above who likely developed MS in prison and did not receive a proper diagnosis nor treatment. At other outpatient clinics in which I worked, I would see formerly incarcerated patients who had not been fully informed about their conditions nor prescribed optimal therapy for the conditions they knew they had. Some attending physicians remarked at how it is important to test for certain conditions in this population when they come to the hospital because they may not

be tested in prison due to the cost of treatment. In the United States, when people become ill, they usually have multiple options available, including seeing their primary care physician or going to an urgent care center or an emergency department, the latter of which is required to examine all who present there by the Emergency Medical Treatment And Labor Act (EMTALA, which ensures all patients who seek care at an emergency department be screened and stabilized before transferring regardless of ability to pay). But when prisoners are ill or are incarcerated with chronic diseases, what access to care do they have?

In order to address the health care access, it is first important to understand the scale and composition of this population. As of December 31st 2016, there were 6,613,500 adults being supervised by the correctional system: 2,162,400 of those people were incarcerated in a facility, 740,700 in jails, and 1,505,400 in prisons. The remaining 4,537,100 were either on probation or parole. In total, this number is approximately 2.6% of all adults aged 18 and over in the United States of America. These numbers, though seemingly high, represent the lowest number of incarcerated persons since 1993 (Kaeble and Cowhig, 2016). The makeup of this population reveals certain disparities when compared to the US population at large, consisting largely of African American males, who have made up nearly half the incarcerated population for years, with about one third being non-Hispanic whites. Many inmates do not have high school diplomas or GEDs when compared to similar age groups in the community and are less likely to be employed, markers of lower socioeconomic status in society (Uggen et al, 2006). The disparity of correctional populations is also apparent in the estimate that about 33% of

African American men will be incarcerated at some point in their lifetime, almost double the estimate of Hispanic men and greater than five times that expected of white men. It is such that some groups of African American men were more likely to have prison records than military records or bachelor's degrees. Part of what accounts for certain groups being incarcerated may be the nature of their community: low income communities with little opportunity lead people to commit crimes to sustain themselves. There may also be biases toward minorities and poor persons in that they are more threatening to social order, and are thus treated more harshly by the criminal justice system (Pettit and Western, 2004). In 1975 the rates of incarceration began to climb as policies, such as the War on Drugs, three strikes laws, and mandatory minimums, led to more people being sentenced to prison time. This influx led to the coining of the term "mass incarceration", which affected certain groups in society so much that being incarcerated became almost like a stage of one's life (Wildeman and Wang, 2017). There are many other terms and phrases used by the Bureau of Justice with regards to the correctional population that can be seen in Appendix A.

One factor to consider first is the goals of incarceration. It is generally known to be a form of punishment for certain crimes, determined to be such by state or federal governments, but in order to understand the health of this population it is useful to understand the leading aims of the institution. Allen et al put forth various ideologies of incarceration including incapacitation, deterrence, rehabilitation, and retribution; in their 2016 update, they include prevention as well (Allen et al, 2016). One study surveyed workers in various correctional facilities to understand how they perceived these four

aims as they perform their jobs. While exact ranking varied, there was consensus that incapacitation was the main goal, and retribution the least important, with deterrence and rehabilitation close in the middle (Kifer et al, 2003). This seems reasonable, as the main consequence of being incarcerated is that one cannot commit further crimes in the general population (thus incapacitated), and since the incarceration itself is the punishment, it is no surprise that retribution was universally ranked low. Deterrence and rehabilitation, while sensible goals, would seem to be harder to gauge while incarcerated. As this study was done prior to Allen's newest edition, they did not assess prevention, though this seems to be a both a combination of the four other aims and something that requires management outside of a correctional setting.

While deciding on what the main goal of incarceration should be seems central to the issue of prisoner health, the courts have ostensibly settled this matter. The issue of health care for this population was decided by the Supreme Court in the case *Estelle v Gamble* 1976. The case centered around a Texas prisoner, J.W. Gamble, who sued the state corrections department for not receiving adequate care following a debilitating back injury while doing prison labor. Based on antecedent cases, the Supreme Court put forth that to deny health care to prisoners was antithetical to the Eighth Amendment of the Constitution of not inflicting cruel and unusual punishment, as denying care led to prolonged suffering or even death. Through this and other cases, three rights of prisoners came forth: the right to access to care, the right to ordered care and the right to a professional medical judgment (Rold, 2008). Coincidentally, because of these court decisions, incarcerated persons are some of the few people in the United States that are

guaranteed healthcare; however, the quality and breadth of the care provided can still vary based on institution. What further complicates matters is how institutional corrections is split among jails, state and federal prisons which are usually run by separate entities.

Though guaranteed healthcare based on court decisions, the prison population has its own unique circumstances. Being incarcerated on its own strips persons of some of their autonomy and agency to care for themselves. The facilities themselves can also present health risks less common in other settings due to a large population in a relatively small area. Given that either federal or state governments fund public prisons and jails, the care provided may be influenced by the costs as well as they relate to department of corrections budgets. Even once released from prison, persons may still have worse outcomes secondary to being incarcerated. This could be related to an inability to find work and provide for themselves or turn to unhealthy habits such as drug abuse to deal with stress upon release. Because of how different this population is and how it has grown in the past few decades, some have put forth that there now exists a “felon class” in the United States that perpetuates itself in an era of mass incarceration (Uggen et al, 2006). Given the many challenges current and former prisoners face, ensuring that they receive proper medical care is crucial, especially since most of those incarcerated will be released back into the general population at some point.

There may exist disparities in the health of prisoners compared to the incarcerated population simply because of perceptions. People who are incarcerated have been convicted or plead guilty to some wrongdoing, and are in that situation because of this.

To show favor to this population is not politically beneficial, and in some frames may be perceived to be ignoring the victims of crimes. But, to fully ignore them because of this is also wrong, as inmates are still human, and incarceration is largely a temporary measure, meaning they will rejoin society at some point in whatever health they are in. And especially in urban centers, criminal justice, health and education are closely tied together, such that the disparities within prison populations may be an extension of the communities from which many of the inmates come from (Rich and Ashby, 2014). Given that this population is vulnerable secondary to its reduced autonomy and freedom, they are almost in greater need of bioethical scrutiny to ensure proper medical treatment, especially as they will eventually be released into the charge of societal health systems.

The goal of this paper is to review the literature about the access to health care available to incarcerated persons and evaluate for bioethical concerns. While the goals and reasoning for incarceration may be controversial, these are legal issues, not medical ones, and will not be of focus in this review. The review is meant to be general to all incarcerated persons regardless of which institution they were placed; because of this, terms such as “prisoner”, “inmate”, “incarcerated person” and so forth may be used interchangeably throughout. Topics of focus will be a general overview of the healthcare provided, the health of this population including the most prevalent conditions, proceeding to where prison health is headed and a bioethical analysis of major issues apparent upon reviewing the literature.

CHAPTER 2: ADMINISTRATION OF HEALTH

In terms of the basis of care provided in correctional facilities, many cite the concept of “equivalence of care”. This would entail that persons who are incarcerated have the same access to health services as the rest of the community would, which can either be measured in terms of processes and outcomes (Charles and Draper, 2012). The main issue with the implementation of equivalent care is that prison is a different environment that also presents unique risks; for example, Charles and Draper discuss that in the UK, a person must wait on a list before receiving methadone treatment for opioid addiction, but that given the higher likelihood of use in prison, even waiting on the list as someone not incarcerated may be a greater risk for this population. Thus, equivalence is a good starting point, but may not be sufficient for prison populations. Many countries in the world have some form of public healthcare coverage, such as in the UK and Canada, with some private options available for those who choose to utilize it. The UK at one point transitioned their prison health system over to their National Health System, ensuring more equivalent care in this respect. However, the US utilizes an insurance market to help people pay for medical costs; many people get their insurance through an employer, while individuals can still get plans through other means such as the government marketplace that resulted from the Patient Protection and Affordable Care Act. Some groups, including persons age 65 and older, veterans and Native Americans, receive a form of government sponsored healthcare; prisoners also fall somewhere into this latter group because they have a right to health care given their circumstance. A

major difference is that the budgets for prisoner health come from the department of corrections as opposed to Medicaid and Medicare, which are financed by other parts of the government.

The care team for inmates are doctors, nurses and medical assistants, and are typically able to provide primary care services with some ability to perform minor procedures. A major difference between community and prison health is that prisoners are largely overseen by correctional officers (COs) in their day to day activities whose mission it is to maintain the status quo of the facility and enforce its rules. This is not the mission of the healthcare providers in the prison, who are there to treat patients as in any other environment, which includes maintaining confidentiality and doing no harm to patients. This can create conflict between providers and correctional staff, whose missions may be diametrically opposed at times. Compounding this potential conflict is that some healthcare professionals do not receive any specialty training with regards to considerations of care for prison populations such as mental health (Watson et al, 2004). In addition to this, caring for persons sentenced to incarceration for some form of wrongdoing may deter qualified providers from taking positions in these facilities, and lead to physician shortages which have traditionally led to subpar healthcare (Rich et al, 2014).

Independent of issues with staffing, a prison health center may not always have the necessary equipment to treat patients in a timely manner. One study aimed to compare the sepsis mortality rates of the inmate population at a facility to that of the

general community; despite a lower prevalence in the inmate population, the authors found that the adjusted risk of death was over two times greater in the inmate population than the non-inmate population in these situations (Chertoff et al, 2018). They posit that this increased risk could either be related to the co-morbidities or stress of the inmates, or a reluctance of the facility to seek the level of care needed for septic patient in a timely manner. Another component complicating care is the need to maintain a safe environment in facilities; this means that some patients might not have access to certain medications such as insulin outside of a clinic setting to prevent misuse of needles or medication (Thomas et al, 2016). While this may prevent adverse outcomes from using supplies or medications in ways other than intended, it can restrict patients in these environments from caring for themselves in a timely manner, and makes them more reliant on the health services available in the facility. In addition, depending on the facility, if someone refuses to take a scheduled medication, they may be sanctioned or punished for such a refusal, which could further strain these patients relationship to healthcare. Because of this, some former inmates may not be prepared upon release to properly care for themselves.

The interaction with correctional health usually begins with an intake interview. This entails going over your medical history and the medications you take, in addition to a physical exam and other lab work (Condon et al, 2006). The disbursement of medications may vary based on facility or individual, either being given by facility staff for each dose, or given in certain amounts to patients who have earned the trust of

providers that they can reliably take their prescriptions. The rest of the interactions with health providers is much like urgent care, in which patients are seen in order of triage; given the limited staff in facilities, this may mean waiting for a significant amount of time before seeing a provider for non-urgent issues (Thomas et al, 2016). Once inmates are released, they are again responsible for their health, with some programs available that can aid in this step, but no set standard. Despite the fact that many prisoners have or are newly diagnosed with chronic conditions, as will be detailed below, a significant number do not receive prescriptions or fail to fill prescriptions upon release, and many whom did not interact with a primary care physician will likely not do so upon release, relying on emergency departments for medical care (Wildeman and Wang, 2017).

When the needs of an incarcerated patient exceeds that of their facility's staff and supplies, care at an outside facility is sought. This process requires much planning in terms of transportation and having guards present with a prisoner who may also be in shackles during the visit. I have seen an incarcerated patient come to the hospital in need of a colonoscopy, and had the procedure performed under anesthesia while he was shackled to the bed, with guards waiting right outside of the door. While it is good to be able to seek more advanced care, having to account for the possibility that a prisoner may escape or cause harm to those providing care complicate what might otherwise be a simple visit. As discussed, health care providers have a different mission than the prison staff, and for a patient to have guards in a room makes a provider's mission harder to accomplish. The Health Insurance Portability and Accountability Act (HIPAA) of 1996

sought to restrict access to private health information (PHI) of patients to ensure confidentiality of patient encounters and create an environment of trust. While guards would be expected to respect a patient's privacy, having them present during a visit or procedure has the potential to sow distrust in the provider, and lead to an inaccurate medical history or exam that could then lead to improper treatment (Scarlet and Dreesen, 2017). In addition, restraining a person during a procedure has the potential to cause harm as well; during any procedure it may become necessary to move a patient, and if that patient is shackled, injury may occur to the surrounding structures that are restrained. However, these steps are currently necessary for these persons to get more advanced care.

As mentioned before, the resources available depend on the type of facility an inmate is housed. In 2018, there was a woman who begged for medical aid for hours in a work release facility but was largely ignored by those overseeing her; she eventually died secondary to sepsis caused by a perforated ulcer (Nir, 2019). The staff at the facility had no formal medical training, and her history with drug abuse and her race may have biased them to assume she was making up these claims, despite their notations that she was vomiting and refusing to eat. There are many factors that contributed to this unfortunate outcome, but one aspect was likely the lack of medical personnel or supplies to better assess this person. This vignette is a stark reminder of how not every correctional facility is the same, and they may vary based on their purpose.

CHAPTER 3: THE HEALTH OF PRISONERS

In order to assess the needs of incarcerated populations, it is important to understand the health of the population. This has been largely assessed using the results of national survey data. Based on surveys from 2002-2004, it was found that around 40% of prisoners in jails, federal and state prisons had at least one chronic medical condition. Regarding care amongst these prisoners, it was found that:

Among inmates with a persistent medical problem, “13.9% of federal inmates, 20.1% of state inmates, and 68.4% of local jail inmates had received no medical examination since incarceration. More than 1 in 5 inmates were taking a prescription medication for some reason when they entered prison or jail; of these, 7232 federal inmates (26.3%), 80971 state inmates (28.9%), and 58 991 local jail inmates (41.8%) stopped the medication following incarceration. (Wilper et al, 2009)

The incarcerated population in this analysis compared to the general population was more male, younger (less than 35 years old) and predominantly black and Hispanic (Wilper et al, 2009). Another analysis of this data looked to see what chronic conditions were more prominent among incarcerated populations compared to the general population (Binswanger et al, 2009). This analysis found that the incarcerated population was more likely to have chronic health conditions, and were more likely to have “hypertension, diabetes, myocardial infarction, asthma, arthritis, cervical cancer and hepatitis” compared to the general population, and that there was a greater prevalence of chronic medical

conditions among non-Hispanic whites compared to other groups. An analysis looking into cardiovascular risk and hypertension found that the cohort of those who were incarcerated had a higher prevalence of hypertension and were more likely to develop hypertension in the span of the study compared to the general population (Wang et al, 2009).

From these representative analyses, it seems safe to say that persons who are incarcerated are just as sick as those in the general community, if not more so. Another study looked at mortality of male inmates in a state correctional facility and found infections to be the main cause of death in the population (greater than two to three times the number in the general community), followed by cancer and cardiovascular disease (Harzke et al, 2011). The latter conditions may become more prominent as the already large prison population ages. One interesting finding is that the adjusted rates of death for conditions such as liver disease and cancer normalized to that of the community towards the end of the study, which may have been due to improvements in the health system at this one correctional system. Thus, while morbidity and mortality may be greater in certain respects in correctional populations, there is potential to narrow the gap towards that of the general community.

Despite the many articles and court filings to the contrary, there exists some literature that argue that there is an improvement of health in correctional populations. Given the increased morbidities discussed above, this may seem preposterous that inmates are actually healthier when incarcerated, but when adjusting the reference frame, it makes more sense. Because a large majority of those incarcerated have lower

socioeconomic status, many may not follow with a primary care physician, might have a history of substance abuse, violence or any number of other events that can adversely affect one's health. This is such that prison may serve as a respite from the challenges of their lives in their respective communities. Prison offers shelter and a consistent place to sleep with food, water and court-guaranteed access to healthcare while under the purview of COs and where access to recreational drugs is limited and generally banned. Though the quality of facilities may vary, this population generally has access to the necessities needed to live without certain harms. While this may not apply to all incarcerated persons, these factors may actually help impart a healthier lifestyle in prison compared to their lives prior incarceration.

One study looked into how social factors affect how healthcare is utilized by inmates using data from surveys (Nowotny, 2016). The author found that though women had a higher disease burden, there was no gender difference in the utilization of healthcare. However, black inmates were more likely to seek healthcare than their white and Hispanic counterparts. Because black inmates have been historically more likely to have limited access to healthcare or affordable insurance prior to incarceration, their imprisonment actually affords them the opportunity to seek a health provider when they are ill because of the court standard. This helps to reduce the disparity that exists in non-institutionalized populations who do not have the same right to healthcare. Assuming this data is indeed true regarding utilization of healthcare while incarcerated, Nowotny offers no further analysis as to whether these changes were maintained status post release. Thus,

even though prison may evoke healthier habits, it could be setting up these prisoners to decompensate when they are released and responsible for seeking out health insurance and finding their own provider.

Confirming this rationale of prison as healthier are studies that show that prisoners perceived their general health to be better since incarceration compared to before based on survey results (Yu et al, 2015, Alves et al, 2015). The limitation of these studies is that they focus solely on the perceptions of the prisoners using either survey data or focus group responses, and do not correlate these perceptions to measurements of the respondents' actual state of health, such as blood pressure or hemoglobin A1c. These studies are also limited in that the results usually emanate from one facility, which might vary if extended to include all incarcerated persons at all institutions. Given that the environment may very well be better than their life before incarceration, it does not ensure they get the care they need, nor whether their health and perceptions of health would continue to be positive after release. One published study includes a hypothesis that prisoners may be healthier, but not due to the environment. This study analyzed what they referred to as the "Healthy Prisoner Hypothesis", which posits that persons must be healthy to commit crimes, and thus, the populations in prisons are of rather healthy people; this hypothesis is based on a similar hypothesis that people who seek out work are generally healthier than those who do not. The authors used general survey results to investigate this hypothesis and were not make this association with respect to prison populations when compared to the general population (Bacak and Wildeman, 2015).

In terms of in prison mortality, a Bureau of Justice analysis was published in 2007 outlining the medical causes of death in state prisons. It found that 89% of prison deaths were due to medical causes between 2001-2004, with heart disease (27%) and cancer (23%) accounting for half of all deaths; by adding those with liver disease (10%) and HIV-related disease (7%), these conditions accounted for $\frac{2}{3}$ of deaths in prisons during this time span (Mumola, 2007). Men had higher mortality than women in general (257 vs 149 per 100,000 inmates), with women having only a higher mortality in cases of septicemia. Relative to the general population, mortality was 19% lower in prisoners than the comparable non-incarcerated population, mainly driven by a reduction of mortality in blacks with 57% decreased in mortality whereas whites and Hispanics had slightly above average mortality in prison. This latter point seems to serve as a theme that prison narrows the disparities which exist outside of correctional facilities by initiating a protective effect for some while having a more detrimental effect on others. While having this data is useful, much has likely changed in the intervening years as the knowledge and practice of medicine has advanced. Despite this, it is a useful framework to understand that though there may be some protective effects of prison, people still die from conditions for which treatment options may exist.

CHAPTER 4: PRISON AS A SOURCE OF ILLNESS

While being incarcerated is a result of a legal process, there are health implications to imprisonment. These include pre-existing conditions prior to incarceration (such as poor health secondary to low socioeconomic status), being in a confined space with others for an extended period of time in a controlled environment, and being released on one's own after their sentence. There also exists a health impact on the friends, family and communities of those who become incarcerated; this includes family members struggling to put food on the table without the money from their inmates' former income, children who grow up without a parental figure or the loss of an active member in a community (Massoglia and Pridemore, 2015). While this has been noted in the literature, the primary cause of these impairments is the physical separation from the person who was incarcerated and the stresses that follow, which, as mentioned above, is mainly a legal issue with regard to the consequences of certain crimes, and will not be discussed further here. What will be discussed are some of the unique health risks that inmates face more so than the general population.

The literature appears to show a consensus concerning three major health risks of being incarcerated: communicable disease, substance abuse and mental health; in addition, some sources also point out increased risk of harm from violence. Prisoners are at increased risk for communicable diseases due to their close quarters and sharing of supplies such as razor blades and needles for tattoos. The most common of these diseases are tuberculosis, which is spread through aerosols, Human Immunodeficiency Virus (HIV), and Hepatitis C (HCV), which are spread through bodily fluids, with estimated

global prevalence in prisons being 2.8%, 3.8% and 15.1% respectively (Dolan et al, 2016). Substance abuse, particularly opiate abuse, remains a pressing issue, with the possession, selling and use of certain substances such as heroin being the cause of some inmates' incarceration. Finally, mental health may relate to either issues or conditions prior to incarceration or conditions that develop because of incarceration. Violence may also have a higher prevalence as some violent offenders are concentrated in these facilities. The three main topics will be discussed individually.

HIV is a retrovirus that spread rapidly in the 1980s that infects CD4 T cells that play an active role in the body's immune response. As more CD4 cells are infected and the viral load increases, patients become susceptible to numerous infections that the immune system usually protects us from, such as pneumocystis pneumonia and toxoplasmosis. The virus is transmitted through bodily fluids, and can be sexually transmitted; when it first arose, many persons infected were men who had sex with men, though others attained the virus through drug use and tainted blood transfusions. Since its initial discovery, there now exists many therapies that suppress the virus from replicating, including many regimens, referred to as antiretroviral therapy (ART), some of which can be contained in a single pill. Though no cure currently exists, HIV infection has gone from being a near death sentence to a chronic condition controlled by medication. However, in order to control the virus, ART must be taken every day to maintain viral suppression.

Because of the nature of correctional environments, HIV is a challenge with respect to both transmission and treatment. In 1997, it was estimated that around one

quarter of persons infected with HIV passed through a correctional facility (Hammet et al, 2002). There are a few issues that concern HIV prevalence and treatment in a carceral setting. In terms of prevalence, prisons represent a place where unsterile needles may be more likely to be used given the ban on intravenous drugs in general, and more likely for inmates to engage in sexual intercourse, both consensual and non-consensual. The latter point is further complicated that sexual intercourse in prisons, while generally banned as well, may represent a form of entertainment or be a form of payment for favors such as protection. While HIV is a more chronic condition, sexual activity also increases the risk of other sexually transmitted diseases while incarcerated. While condoms may help prevent transmission, distribution of condoms is controversial in US prisons as it would seem to encourage a behavior that is supposed to be banned but is occurring nonetheless (Okie, 2007).

In terms of treatment, if an HIV positive person becomes incarcerated in a jail setting where they will remain for a relatively short time, they may not have their ART regimen readily available to them, and the facility may not have the medication in stock. Missing multiple doses of ART both allows the virus to replicate unimpeded and increases the risk of resistance to the medications in their regimen. Another aspect about HIV is that there is still stigma around this disease based on the populations who first presented with the virus, which may make people more hesitant to want to be tested if offered (such as in routine opt-out testing in a prison setting), and if they know they are positive, more guarded about the condition. As mentioned before, some facilities distribute medications to prisoners as needed, and with the stigma surrounding HIV,

patients may be hesitant to take HIV medications in public view of other inmates and correctional staff because of this. Despite many US prisons having access to HIV therapy, 16-34% of those incarcerated with HIV reported taking no prescription medications while in prison, potentially due to these causes (Rich et al, 2016). Given that viral suppression leads to decreased risk of transmission and that prisons have disproportionately high numbers of those with HIV, it has great potential to stem the spread and mortality of HIV through education of the virus and harm reduction.

HCV is another virus common in prisons. It is an RNA virus transmitted by bodily fluids that damages the liver. Over an extended period of time, the liver becomes more damaged to the point of cirrhosis, at which point, there is increased risks for complications and even hepatocellular carcinoma. Some common ways HCV is transmitted is through intravenous drug use and tattoos administered using dirty needles; it can also be transferred via blood transfusion, though increased testing by blood banks makes this a rarer occurrence. In recent years, therapies for HCV have improved such that most genotypes of HCV can be cured using a medication for 2-3 months. In prison populations, it is estimated that about 30% of people with HCV in the US pass through the prison system each year (Tan et al, 2008), and the prison setting teems with potential to spread the virus, such as tattoos administered with needles that could have been used on an HCV positive individual, or the sharing of supplies that an HCV positive person has used. Given this situation, prison would seem like an ideal place to help decrease the prevalence of this disease: people who are guaranteed health care and will have

consistent living arrangement for an extended period could receive the medication that could cure them in this period.

The reality is slightly more complicated. The newer treatments for HCV are very expensive, such that some facilities may be hesitant to test for the virus so they may forgo the cost of treatment (Rich et al, 2016) despite having therapies that are easy to take and have greater than 90% chance of curing patients. Modeling studies have shown that testing and treatment both with older first line regimens such as interferon and ribavirin and new regimens with sofosbuvir-based therapies combined with screening protocols are ultimately cost effective (Tan et al, 2008; He et al, 2016). This is because despite the cost of treatments, there is overall saving in the reduction of HCV and the cirrhosis and liver transplants associated with it over time. The other problem is that while HCV can be cured, patients can still be reinfected by the virus if they continue to take part in the risky behaviors from which they initially contracted HCV. While education when undergoing treatment may prevent this, it is something that needs to be considered when treating anyone for HCV. However, given the costly consequences of this infection and the fact that many of these persons will at some point be back in the general society makes correctional facilities an appropriate site for intervention and prevention of HCV.

Mycobacterium tuberculosis, a third common communicable disease in prisons commonly referred to as TB, is an acid fast bacterium that is spread through aerosolized droplets and infects the respiratory system. Most people with TB present asymptotically with the latent form of the disease in which they have been exposed to the bacterium but show no signs of active infection. Only about 10% of people will either

present with active TB infection or convert from latent to active TB. There is currently no vaccine offered in the US for TB, and while treatments for TB exist, they must be taken daily for many months and have unpleasant side effect profiles. The main risk factors for TB are impoverished and disadvantaged persons such as those who are homeless, and people who are in large, crowded environments such as prisons; it is still taught in medical school that prisoners are more likely to have TB, and may require testing if indicated. Usually when a patient suspected of having TB is admitted to the hospital, they are placed in a room in which negative pressure is maintained to prevent the spread of the bacteria outside of the room, and special filters are worn by the care team when entering these rooms. Diagnostics may include a tuberculin skin test, chest radiograph, sputum smear and/or culture, or immunologic testing in the setting of TB symptoms to confirm diagnosis. Prison settings are not likely to be constructed to have negative pressure rooms or filtering masks provided, and in especially low or middle income countries, diagnostic ability in facilities may be lacking and miss new cases of TB (Rich et al, 2016). Despite efforts to eradicate TB, there are now strains that are resistant to many or most therapies available to treat this infection, referred to as multi-drug resistant and extensively-drug resistant TB (MDR and XDR TB). Correctional facilities are ideal places for TB to spread as they have many people confined in a finite space; if an infected person coughs in a crowded area, multiple people can be infected simply by breathing in the air. Globally, rates of TB in prisons are greater than those in the general population, such as 17 times in Europe and 64 times more prevalent in Brazil (Dara et al, 2015). Another risk factor for TB is infection with HIV, which has been discussed above as higher in prison

populations, because it weakens the part of the immune system that usually helps to combat TB infection. Once again, prison represents a large amount of cases of this disease for which the hope is to eradicate it, and presents an opportunity to reduce the global prevalence of this disease with the right tools and protocols. Despite the rise of resistant strains, being vigilant about testing and treating TB in prison populations, including continuation of treatments as needed upon release, can make large strides in the greater effort to eradicate this disease so long as the time and resources are devoted to this cause.

In addition to these communicable diseases, prisons can also exacerbate or lead to substance abuse and mental health disorders. Prison represents a population that has high prevalence of substance abuse, from tobacco and alcohol to cocaine and opiates. Given the large number of persons incarcerated secondary to drug charges, it makes sense that many prisoners may suffer from substance abuse disorder. Due to the nature of prisons, the most common way these addictions are handled are through facility wide bans of substances. While bans may work while persons are incarcerated, they do not portend long-term sobriety as prisoners can revert to their old habits once released, which puts them at continued risk. One of the risks of intravenous drug use is the transference of blood borne pathogens, as discussed above, due to sharing of unsterile needles. One preventative measure used in many countries are needle exchange programs, in which people exchange used needles for sterile needles in an effort to prevent the spread of disease. The first of these programs date back to the 1980s when HIV first broke out, and have become more prevalent as data shows that are effective, so much so that the WHO

recommends the use of these programs. However, there are only a handful of studies that look into the efficacy of these programs in a prison setting, and none of these few studies occurred in the US (Lazarus et al, 2018). While the intention of these programs is good in nature, that the use of IV drugs is banned in prison makes implementing a program such as this untenable, as it allows for use to continue as new needles are supplied. There is also the consideration that needles could be used to harm other inmates or prison staff, and it is thought this is more likely in the US due to the increased rates of mental illness and violence in their prison systems than other countries (Okie, 2007).

The US has been struggling to contain what is now referred to as the opioid epidemic as deaths from overdoses rise. Given the substance use histories of prisoners, it is an especially prevalent problem in prisons. Opioids act on receptors that causes a high for the patient and have addictive properties, though after time, users need to take the drug just to prevent withdrawal, which itself can be life threatening. The most effective treatments we currently have is opioid replacement therapy, which utilizes agonists for the receptors that will prevent withdrawal, and can be weaned down, which include sublingual buprenorphine (Suboxone) and methadone; however, despite the evidence supporting their use, they are not always available in prison settings (Wakeman 2017). Part of this has to do with a bias against using an agonist that activates the same receptors, which some take to be equivalent to using opioids despite these medications being prescribed daily like many other medications; there may also be lobbying by companies for other treatments such as antagonist therapy with naltrexone. Given how great an issue this is in the country, prison represents a unique opportunity to stem the

epidemic by treating people in a controlled setting with access to healthcare providers. Without any treatment or opioid use, inmates will go through withdrawal, which may have complications that can lead to further harm; even so, most inmates will eventually be released and can attain access to more drugs. By not taking action to help these persons during incarceration, they may revert back to old habits upon release, which with changes to their tolerance for the drug may have fatal results.

Another common substance that has a higher prevalence in prisons is cigarette smoking. While cigarettes are legal in contrast to other recreational drugs such as cocaine and heroin, smoking increases a person's risk for multiple conditions including heart and lung disease. One study that looked at smoking in prisons versus the general community estimates that the prevalence approximately doubles in prison populations (Spaulding et al, 2018). In addition to the behavioral effects of cigarettes, they may also play a role as surrogate currency in prison. Many prisons in the US have bans on smoking, which help to reduce usage and improve inmate health; however, since the bans do not extend once released, persons are then free to take up smoking again and increase their risk. Interventions such as nicotine replacement therapy in addition to counseling options could potentially bring long-term behavioral changes, but this has not been studied in carceral settings. Same with opioids and many other addictions, incarceration has the potential to be a place of intervention that may lead to less substance use in the general population.

In line with substance abuse, there is a great amount of psychiatric illness seen in incarcerated populations. This could be due to precedent illness leading to incarceration, the effect of incarceration itself or a combination of the two. For example, Antisocial Personality Disorder leads to behaviors that are contrary to the norms of society, making persons with this condition more likely to partake in criminal behavior. On the contrary, a negative experience in prison could lead to post-traumatic stress disorder that did not exist prior to imprisonment. Systematic reviews seem to agree that there is a higher prevalence of nearly all forms of mental illness in prisons than the general community (Prins, 2014, Fazel, 2016). This said, trying to quantify mental illness is a difficult task; in general, psychiatrists follow the Diagnostic and Statistical Manual of Mental Disorders (DSM), which is now in its fifth iteration to diagnose mental illness; however, criteria and diagnoses have changed with each edition, and can be more subjective than tests to diagnose physiologic abnormalities.

There is so much literature about mental illness in prison populations that books could be written on the topic. As this is meant to be a broad review of correctional health, to expound further would go outside of the scope of this paper. The main takeaway is that there is much psychiatric illness in correctional facilities, and as with other conditions, diagnosis and treatment may not be optimal.

CHAPTER 5: PRISONER HEALTH STATUS POST-RELEASE

While there are many risks to prisoners while incarcerated, there are also risks upon being released. This period of transition from a correctional facility back into society poses many challenges as former inmates reclaim their independence and need to care for themselves. Pending the terms of their release, inmates must find a place to live, employment and confront their community all with the stigma of doing so as a former inmate. All of these factors make this period stressful for many former inmates, and as such can be a very volatile time.

Many studies have been done using data from surveys and from death records to try to assess prisoner health and mortality once released. It was found in a retrospective study in one state that an inmate's risk of death was 12.7 greater than someone equivalent in the general population (Binswanger et al, 2007). One quarter of the deaths reported in this study were due to drug overdoses, and 27 of the 103 overdoses occurred within two weeks of being released. The deaths of those released were noticeably greater than those who remained incarcerated. This may go back to prisons having a protective effect, as events such as homicides and motor vehicle accidents are less likely to occur in the confines of a correctional facility when compared to the general community. Binswanger followed this analysis with one that followed over 76,000 prisoners released within a 10 year period with over 4 years of follow-up, and found similar trends: The mortality rate of the post-incarceration population was 737 per 100 000 person-years, and that of those incarcerated were more than half that at 245 per 100 000 person-years. The leading cause

of death in this study was drug overdose, with 14.8% testing positive for opiates. Women were found to be the most likely to die from an overdose, though they note that all-cause mortality was reduced for Hispanic, African American and Asian former inmates relative to the non-incarcerated population (Binswanger, 2013).

Another evaluation of mortality in men released from a state's correctional facilities found that former white male inmates had more than expected deaths when compared to the general community and former black male inmates who were older (>50 years old) had less than expected deaths across all fields. This analysis also found that those who never graduated high school, used as a proxy for lower socioeconomic status, had lower mortality compared with other residents in the community (Rosen et al, 2008). Another study used data of state prisoners in Pennsylvania over a six-year period to analyze the risk of mortality and factors associated with mortality across race and ethnicity (Testa et al, 2018). Their study confirmed the previous finding that whites are at increased risk of death compared to black and Hispanic populations. Whites were most likely to die from unintentional accidents such as motor vehicle accidents and drug overdoses, and also committed the most suicides of the three groups. In contrast, black populations were more likely to die from homicide and committed no suicides during the study period. In general, it was found that mental health issues, multiple arrests and prison misconducts increased the risk of mortality; it however found the re-incarceration decreased the risk of death. This again reinforces the point that prisons may have a protective effect for some groups from the harms of the outside world.

One study looked to see if the length of incarceration had any effect on mortality (Patterson, 2012). By using data on New York parolees from 1989-1993 with a 10-year follow up, she determined there was approximately a 15.6% increased risk of mortality for each year of sentence; she also modeled that as a former inmate survives their parole, their mortality risk eventually reaches that of the general population. There were many limits to this study and that data is now many years old, but the premise is not unreasonable. Incarceration can be a stressful ordeal, adjusting to a new living situation and having to coexist with others and avoid potential conflicts. Stress on its own can lead to unhealthy habits such as poor nutrition, poor sleep hygiene and substance use, but stress also modulates endocrine and immune responses. This effect has been shown to increase risk for infections and inflammatory states (Glaser and Kiecolt-Glaser, 2005), which could account for a dose response of prison sentence to mortality.

The main issue with these analyses is that they rely on administrative data that is easily accessible to assess the outcome of death following incarceration. These methods must assume that all of the data is input into databases correctly and are accurate. Most if not all of these studies take place in a single state's prison system, which means that some former inmates may be lost in these analyses by moving to another state. The location may also alter the cause of death, such that if more drugs are available in a certain place, overdoses may be more likely to occur whereas other places may have more guns and more homicides likely to occur. Another innocuous factor that may affect some of the data on mortality may be based on the use of "compassionate release". Per the Federal Bureau of Prisons, compassionate release is considered usually in elderly

persons aged 65 and over with terminal or debilitating disease who have served a majority of their sentence and are unlikely to reoffend. While the thought of this provision is considerate in its inception, it has the unintended consequence of increasing the mortality of released prisoners/the general community instead of that of the incarcerated population (Massoglia and Pridemore, 2015; Spaulding et al, 2011). Despite the limitations of each individual study, that many authors found similar results in different settings suggest that mortality is increased after being incarcerated, which is a very striking indicator of the health of this subpopulation of persons. For any number of reasons, former inmates appear to be worse off in terms of mortality following incarceration. This could be related to stresses of being incarcerated, mental health issues, a communicable disease or something we do not yet understand.

CHAPTER 6: WHERE THINGS ARE GOING: TELEMEDICINE

One advent that may be improving the health of prisoners is the evolution of telemedicine. Access to specialists for certain conditions, such as psychiatrists to aid with mental health issues, might be limited in the prison setting based on the location of the facility and the amount of persons who need the care. Even in areas where specialists are accessible, prisoners need to be accompanied by guards and restrained as they are transported via prison transport vehicle to the specialist, adding both monetary and emotional costs to seeing an outside specialist that those in the general community may not face. Many resources are typically used when transporting a prisoner, from planning multiple routes to the hospital to notifying hospital personnel of the visit, all of which are to give the patient the care they need while preventing harm to the public. In one instance in 2006, a man escaped custody while being transported for treatment of mild sprains and caused a campus lockdown on a university campus and killed multiple people before he was apprehended (Mason et al, 2013). Being transported out of the confines of the correctional facility may allow for more opportunity to escape, which means a lot of resources are necessary solely for getting them to a specialist not available on site. Telemedicine is a possible solution to these issues.

Telemedicine provides a way to connect incarcerated persons to a specialist using encrypted video and telecommunication. These setups can include tools such as electronic stethoscopes and retinal cameras to best assess patients remotely. Some of the first attempts to utilize telemedicine models in the 1990s found it to be effective at providing care without the need for prisoner transport and associated costs, and had

generally positive feedback from respondents (Brecht et al, 1996). One study in Maryland invested in an open architecture telemedicine program in which care in 10 specialties could be delivered to their prisons; having estimated the costs of transporting patients to such appointments in the traditional manner, they found with this model that they began saving money after 32 months of its use, having predicted it would take 48 months to reach that point (Rappaport et al, 2018). The system met all of their expectations. It reduced cost by preventing multiple visits to specialists, increased public safety by decreasing the number of trips outside of the prison and showed that investing in this type of system would be cost effective in a reasonable amount of time. Their chief example is that a patient seeing a cardiologist could be evaluated via telemedicine, and if they required a catheterization, they could go to the hospital for the procedure and then return to the prison for a telemedicine follow up, reducing what could have been three hospital visits to one without sacrificing prisoner well-being. In addition, some of these systems may have an Electronic Medical Record (EMR) system that can follow the patient if they are transferred to another facility or released, allowing for continuity of care.

One of the best examples of telemedicine use in prison systems is with HIV patients. Since its discovery back in the 1980s, there now exist many therapies to treat HIV, including single pill antiretroviral therapies containing up to four medications that need to be taken once per day to ensure a sustained virologic response. However, patients with HIV are still prone to certain conditions, and may have adverse side effects to ART regimens, which makes follow up with a provider who is specialized to care for HIV patients imperative. Young et al found that a larger proportion of inmates achieved

complete virologic suppression when compared to those who did not receive these sessions irrespective of virologic suppression or CD4 count at the beginning of this retrospective study (Young et al, 2014; Young and Patel, 2015). In addition, a retrospective study analyzing the effect of telemedicine on a diabetic also found that the population improved after these sessions, with modest but significant decrease in HbA1c, blood pressure and lipids (Kassar et al, 2016). These studies help to show that for people with certain disease that require monitoring by specialists, telemedicine supplies an avenue that may otherwise be limited to spur better health outcomes while incarcerated.

Another area in which telemedicine has great potential is telepsychiatry. As previously mentioned, mental health is a serious issue in prison populations, and its prevalence may correlate to why persons become incarcerated in the first place. One review searched the literature regarding uses of telepsychiatry and interviewed a practitioner utilizing this means of practice. The review found that telepsychiatry enhances access to care to all inmates while an average saving costs over time due to reduced provider travel (Deslich et al, 2013). The main author contended that the only difference in the care provided was the means by which it had been delivered, the main issues being technical in nature. Given the large prevalence of mental illness in prison, telepsychiatry may be a boon to prisons in stemming the negative effects of such illness in this population, and potentially the greater community upon inmate release.

CHAPTER 7: BIOETHICAL ANALYSIS

Having looked at the state of prison health based on a review of the literature, it is now time to consider the bioethics of this situation. Many things are immutable about incarceration mainly because this system is based on laws and precedents set forth by federal and states' government. They determine what offenses deserve the punishment of having one's body held in custody for a given period of time. The problem then is that once incarcerated, we as a society largely forget about this large swath of people, both individually and as academics. While these persons may have violated certain laws and performed "bad acts", they are more than just that one part of their lives and are still humans susceptible to illness. As a learning health professional, there were certain situations in which a care provider may have inquired about why a patient had been incarcerated. The truth is, in nearly all cases that information is useless medically, as the algorithm blood pressure management of someone who possessed a small amount of marijuana is most like the same as a burglar. The main point is that in this society, the incarceration itself is the penance for wrongdoing, and allowing for further harm through subpar medical access would be a lapse in our ethical duties.

This said, the main bioethical inquiries of this area revolve around the concepts of beneficence and non-maleficence doing good and not doing harm. These are at the core of medical practice and part of the Hippocratic Oath that doctors undertake, and are rather common sense aims. However, prisoners are usually seen in a negative light in most circumstances given that they are there as punishment for a crime they have committed. This potential bias can have wide reaching consequences, from having

trouble recruiting health professionals to care for this population, to appropriate treatment not being given, which in turn relates to justice, or the distribution of goods and services to a population. This supply can be limited not just by perceptions, but also by the budget allotted for prisoner health, which is separate in the US from funds such as Medicare and Medicaid and part of the department of corrections budget. The ideal goal would be to provide indicated therapies to prisoners to prevent worsening conditions and decrease disease burden, but these inherent biases may hinder this goal.

Upon doing this literature review of prison healthcare, three main areas of change to achieve better care for this population seem apparent. The first involves the need for more primary research regarding prisoner health. The next involves the need for more education of prisoners of their health conditions and how to manage them. The last involves the need for linkage to care upon release from prison.

Primary Research of Prisoner Health

One aspect of the literature that seemed rather consistent was the lack of primary research on prisoners. Most studies used survey data or death records to evaluate prisoner morbidity and mortality, with minimal to no interaction with this population itself. One systematic review found only 95 randomized clinical trials performed in a prison setting, and of these, only half reported outcomes after release (Kouyoumdijan et al, 2015). Kinner and Young analyzed how limited the research is relative to all of the health issues facing prisoners, with health funding for criminal justice disproportionately going solely to HIV research, and how there is very little longitudinal research in this population to track outcomes over time. There do exist barriers to studying this population. One goes back to

the concept that the jobs and goals of corrections administrators do not always align with those of health professionals. Research requires a release of information that may reflect an environment, which might be unsettling to those who help run correctional facilities. However, the biggest barrier is probably that self-imposed by bioethicists.

Historically, captive persons have been used for experimentation for the betterment of the rest of society. Prisoners by definition have less liberty and reduced autonomy, because of which they may agree to participate in studies potentially for a false belief that it may aid in their legal issues in a seemingly coercive situation, and as such are considered a vulnerable population; alternatively, there is the thought that participating in research may be the only way to attain adequate treatment. For these reasons and more, ethics committees may place multiple barriers to prevent this population from being taken advantage of. This approach does work to protect prisoners from situations such as testing new drugs with unknown side effect profiles on inmates which if effective may not be available to them following the end of the study. The problem is that while prisoners may be a vulnerable population, they are also a unique one. They are more prone to communicable diseases such as tuberculosis and hepatitis C than the general population, and interact with healthcare differently than those not incarcerated. While guaranteed healthcare, the scope of that care might be limited and access to specialty care complicated. And the research that exists shows that this population has increased mortality after release than compared to the non-incarcerated population. Given all of these differences that have been shown in studies thus far, more

research is needed to both identify the factors that make this population different and how to treat or prevent this.

Apa et al, 2012 lay out well several of the barriers that exist to do research involving inmates. Proposals must be overseen by a prisoner advocate, and approved by both an institutional review board (IRB) and the appropriate department of corrections office. Assuming this is successful, researchers need to inform the staff of the project, what it will entail and how they can aid in the process. Subjects for the study need to be recruited in a fair manner, which may be difficult if significant swaths of the community decline to enter the study. In addition, one of the biggest challenges is assuring confidentiality of responses and results; as an example, if a patient has used recreational drugs or committed a violent act, they may be less willing to disclose the information if they fear it will be conveyed to someone who may utilize it against them. The biggest step researchers can take is to develop rapport both with the staff and with the inmate population at these facilities. By gaining the trust of the population as a physician would in a clinic environment, this population may be more open to honest communication. Though there exist additional hurdles to overcome when compared to research on other populations, it is prudent to undertake this.

In addition to the structural challenges to this type of research, there is also the question of whether this population perceives that they are exploited in clinical research studies and thus deservedly need protections in place. Christopher et al, 2016 asked 70 prisoners in one facility who were involved in a separate clinical studies about how they perceived their involvement in research; about one quarter of participants felt like the

studies took advantage of the fact that they were in prison, but only one agreed that they were being personally exploited. Over half of the participants in this study said that being part of a clinical study was the only way to get the treatment they needed, and all but one participant agreed there should be more research with prisoners. While this study was limited in its scope and sample size, it showed that prisoners largely did not feel like they were exploited by participating in research studies. This study also represents an additional direction for future studies in doing more qualitative research, in which the perceptions of prisoners are collected.

Since undertaking primary research with this population is lacking, asking prisoners about their perceptions of taking part in studies while incarcerated as Christopher et al 2016 did can help guide how to go about starting new studies. Apa et al found that talking to a committee of prisoners helped with recruiting a large swath of the population into their study because they felt involved in the process. I believe that instituting more qualitative research examining the themes of prisoner perspectives can help to supplement the quantitative data we have to better understand what is going on and reinforce to inmates that their contributions are meaningful and significant. One study used semi-structured interviews with recently released prisoners with cardiovascular disease risk factors to understand how correctional facilities manage these patients (Thomas et al, 2016). Through this, the authors found four main themes including the dual role of providers in prison settings and how support structures helped patients keep up with their regimens. As a completely qualitative study on a small sample of persons, this led to results that could influence management of cardiovascular disease

in prisons and lead to better outcomes. There are many conditions and facilities for which similar methods can be applied to find major themes that could improve correctional health outcomes. Even going one step further and using mixed method approaches may be beneficial, as they have been shown to sometimes uncover more than one method on their own in non-correctional settings (Moffat et al, 2006). By doing so, we can measure both how prisoners might respond physiologically to certain interventions and how they perceive the effect of the intervention.

By not undertaking this research, we fail to do right by the incarcerated population. *Estelle vs Gamble* led to the guarantee of healthcare because to not do so would be cruel and unusual, as suffering from illness would be prolonged. Since healthcare is based on evidence based medicine and practice, it should seem that a logical extension of this finding would be that to deny evidence gathering relevant to this population would lead to health standards that inevitably cause subpar care, and thus, cruel and unusual circumstances. What has been addressed well thus far is that incarcerated populations are disproportionately affected by certain conditions such as communicable diseases, mental health and substance abuse and violence and have higher mortality upon release; what needs to follow are studies that test hypotheses as to why these differences occur, and then to test interventions that could improve their health (Binswanger et al, 2012). For example, there were a number of HCV studies that used models that made certain assumptions to estimate possible health savings over time; instead, why not treat a subset of prisoners and measure actual outcomes that could influence policy and drug availability moving forward? Even if the studies required

extensive funding, if their findings both led to better health outcomes and increased savings in reduced care later, would that not be worth it?

Prison as a Place of Education and Intervention

Prison also represent an opportunity for intervention, both in health maintenance and literacy. As mentioned before, many persons who become incarcerated may not have followed with a primary care physician or suffered from mental illness or substance abuse, which can be addressed once incarcerated. However, once they are released, their health is back in their own hands. Binswanger and her coauthors in 2012 acknowledged this both in realizing the limits of current research and that at multiple points during the correctional process there are potential points of intervention from the initial intake interview to linkage of care upon release (Binswanger et al, 2012). These can include treatment of chronic diseases such as hypertension, diabetes or HIV, substance abuse or mental illness that have high prevalence in prison population but also proven therapies.

While some facilities may already do this, educating prisoners about their health and why they should keep certain habits can cement an inflection point in their health care as opposed to an ephemeral change that reverses when they are released. The first step would be to understand the health literacy of each prisoner, and accordingly use methods to teach them both about different conditions and the harms they cause, but also about medications and lifestyle modifications that can prevent debilitating diseases. In one sense, one could consider low health literacy to be another comorbidity encountered in correctional facilities, and just as treating HIV or HCV could lead to less costs after release, so too can providing prisoners the tools to lead healthier lives.

The benefit of education could also extend beyond the individual prisoners. As previously stated, the incarceration of an individual has reverberating effects on their family and community, as they are unable to aid these groups during their sentence. While the cause of this harm is legal in nature, this could be partially compensated by educating prisoners. If we can assume that prisoners who have been educated about their health and healthy habits to maintain will spread this knowledge to their family and possibly to their community, it could lead to potential health improvements in others, in whom even modest improvements would be welcome by health professionals.

Given the reflection of disparities of certain communities in the prison population and the concept of a “felon class” arising from this, being able to effect rehabilitative change on prisoners could have significant impact in larger communities. One basis for this is the Cure Violence Model that is being used to stem epidemics of violence, especially gun violence, in communities and prison settings. A central part of this model is the use of “credible messengers” who can relate to the communities with high amounts of violence, better relay the messages of initiatives, and mediate best between two parties in order to change norms. These messengers include violence interrupters and outreach workers who form relationships within communities and work to stem violent acts; this model has been implemented in multiple cities with preliminary signs of success (Butts et al 2015). This model was implemented in a youth prison in the UK in which inmates were hired as credible messengers, and during the year this program was implemented, all forms of violence, including disciplinary measures from the institution, decreased (Ransford et al, 2016). They also found that since some violence from prisons spreads to

communities, there were some qualitative findings of community violence being prevented by mediators within the prisons. If a similar concept is used for prisoners and former prisoners to relay information regarding health care, it may be possible for community health and correctional health to improve through the use of such credible messengers. The first step towards this goal would be to provide education about health and health habits, and to build up these potential messengers during their incarceration.

Linkage to Care upon Release

A final but related way to improve inmate health is to connect them to health services upon release. While some areas have programs in place to help prisoners reacclimate to life outside of a correctional facility, it is not standard. Once released, prisoners technically have the freedom to seek out healthcare as everyone else, such as at a PCP's office, urgent care or an emergency room. However, if a person did not seek care prior to incarceration and even assuming they received education and want to be involved in their care, they may not know where to do so. In addition, they will need to seek out health insurance to help pay for costs, which many people in the US receive through their employer and can be a complicated process to apply for as an individual. This post-release period is also notorious for increased mortality in this population, with abstinence from drugs being a large component; because overdose mortality spikes in the weeks following release, having access to resources to both prevent relapses and to manage the stresses of being released back into the world are critical. In addition, prisoners may simply have chronic conditions such as hypertension or diabetes that require monitoring to prevent adverse outcomes secondary to medical noncompliance.

There have been some studies regarding this transitional period and linkage to care. One study found that prisoners linked to primary care program had fewer emergency department visits and did follow up at least once within a one-year period (Wang et al, 2012). One helpful aspect in such a program is the use of former prisoners as health care representatives, who could help newly released inmates get the care they needed having been through a similar situation by providing peer support (La Cerra et al, 2017). This solves multiple problems, as it both helps newly released patients get connected to care while also offering employment opportunities to former inmates who wish to help improve the health of others. This goal of connecting this population back into care is also aided by the advent of electronic medical records. These systems allow for the protected sharing of patient information across an institution and usually allow other institutions access with the patient's permission. If correctional facilities used systems compatible with local health care centers, it can allow a patient's medical records to be available once they find a new provider.

Next Steps

Based on these conclusions, I think the next steps to take are as follows. First, we should evaluate prisoner's understanding of his or her own health and conditions, and their perceptions of the care available to them in prison settings. Knowing these perceptions will allow for educational programming that will meet them at their level and help fill in the gaps in their knowledge, which can occur over multiple sessions. During follow-up sessions, their comprehension of their health can be reevaluated to see if the methods used are having an effect, and can modify as needed. While it would be difficult

to track this progress upon release, an educational program like this may also be the opportunity to initiate a “Cure Violence” model for healthcare. This could be by finding credible messengers to act as “health liaisons” both in prisons and in communities. In prisons, having liaisons to help other inmates maintain their health and be a bridge to the health staff at the prison. In communities, having a health liaison who can promote healthy behaviors may have a similar effect and lead to better compliance and outcomes in these communities, though this would be hard to enumerate.

These initial efforts may also aid in connecting inmates to care upon release. As more inmates become more informed about their health and how to manage it, and if health liaisons come about, this may aid in patients seeking care upon release, with some aiding others through the process. The bulk of connecting to care will likely be through community and reentry programs, though collaborations between prisons and local care systems may be another avenue; either way, the data already shows that connecting to a provider reduces ED visits, and likely leads to better health outcomes. All of these options moving forward represent avenues of research that will help medical professionals better understand this population, and lead to better health outcomes in these prison populations.

CHAPTER 8: CONCLUSION

In an ideal world, the solution to this problem would be to achieve health equity in all places. Through equivalency, that would ensure that prison populations receive the same healthcare as those in the general community and have easy access to care upon release. However, while a noble goal, it is one that needs to be fought on a policy basis, and is largely an uphill battle. This may also ignore the fact that just being in prison alone increases mortality when compared to the non-institutionalized population, which suggests that prisoners may need extra care. In addition, healthcare in general has been a politically charged topic in the US without further consideration of the correctional population, which will likely persist until the larger issue resolves. Other policy solutions proposed include reducing the number of inmates incarcerated (Rich et al, 2014), which would require changes in sentencing on the legal end of criminal justice. Other thoughts include requiring these health facilities to undergo accreditation, which would allow outcomes to be better measured and insure consequences for failing to meet a set of standards. While many possible solutions exist, it is not likely any will happen quickly. The best any medical provider can do on their own is be more aware of the barriers to care and experience of the incarcerated or formerly incarcerated patients and tailor their care based on this knowledge.

By no means is this an exhaustive review of the health of prisons, but rather a framework to build upon. For one, the goal of this writing is to address the general issues regarding prisoner access to health and what could be done to improve it. For example, mental health and substance abuse issues are prevalent in both the general community

and in prisons, and many papers could solely focus on these aspects of prisoner health. Another area not addressed here is the health of female prisoners, especially concerning pregnancy while incarcerated. There is also the fact that with some prisoners receiving long sentences, the incarcerated population is aging, and will develop more health problems as they age, requiring more interventions. While some reviews and data analyses exist regarding these topics, more needs to be done to try to improve the health outcomes of this patient population rather than continually point out the disparities that exist. From gauging the effects of health education in prison to the reductions of substance abuse with replacement therapies to asking prisoners bluntly what they think about their health and what resources they need to improve it, investing in studies to identify what will lead to better health outcomes in this particular subset of the population could improve the overall health of everyone. Being able to show data to this effect may help progress the policy issues that surround prisoner health.

While there is still a lot that can and should be done for the health of the prison population in the US and worldwide, there is already room for hope. The increased utilization and capabilities of telemedicine could continue to improve access to specialty and reduce the costs of transport while leading to better health outcomes. More prisons may allow for the treatment of diseases such as HCV in Philadelphia (Melamed, 2018). Nevertheless, until this becomes a universal reality, more needs to be done to help understand what can be done to limit any additional health risk in the patient population while also treating them appropriately in a timely manner. The criminal justice system can be a very controversial and political issue, but caught in the middle are the people

who compose this population. Per the literature, most of those incarcerated will be released to the general population at some point, where, as of this writing, they will not have guaranteed access to healthcare and will be under the responsibility of local health providers; given this, prison health truly is public health. I think most people would agree that being able to avoid a liver transplant by treating HCV or preventing hospital stays by continuing an HIV regimen would be good things that will save costs later. As I finish this review, I encountered a young patient in the hospital with metastatic cancer initially diagnosed while incarcerated, and per the history, this patient had to miss certain treatment sessions for court appearances or other reasons, and passed away during this hospital admission. While it may never be known whether these treatments may have made a difference, the idea that even one person should die because they could not get adequate care should be unfathomable, and at minimum, we must be more cognizant of this population and the potential for improvement that still exists.

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APPENDIX A

Bureau of Justice Definitions	
Term	BJS Definition
Arrest	The act of detaining in legal custody. An "arrest" is the deprivation of a person's liberty by legal authority in response to a criminal charge.
Community corrections	The supervision of criminal offenders in the resident population, as opposed to confining offenders in secure correctional facilities. The two main types of community corrections supervision are probation and parole. Community corrections is also referred to as community supervision.
Custody	To have custody of a prisoner, a state or the Federal Bureau of Prisons (BOP) must physically hold that person in one of its facilities. A locality, state, or the BOP may hold inmates over whom a different government maintains jurisdiction.
Discharge	Individuals exiting parole supervision. Successful discharges include persons who have completed the term of conditional supervision. Unsuccessful discharges include revocations of parole, returns to prison or jail, and absconders. Parolees who are transferred to other jurisdictions and those who die while under supervision are not included in the calculation of success/failure rates.
Ethnicity	A classification based on Hispanic culture and origin, regardless of race. Persons are asked directly if they are Spanish, Hispanic, or Latino before being asked about their racial category.
Federal Supervised Release	Established by the Sentencing Reform Act of 1984 (SRA), Federal supervised release is a term of conditional community supervision set by the court at the time of sentencing. The SRA also abolished release by a parole board, required a determinate sentence term, and limited the amount of good time that can be credited toward the sentence.
Felony	An offense, as murder or burglary, of graver character than those called misdemeanors, especially those commonly punished in the U.S. by imprisonment for more than a year.
Felony or serious misdemeanor	The category of offenses for which fingerprints and criminal history information are accepted by the FBI and entered in the Bureau's files, including the Interstate Identification Index (III) system. Serious misdemeanor is defined to exclude certain minor offenses, such as drunkenness or minor traffic offenses.
Homicide	Killing of a human being by another human being. The arrest-related death (ARD) program gathers data on homicides that occur during an arrest process regardless of whether the homicide was attributed to law enforcement personnel or a civilian. Homicides by law enforcement personnel were included in the ARD collection because they resulted from a direct use of force by law enforcement officers. However, not all homicides by law

	enforcement personnel involve shooting deaths. Other types of homicides by law enforcement officers included deaths attributed to asphyxia during restraint, injuries sustained during an altercation, and the use of technologies such as, chemical sprays and conducted energy devices
Imprisoned population	The population of inmates confined in prison or other facilities under the jurisdiction of the state or Federal Bureau of Prisons (BOP).
Imprisonment rate	The number of prisoners under state or federal jurisdiction sentenced to more than one year, per 100,000 U.S. residents.
Incarcerated population	Incarcerated population is the population of inmates confined in a prison or a jail. This may also include halfway houses, boot camps, weekend programs, and other facilities in which individuals are locked up overnight.
Indian country jails	Indian country adult and juvenile detention centers, jails, and other correctional facilities operated by tribal authorities or the Bureau of Indian Affairs, U.S. Department of the Interior.
Institutional corrections	Persons housed in secure correctional facilities. There are many different types of correctional facilities, operated by different government entities. Local jails are operated by county or municipal authorities, and typically hold offenders for short periods ranging from a single day to a year. Prisons serve as long-term confinement facilities and are only run by the 50 state governments and the Federal Bureau of Prisons (BOP). Private correctional facilities also operate under contracts for a wide variety of local, state, and federal agencies. Other correctional facilities are operated by special jurisdictions, including the U.S. Armed Forces, U.S. territories, and federal agencies, such as U.S. Immigration and Customs Enforcement (ICE).
Jail inmates	Offenders confined in short-term facilities that are usually administered by a local law enforcement agency and that are intended for adults but sometimes hold juveniles before or after adjudication. Jail inmates usually have a sentence of less than 1 year or are being held pending a trial, awaiting sentencing, or awaiting transfer to other facilities after a conviction.
Jurisdiction count	Prisoners under legal authority of state or federal correctional authorities who are housed in prison facilities (e.g., prisons, penitentiaries, and correctional institutions; boot camps; prison farms; reception, diagnostic, and classification centers; release centers, halfway houses and road camps; forestry and conservation camps; vocational training facilities; prison hospitals; and drug and alcohol treatment facilities for prisoners), regardless of which government entity physically holds them. This number also includes prisoners who are temporarily absent (fewer than 30 days), out to court, or on work release; housed in local jails, private facilities, and other states or federal facilities; and serving a sentence for two jurisdictions at the same time. This count excludes prisoners held in a state or federal facility for another state or the Federal Bureau of Prisons (BOP). However, prisoners housed in another state and under the legal authority of the governing state are included.
Master Name Index (MNI)	A subject identification index maintained by criminal history record repositories that includes names and other identifiers for each person about whom a record is held in the systems. As of 1999, only one state did not have at least a partially automated MNI. Almost all states (45) had fully automated MNIs. The automated name index is the key to rapidly

	identifying persons who have criminal records for such purposes as presale firearm checks, criminal investigations, or bail setting. MNIs may include "felony flags," which indicate whether record subjects have arrests or convictions for felony offenses.
Movement	In corrections, a movement refers to an admission or a release from a status, such as prisoner, parolee, or probationer. Unless specifically noted, a transfer between facilities does not count as a movement.
Natural	Deaths attributed to natural agents such as illness or internal malfunctions of the body. The majority of arrest-related deaths recorded as "natural" were due to heart complications. Other natural deaths included complications from long term illnesses.
Operational capacity	The number of inmates that can be accommodated based on a facility's staff, existing programs, and services.
Other type of release	<i>Emergency release—Defendants are released in response to a court order placing limits on a jail's population</i>
Parole	Parole refers to criminal offenders who are conditionally released from prison to serve the remaining portion of their sentence in the community
Prison	Compared to jail facilities, prisons are longer-term facilities owned by a state or by the federal government. Prisons typically hold felons and persons with sentences of more than a year; however, the sentence length may vary by state
Prisoners	Prisoners are inmates confined in long-term facilities run by the state or federal government or private agencies. They are typically felons who have received a sentence of incarceration of 1 year or more.
Probation	Probation refers to adult offenders whom courts place on supervision in the community through a probation agency, generally in lieu of incarceration. However, some jurisdictions do sentence probationers to a combined short-term incarceration sentence immediately followed by probation, which is referred to as a split sentence. Probationers can have a number of different supervision statuses, including active supervision, which means they are required to regularly report to a probation authority in person, by mail, or by telephone. Some probationers may be on an inactive status, which means they are excluded from regularly reporting, and that could be due to a number of reasons. For instance, some probationers may be placed on inactive status immediately because the severity of the offense was minimal or some may receive a reduction in supervision and therefore may be moved from an active to inactive status. Other supervision statuses include probationers who only have financial conditions remaining, have absconded, or who have active warrants. In many instances, while on probation, offenders are required to fulfill certain conditions of their supervision (e.g., payment of fines, fees or court costs, participation in treatment programs) and adhere to specific rules of conduct while in the community. Failure to comply with any conditions can result in incarceration.
Race	For the National Crime Victimization Survey, respondents self-identify with one or more racial categories. Racial categories include white only, black only, and other race only. The "other" category is composed of Asians, Pacific Islanders, American Indians, Aleuts, and Eskimos, if only one of these races is given. Persons reporting two or more races are included in the category of "more than one race." The race of the head of household is used

	for computing household crime demographics.
Sentenced prisoners	Prisoners under the jurisdiction of state and federal correctional authorities who have been given a sentence of more than 1 year.