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THESIS

THE AMERICAN CORRECTIONAL HEALTHCARE SYSTEM IS AILING: TECHNOLOGY INNOVATION AS A PRESCRIPTION FOR PENAL SYSTEM HEALTHCARE DELIVERY

by

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The U.S. corrections industry has a history of poor inmate healthcare delivery, with penal-system reform advocates and other stakeholders highlighting these failures. Inmates receiving poor medical and psychiatric care behind jail walls experience greater difficulty becoming self-sufficient, and this situation contributes to the nation's recidivism problem. Caring for inmates is often a neglected proposition and because of this, the U.S. courts impose legal requirements that inmates receive healthcare. Access to quality healthcare specialists for inmates led the penal system to investigate and implement use of telehealth during the 1990s. This thesis investigates how the evolving field of telehealth and emerging technologies may contribute to improved inmate healthcare in the future. A myriad of factors discussed in the thesis pose as challenges to implementing innovations that could improve penal system healthcare. For all the challenges confronting corrections administrators and criminal reform advocates, the corrections system is at a crossroads, as there is potential to modernize jail facilities and use technology to improve the safety and healthcare of inmates, corrections officers and those who render care. Investing in technology infrastructure that supports emerging technologies could also facilitate simpler integration of future innovations that address suicide, mental illness and other medical health maladies that would otherwise go unaddressed.

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THE AMERICAN CORRECTIONAL HEALTHCARE SYSTEM IS AILING: TECHNOLOGY INNOVATION AS A PRESCRIPTION FOR PENAL SYSTEM HEALTHCARE DELIVERY

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ABSTRACT

The U.S. corrections industry has a history of poor inmate healthcare delivery, with penal-system reform advocates and other stakeholders highlighting these failures. Inmates receiving poor medical and psychiatric care behind jail walls experience greater difficulty becoming self-sufficient, and this situation contributes to the nation's recidivism problem. Caring for inmates is often a neglected proposition and because of this, the U.S. courts impose legal requirements that inmates receive healthcare. Access to quality healthcare specialists for inmates led the penal system to investigate and implement use of telehealth during the 1990s. This thesis investigates how the evolving field of telehealth and emerging technologies may contribute to improved inmate healthcare in the future. A myriad of factors discussed in the thesis pose as challenges to implementing innovations that could improve penal system healthcare. For all the challenges confronting corrections administrators and criminal reform advocates, the corrections system is at a crossroads, as there is potential to modernize jail facilities and use technology to improve the safety and healthcare of inmates, corrections officers and those who render care. Investing in technology infrastructure that supports emerging technologies could also facilitate simpler integration of future innovations that address suicide, mental illness and other medical health maladies that would otherwise go unaddressed.

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LIST OF ACRONYMS AND ABBREVIATIONS

AACP	The American Association for Correctional Psychology
ACA	American Correctional Association
ACA	Affordable Care Act
AI	artificial intelligence
APHA	American Public Health Association
AR	augmented reality
ATA	American Telemedicine Association
BI	behavioral intention
BOP	Federal Bureau of Prisons
CBT	cognitive behavioral therapy
CCHT	care coordination/home telehealth
CMS	Centers for Medicare and Medicaid Services
DHHS	U.S. Department of Health and Human Services
EHR	electronic health records
GAF	global assessment of functioning
HIE	health information exchanges
HIPAA	The Health Insurance Portability and Accountability Act of 1996
HITECH	Health Information Technology for Economic and Clinical Health Act
IACFP	The International Association for Correctional and Forensic Psychology
IATV	interactive television
ICT	information and communication technology
IoT	internet of things
ISF	interstitial fluid
IP	internet protocol
IT	information technology
MU	meaningful use
NACo	National Association of Counties
NCCHC	National Commission on Correctional Health Care
PEOU	perceived ease-of-use
PU	perceived usefulness

QA	quality assurance
RPM	remote patient monitoring
SIT	social identity theory
TAM	technology acceptance model
UTAUT	unified theory of acceptance and use of technology
VHA	Veterans Health Administration
VLAN	virtual local area network
VPN	virtual private network
VR	virtual reality
WBAN	wireless body area network
WIFI	wireless fidelity

EXECUTIVE SUMMARY

The U.S. correctional system continues to struggle in its delivery of healthcare to inmates, and at times, provision of basic healthcare has resulted from legal action.[1] Evaluative analysis of research and literature covering healthcare delivery afforded to the public contrasted against penal system healthcare indicates gaps could be closed through use of existing and emerging technologies. This situation contributes to a cycle of recidivism, as inmates are not appropriately rehabilitated in a way that permits them to become self-sufficient upon release. Poor healthcare delivery is compounded by a lack of electronic health records that would improve accessibility to medical histories and save time providing care to former inmates.[2]

Telehealth has been used in the correctional system for many years, but these proven solutions and other emerging technologies could serve to improve healthcare in the penal system at all levels. While technology solutions afford opportunities to improve inmate healthcare screening, monitoring and ongoing care, investment in required information technology (IT) infrastructure that supports innovative solutions makes it incumbent on correctional system administrators to support investment in these areas. Technology implementations require a serious commitment of human resources and a change in management techniques and organizational leadership to cultivate workplace environments that will embrace needed reform.

This thesis addresses the question: How can telemedicine and emerging technologies help improve healthcare in the penal system? Technology solutions continue to proliferate and to be leveraged for improvements in healthcare. In the penal setting, barriers to technology use are explored to determine how correctional system

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[1] Josiah D. Rich, Scott A. Allen, and Brie A. Williams, "The Need for Higher Standards in Correctional Healthcare to Improve Public Health," *Journal of General Internal Medicine* 30, no. 4 (April 2015): 503, https://doi.org/10.1007/s11606-014-3142-0.

[2] Alyssa Hinchman et al., "Implementation of Health Information Exchange at the Pima County Adult Detention Complex: Lessons Learned," *Journal of Correctional Health Care* 24, no. 2 (April 1, 2018): 195, https://doi.org/10.1177/1078345818764127.

administrators and criminal justice reform advocates can overcome them. Unless these barriers are strategically addressed, penal system reformists will continue to miss opportunities to improve inmate healthcare while reducing recidivism rates plaguing society.

This thesis uses a qualitative assessment methodology to explore literature on topics influencing inmate healthcare delivery to understand how each contributes to or impedes this American correctional system effort. The myriad elements affecting quality inmate healthcare are also analyzed under the lens of interconnectivity with technology solutions serving to facilitate improved healthcare. When considering each of the dimensions bearing on inmate healthcare delivery, correctional administrators must also remain cognizant of how disruptive technology integrations will require modification to correctional operations workflow and procedures.

Findings from the research include discovery of opportunities to multiply the effect of telehealth use as electronic health records could help to capture health interventions and chronicle care that could be easily accessed and shared with other providers. The risk of cybersecurity breaches also looms as a cause for concern when correctional system administrators consider use of technologies to promote inmate healthcare, but the literature reveals approaches to limiting this risk. To ensure successful integration of innovative health technologies, a considerable investment in human and financial resources is required. The COVID-19 pandemic propelled telehealth as a mode of healthcare delivery that also serves to prevent the spread of disease. Because of the exigent circumstances leading to accelerated use of telehealth, regulatory use barriers were reduced or eliminated, and this should draw the attention of correctional system administrators who had previously considered use of this technology platform for inmate healthcare delivery.[3]

This research concludes that telehealth and other emerging technologies serve as a means to improve correctional system healthcare, but correctional system administrators

[3] Chris Hayhurst, "A Turning Point for Telehealth: COVID-19 Spurs Rapid Uptake of Connected Care," *Biomedical Instrumentation & Technology* 54, no. 4, (July 1, 2020): 243–244, https://doi.org/10.2345/0899-8205-54.4.242.

and other stakeholders are required to strategically develop implementation and use strategies that will ensure technology innovations are safely and effectively implemented. To create the environment needed for successful integrations, correctional leaders must also manage change, cultivating learning opportunities and use of solutions to close inmate healthcare gaps.

Because of the loosening of restrictions tied to telehealth use associated with the COVID-19 pandemic, the corrections industry should determine if implementation of these and other solutions are now more attainable. Finally, emerging technologies and cloud computing pose opportunities to improve healthcare for everyone. However, without the required information technology infrastructure, leveraging these solutions is just a fantasy. Because of this, the corrections industry must seek current and future innovations to improve healthcare in the penal setting while advocating for resources needed to bring about changes.

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experience that will lend to improved homeland security practices in our own organizations. For this, I salute the faculty at NPS for imparting coveted academic instruction that lends to strengthening our nation's homeland security.

I. INTRODUCTION

A. PROBLEM STATEMENT

Healthcare in U.S. correctional settings is deficient because the penal system has failed to provide inmates with access to quality healthcare, yet past litigation obligates the penal system to deliver adequate medical care to inmates.[1] The legal right to provide prisoners healthcare is a penal system obligation because of the 1976 Supreme Court ruling established by *Estelle v. Gamble*.[2] The Supreme Court set up the rule that purposeful neglect of prison administrators to provide for medical care of inmates represents "cruel and unusual punishment."[3] Furthermore, the court held that "deliberate indifference to serious medical needs of prisoners constitutes the 'unnecessary and wanton infliction of pain' prohibited by the Eighth Amendment."[4] Another case adjudicated in 1994 by the U.S. Supreme Court also held jail officials responsible for ensuring the health and safety of inmates.[5] Known as *Farmer v. Brennan*, this case also held penal system officials liable for failing to take reasonable action needed to remedy potential serious medical conditions plaguing inmates under their custody.[6] In *Parsons v. Ryan*, the 9th Circuit Court of Appeals upheld the district court's ruling that Arizona's Department of Corrections administrators subjected inmates to systemic Eighth Amendment violations by failing to provide appropriate medical care, dental care, mental healthcare and because conditions of

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[1] Andrew P. Wilper et al., "The Health and Health Care of U.S. Prisoners: Results of a Nationwide Survey," *American Journal of Public Health* 99, no. 4 (April 2009): 670–671, https://doi.org/10.2105/AJPH.2008.144279; Josiah D. Rich, Scott A. Allen, and Brie A. Williams, "The Need for Higher Standards in Correctional Healthcare to Improve Public Health," *Journal of General Internal Medicine* 30, no. 4 (April 1, 2015): 503, https://doi.org/10.1007/s11606-014-3142-0.

[2] Estelle v. Gamble, 429 U.S. 97 (1976).

[3] *Estelle*, 97.

[4] *Estelle*, 103.

[5] Farmer v. Brennan, Warden et al., 511 S. Ct. 825, 826 (1994).

[6] *Farmer*, 826.

confinement exposed inmates to substantial risk and harm.[7] Through these and other court rulings, the history of healthcare delivery in jail settings has required legal intervention to improve inmate healthcare.

To complicate the picture, individuals in our nation's correctional system have a significant need for high-quality healthcare because they have higher rates of medical problems than the U.S. general population. Chronic conditions, including asthma, cervical cancer and hypertension, challenge jail system administrators because the growing number of older inmates in prisons commonly have one or more of these conditions.[8] Longer incarceration sentences handed down during the 1980s and 1990s have exacerbated this problem.[9] Furthermore, individuals locked away in correctional facilities for decades also exhibit riskier behaviors such as unprotected sex, which allows communicable disease to spread. For incarcerated individuals, HIV and AIDS are 2 to 7 times more common compared to the general population.[10] Hepatitis C occurs at rates 8 to 21 times higher, and tuberculosis is four times more common compared to the general population.[11] In this context, the socioeconomic background of most inmates contributes to the higher incidence of medical maladies afflicting the penal system population because these individuals are less likely to access the U.S. healthcare system before incarceration.[12] For these reasons,

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[7] Parsons v. Ryan, 754 F.3d 657, (9th Cir. 2014).

[8] I. A. Binswanger, P. M. Krueger, and J. F. Steiner, "Prevalence of Chronic Medical Conditions among Jail and Prison Inmates in the USA Compared with the General Population," *Journal of Epidemiology & Community Health* 63, no. 11 (November 1, 2009): 912, https://doi.org/10.1136/jech.2009.090662.

[9] Dora M. Dumont et al., "Public Health and the Epidemic of Incarceration," *Annual Review of Public Health* 33, no. 1 (April 21, 2012): 328, https://doi.org/10.1146/annurev-publhealth-031811-124614.

[10] David Cloud, "On Life Support: Public Health in the Age of Mass Incarceration," 6, (New York: Vera Institute of Justice, November 2014), https://www.vera.org/downloads/Publications/on-life-support-public-health-in-the-age-of-mass-incarceration/legacy_downloads/on-life-support-public-health-mass-incarceration-report.pdf.

[11] Cloud, 6.

[12] Barbara H. Zaitzow and Anthony K. Willis, "Behind the Wall of Indifference: Prisoner Voices about the Realities of Prison Health Care," *Laws* 10, no. 1 (February 16, 2021): 3, https://doi.org/10.3390/laws10010011.

new prisoners introduced to the penal system may require initial and ongoing medical care to correct conditions untreated before incarceration.

Behavioral health problems in prison populations also are more prevalent than in the U.S. general population. In fact, 14.5% of male prisoners suffer from a mental disorder compared to 3.2% in the general population.[13] By comparison, 31% of female prisoners suffer from mental disorders compared to 4.9% in the general population.[14] Individuals with mental health problems released from prison experience a cascading set of effects, as do their family members, and their family members may opt to shun social contact with others.[15] For inmates and their families, there is a greater strain placed on their relationships because of behavioral health maladies, which impose obligations to provide care that family members view as negative burdens.[16] The problems imposed by mental illness lead to a persistent stigma that negatively affects individuals, such as fewer opportunities to gain employment, to build positive social relationships, and to experience psychological well-being.[17] Thus, reentry to society is more difficult for individuals with behavioral and medical conditions neglected during incarceration. The provision of quality medical care in jail settings links to the jail system's role in rehabilitating inmates while aiming to reduce recidivism rates.

The lack of quality healthcare at prisons and jails across the United States has led to the demand to develop healthcare standards for the penal system. As compared to state or federal detainment facilities, jails are governed at a local level with inmates detained for

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[13] Cloud, "On Life Support," 7.

[14] Cloud, 7.

[15] Lorenza Magliano et al., "Family Burden in Long-Term Diseases: A Comparative Study in Schizophrenia vs. Physical Disorders," *Social Science & Medicine* 61, no. 2 (July 2005): 318, https://doi.org/10.1016/j.socscimed.2004.11.064.

[16] Magliano et al., "Family Burden in Long-Term Diseases: A Comparative Study in Schizophrenia vs. Physical Disorders," 318.

[17] Bruce G. Link and Jo C. Phelan, "Conceptualizing Stigma," *Annual Review of Sociology* 27, no. 1 (August 2001): 380, https://doi.org/10.1146/annurev.soc.27.1.363.

less than one year as individuals serve sentences for low-level crimes or await their trial.[18] In this context, the National Commission on Correctional Health Care (NCCHC), the American Public Health Association (APHA), and the American Correctional Association (ACA) endeavored to set healthcare standards and guidance on accreditation, but adherence to the standards among correctional facilities has been low.[19] The American Association for Correctional Psychology (AACP) helped develop standards of care to provide inmates in jails and prisons access to quality mental healthcare with measured effectiveness, but AACP understands that adherence to the standards may not happen and thus, it cautions penal system administrators that noncompliance with its standards means potential civil and criminal prosecution.[20] Many states lack enforcement powers associated with jail healthcare standards compliance. However, according to Thompson and Mays, some local and state officials already ensure adherence to established standards.[21] The bond between state and local correctional facilities is strengthened when healthcare standards are adopted and enforced at the local level.[22] Ultimately, medical care standards and protocols that go ignored mean the quality of medical care in correctional facilities will raise doubt about humane treatment of inmates and management practices in these facilities.

In the correctional setting, slow adaptation of technologies may exacerbate problems with quality healthcare delivery. Telemedicine has received some use in correctional settings as a means to connect healthcare specialists with inmates requiring

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18 "What Is the Difference between Jails and Prisons?" Bureau of Justice Statistics, accessed November 16, 2020, https://www.bjs.gov/index.cfm?ty=qa&iid=322.

19 Marc F. Stern, Robert B. Greifinger, and Jeff Mellow, "Patient Safety: Moving the Bar in Prison Health Care Standards," *American Journal of Public Health* 100, no. 11 (November 2010): 2103, https://doi.org/10.2105/AJPH.2009.184242.

20 Richard Althouse, "Standards for Psychology Services in Jails, Prisons, Correctional Facilities, and Agencies," *Criminal Justice and Behavior* 27, no. 4 (August 2000): 440, https://doi.org/10.1177/0093854800027004004.

21 Joel A. Thompson and G. Larry Mays, "State-Local Relations and the American Jail Crisis: An Assessment of State Jail Mandates," *Review of Policy Research* 7, no. 3 (March 1988): 567–568, https://doi.org/10.1111/j.1541-1338.1988.tb00854.x.

22 Thompson and Mays, 571.

their expertise. Penal system healthcare stands to improve through the integration of telemedicine and solutions such as electronic health records (EHR) systems. Telehealth sessions may also integrate with an EHR system to facilitate the sharing of medical records, but correctional system administrators may feel daunted when considering how to address storage and maintenance of records, data security or the implementation of technical infrastructure needed to support these systems.[23] Telemedicine use also requires training, planning and establishing communication protocols, and developing methods to facilitate use that correctional administrators may be unwilling to pursue.[24] Adoption of telehealth may serve to support correctional healthcare delivery standards that pose a challenge for correctional system administrators to uphold. Inmates released from prisons or jails also do not receive effective transitional healthcare from community health providers, as these providers do not have access to inmate healthcare records.[25] As telehealth evolves and integrates with EHR and emerging technologies, these solutions may contribute to supporting transitional healthcare for inmates. These integrated systems may also serve to provide a comprehensive understanding of correctional healthcare rendered to inmates before, during and after incarceration.

This research provides a foundation to understanding the potential for telehealth and emerging technologies to improve healthcare in the U.S. penal system while considering barriers to adoption of these solutions. The correctional system has taken a reactionary posture to addressing existing inmate healthcare gaps, and at times, this obligation has required legal action. Technological innovations have led to healthcare improvements in the community healthcare setting, and the penal system stands to benefit from taking a more proactive stance by exploring current and future innovations that could

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[23] Savita Malhotra, Ruchita Shah, and Subho Chakrabarti, "Telepsychiatry: Promise, Potential, and Challenges," *Indian Journal of Psychiatry* 55, no. 1 (2013): 7–8, https://doi.org/10.4103/0019-5545.105499.

[24] Monica Graves and Shelley Doucet, "Factors Affecting Interprofessional Collaboration When Communicating through the Use of Information and Communication Technologies: A Literature Review," *Journal of Research in Interprofessional Practice and Education* 6, no. 2 (November 14, 2016), 28, https://doi.org/10.22230/jripe.2017v6n2a234.

[25] Fiona Kouyoumdjian, Jill Wiwcharuk, and Samantha Green, "Optimizing Continuity of Care throughout Incarceration," *Canadian Family Physician* 61, no. 2 (February 1, 2015): 107–108.

improve the quality of inmate healthcare and more importantly, by rehabilitating inmates to promote their self-sufficiency upon release.

B. RESEARCH QUESTION

How can telemedicine and emerging technologies help improve healthcare in the penal system?

C. LITERATURE REVIEW

The literature review includes statistical information of health problems and healthcare delivery at federal, state, and local prisons derived from surveys of correctional facility staff and inmates compiled by the Bureau of Justice Statistics. This information receives analysis in peer-reviewed articles, which conclude that correctional healthcare is deficient and in need of improvement. Poor inmate healthcare and living conditions addressed in the literature have led to court rulings such as the U.S. Supreme Court case of *Brown v. Plata* where the problem of jail overcrowding required intervention to address a condition viewed by the high court as a violation of the Eighth Amendment that protects against cruel and unusual punishment. Overcrowded jails have bearing on a jail system's capacity to deliver quality medical care to its inmate population.[26] Overcrowding places stress on jail systems to provide services with limited resources and this includes healthcare. For instance, Haney discusses variables such as jail management practices that have bearing on how crowding conditions can impose physical or psychological stress on inmates.[27]

The literature delves into failed strategies to combat overcrowding and the fact that constructing more or larger correctional facilities does not improve correctional healthcare.[28] As Fifield points out, services such as medical care delivery remain neglected

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[26] Brown v. Plata, 134 S. Ct. 436, (2011).

[27] Craig Haney, "Prison Effects in the Era of Mass Incarceration," *The Prison Journal*, July 25, 2012, 9, https://doi.org/10.1177/0032885512448604.

[28] Chris Mai, Ram Subramanian, and Jacob Kang-Brown, *Broken Ground: Why America Keeps Building More Jails and What It Can Do Instead* (New York: Vera Institute of Justice, November 2019), 6, https://www.vera.org/downloads/publications/broken-ground-jail-construction.pdf.

and correctional officer staffing levels remain stagnant even after expansion of correctional facility capacity.[29] Combined with inadequate correctional officer training that addresses empathy and humane treatment of inmates, overcrowding conditions pose as hurdles to providing inmates with quality healthcare. Johnson and Price discuss how medical care delivery in the penal setting relies on correctional officers who serve as a vital link to connecting inmates with quality healthcare.[30] How correctional officers integrate within the correctional system healthcare continuum requires deliberate consideration and planning.[31]

Paris suggests an area of improvement in correctional healthcare when compared to community health providers includes medical record-keeping practices.[32] In the community, electronic health record keeping helps contribute to continuity of care for citizens, but such systems are absent in the correctional system or fail to be shared with community health providers.[33] Information sharing between the penal system and community health agencies is a broken link that hinders effective medical care delivery for inmates before, during, and after their period of incarceration.[34]

Medical and public health journals reveal how government programs may contribute to improved healthcare in correctional settings. The expansion of Medicaid under the Affordable Care Act (ACA) means that many individuals released from the penal

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[29] Jen Fifield, "Many States Face Dire Shortage of Prison Guards," The Pew Charitable Trusts, March 1, 2016, http://pew.org/1pJOyu3.

[30] Robert Johnson and Shelley Price, "The Complete Correctional Officer: Human Service and the Human Environment of Prison," *Criminal Justice and Behavior* 8, no. 3 (September 1981): 368–369, https://doi.org/10.1177/009385488100800307.

[31] Johnson and Price, 355.

[32] Joseph E. Paris, "What Correctional Practitioners Want in an Electronic Health Record," *Journal of Correctional Health Care* 19, no. 3 (July 2013): 218–19, https://doi.org/10.1177/1078345813486322.

[33] Ben Butler. "Health Information Exchange between Jails and Their Communities: A Bridge That Is Needed under Healthcare Reform." *Perspectives in Health Information Management*, Winter 2014. 1, https://search-proquest-com.libproxy.nps.edu/docview/1497036492?rfr_id=info%3Axri%2Fsid%3AprimoParis, "What Correctional Practitioners Want in an Electronic Health Record."

[34] Butler, 2–3.

system will have health insurance for the first time. Although the U.S. government championed the enhanced continuity of care for citizens because of the ACA and HITECH, Butler posits that government officials ignored jail systems and kept them on an island when it comes to integrating inmate health records within health information exchanges (HIEs).[35] He points out that HIEs serve as vital connections uniting patients and their medical providers, including specialty service providers. Gajarawala and Pelkowski also observe that the U.S. Congress has enacted recent legislation that expands Medicare coverage to include treatment that utilizes telehealth.[36] However, failure to link jail healthcare into HIEs means jail healthcare happens in a vacuum and out of the public eye. Butler discusses the positive attributes of electronic health records (EHR) in a jail setting in the context of two case studies that led two jail systems to adopt EHR systems, but he also stresses the importance of stakeholder engagement to ensure successful system implementation and sustainment.[37] Nonetheless, there is a paucity of jails across the country that have adopted use of EHR systems, which could facilitate sharing records between the penal system and community health providers.

The literature covers the challenges of implementing EHR systems in a correctional environment. Even though EHR systems can promote improved inmate health record keeping and continuity of care while helping to save costs, Paris claims that correctional system practitioners resist these technologies because of concerns associated with training required to use systems, perceived loss of patient care efficiency, potential workflow disruptions, and costs tied to system implementation to name a few.[38] Paris also posits that jail system administrators who fail to strategically plan EHR implementations risk reverting to paper records, loss of efficiency, and possibly loss of employee morale when

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[35] Butler, 1.

[36] Shilpa N. Gajarawala and Jessica N. Pelkowski, "Telehealth Benefits and Barriers," *The Journal for Nurse Practitioners*, October 2020, 3, https://doi.org/10.1016/j.nurpra.2020.09.013.

[37] Butler, "Health Information Exchange between Jails and Their Communities: A Bridge That Is Needed under Healthcare Reform," 1.

[38] Paris, "What Correctional Practitioners Want in an Electronic Health Record," 219–220.

systems are poorly implemented or even abandoned.[39] Failure to look beyond the challenges posed by EHR implementations may mean correctional system administrators forgo systems that can improve medical record keeping and more rapid delivery of needed healthcare. Martelle et al. address challenges to EHR adoption in jail settings, and this includes resistance by corrections administrators who feel there is too much risk of data breach exposure associated with these systems.[40] However, regulation changes aimed at promoting EHR use has expanded to cover jail health services. These regulation changes serve to incentivize jail systems to digitize inmate health records while supporting efforts aimed at bolstering human rights, improving healthcare and affirming the safety of inmates.

The Centers for Medicare and Medicaid Services (CMS) Medicaid and Medicare EHR Incentive Program is known as meaningful use (MU) and provides incentive payments to eligible healthcare providers demonstrating that they adopted, implemented or upgraded to a certified version of an EHR.[41] However, Kouyoumdjian, Wiwcharuk, and Green note that maintaining EHR systems requires expert technical support beyond implementation and ongoing support from leadership through effective change management techniques.[42] Although the prospect of implementing EHR systems in jail environments poses challenges, correctional healthcare providers that implement these systems may help establish medical practice structures that deliver a community standard of care to some of our nation's most vulnerable and unhealthy individuals.[43]

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[39] Paris, 218.

[40] Michelle Martelle et al., "Meaningful Use of an Electronic Health Record in the New York City Jail System," *American Journal of Public Health* 105, no. 9 (September 2015): 1752, https://doi.org/10.2105/AJPH.2015.302796.

[41] "CMS and ONC Final Regulations Define Meaningful Use and Set Standards for Electronic Health Record Incentive Program," Centers for Medicare and Medicaid Services, July 13, 2010. https://www.cms.gov/newsroom/fact-sheets/cms-and-onc-final-regulations-define-meaningful-use-and-set-standards-electronic-health-record.

[42] Kouyoumdjian, Wiwcharuk, and Green, "Optimizing Continuity of Care throughout Incarceration," 107.

[43] Martelle et al., "Meaningful Use of an Electronic Health Record in the New York City Jail System," 1753.

The literature also covers how existing and future technology innovations will continue to improve upon healthcare delivery in and out of jail settings, although barriers to adoption exist.[44] Telehealth continues to proliferate as medical care providers see how it serves to overcome high costs of care while promoting access to patients who might not otherwise be served, and because of this, organizations such as the American Telemedicine Association (ATA) have developed guidelines for use of this technology.[45]

Telehealth has proven beneficial for other government agencies, including the Veterans Health Administration (VHA), which has shown that use of the technology led to a $1,999 annual savings per patient.[46] The VHA Care Coordination/Home Telehealth (CCHT) program has also contributed to promote improved chronic disease management.[47] Kvedar, Coye, and Everett champion telehealth's approach of remote diagnosis and treatment, continuous monitoring, adjustment of therapies, and leveraging of healthcare providers across large populations of patients to improve healthcare.[48] Young et al. studied inmate HIV medical treatment outcomes with non-expert care common to jail settings compared to subspecialist management afforded by telemedicine to conclude that telemedicine helped improve HIV patient virology suppression and compliance with antiretroviral therapy.[49] Because of this, telehealth use in the correctional setting

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[44] Eric J. Topol, *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*, 1st ed. (New York: Basic Books, 2019): 18–21.

[45] Elizabeth Krupinski and Jordana Bernard, "Standards and Guidelines in Telemedicine and Telehealth," *Healthcare* 2, no. 1 (February 12, 2014): 74–93, https://doi.org/10.3390/healthcare2010074.

[46] Joseph Kvedar, Molly Joel Coye, and Wendy Everett, "Connected Health: A Review of Technologies and Strategies to Improve Patient Care with Telemedicine And Telehealth," *Health Affairs* 33, no. 2 (February 2014): 196, https://doi.org/10.1377/hlthaff.2013.0992.

[47] Adam Darkins et al., "Care Coordination/Home Telehealth: The Systematic Implementation of Health Informatics, Home Telehealth, and Disease Management to Support the Care of Veteran Patients with Chronic Conditions," *Telemedicine and E-Health* 14, no. 10 (December 2008): 1124–1125, https://doi.org/10.1089/tmj.2008.0021.

[48] Kvedar, Coye, and Everett, "Connected Health: A Review of Technologies and Strategies to Improve Patient Care with Telemedicine and Telehealth," 195.

[49] J. D. Young et al., "Improved Virologic Suppression with HIV Subspecialty Care in a Large Prison System Using Telemedicine: An Observational Study with Historical Controls," *Clinical Infectious Diseases* 59, no. 1 (July 1, 2014): 125, https://doi.org/10.1093/cid/ciu222.

contributes to positive clinical outcomes for care afforded to HIV patients when used to provide inmate care.[50] Telehealth has also proven its value in accessing specialty medical care across geographic boundaries, as specialists situated at distant locations from the patient can interpret diagnostic radiology and laboratory medicine data.[51] Coupled with improved access to healthcare specialists, improved clinical outcomes for some medical diseases such as HIV has highlighted the contributions of telehealth in jail settings.

Telehealth has afforded benefits such as medical care delivery from a distance and expanded access to medical care specialists, but implementation and use are not without debate. Ax et al. advocate for clinical outcome efficacy analysis of telehealth in jail settings instead of using the technology as a simple cost savings tool.[52] Without such analysis, jail reform advocates may lack confidence that telehealth is making a difference in providing quality medical care to inmates. Telehealth has made an impact on inmate healthcare, but its efficacy in generating positive clinical outcomes is still the topic of debate. Resistance to telehealth use has included professional staff objection and high initial start-up costs, but Ax et al. suggest training jail administrators and other stakeholders on the value and benefits of telehealth utilization in jail settings as a means to overcome resistance to its use.[53] For prospective adopters of telehealth, aspects to consider for development of telehealth in prison settings include setting up definitive objectives, establishing medical procedures, and establishing a firm comprehension of the possible impediments of using telehealth solutions.[54] While telehealth may contribute to improving quality healthcare in jail settings, a large investment of time and effort may be required to ensure successful implementation of these systems. As discussed, telehealth has been used in the jail settings

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[50] Young et al., 125.

[51] Kvedar, Coye and Everett, "Connected Health: A Review of Technologies and Strategies to Improve Patient Care with Telemedicine and Telehealth," 196.

[52] Robert K. Ax et al., "Innovations in Correctional Assessment and Treatment," *Criminal Justice and Behavior* 34, no. 7 (July 2007): 902, https://doi.org/10.1177/0093854807301555.

[53] Ax et al., 901.

[54] Jeremy Young and Melissa Badowski, "Telehealth: Increasing Access to High Quality Care by Expanding the Role of Technology in Correctional Medicine," *Journal of Clinical Medicine* 6, no. 2 (February 13, 2017): 3–4, https://doi.org/10.3390/jcm6020020.

for over two decades, but the technology continues to evolve. The 2019 Coronavirus disease pandemic thrust telehealth to the forefront as medical professionals leveraged this solution to deliver safe care. Yet, for all the barriers that exist, Young and Badowski advocate for telemedicine use in correctional settings as it provides access to care by overcoming geographic distance as well as healthcare restrictions endemic to a correctional environment.[55]

Innovative technologies are emerging because of the internet age, and improvements in communications networks now enhance our society's way of life. Some of these technologies will be disruptive not only because of all the implications for lifestyle changes but also because of ethical dilemmas that need addressing such as job displacement that happens through use of robotics and artificial intelligence (AI). Tegmark advises that in the case of AI, developers should temper excitement about advancements with thought about making sure machine learning that outpaces human capacity to control it factors for program design that avoids negative consequences.[56] These and other ethical issues will require policymakers, philosophers and other stakeholders to develop policies on use of emerging technology. Tegmark discusses another ethical dilemma tied to emerging technology that has salience in the correctional setting, and it includes persistent surveillance that is a new tool for watching and controlling movement of people. Persistent surveillance conflicts with freedom of privacy principles, but in jail settings, it can help foster effective medical monitoring of inmates. However, with emerging technologies, neglecting consequence management such as technology failures may happen if individuals fixate on positive attributes of these solutions. Topol discusses how AI can quickly recognize patterns associated with mental health afflictions compared to trained mental health clinicians, and this allows for more rapid treatment of individuals with

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55 Young and Badowski, 1–2.

56 Max Tegmark, *Life 3.0: Being Human in the Age of Artificial Intelligence*, 1st ed. (New York: Alfred A. Knopf, 2017): 335–336.

mental illness.[57] However, Topol also cautions that reliance on AI and machines alone contradicts good medical practice, as humans still need to render humane interactive care.

The literature also advocates for adoption and adherence to inmate healthcare standards as a means to improve penal system healthcare, but objections or barriers to standards' adoption pose as significant challenges. Thompson and Mays argue that the decay of local jails and a litany of lawsuits against them has caused some states across the U.S. to begin looking at enforcement of minimum operating standards and implementing state inspections of local facilities.[58] However, politics can prevail when it comes to holding up policies or standards needed to ensure quality medical care at local jails. Thompson and Mays discuss the following factors regarding whether a state takes enforcement action against local jails when they fail to adhere to standards: State affluence, urban/rural mix of the population, indicators of state political and administrative features, and crime rate among others.[59] Ultimately, when correctional system administrators fail to adhere to standards tied to inmate correctional healthcare standards, bad outcomes are a telltale sign. While standards design seeks to improve safety and afford quality healthcare delivery for inmates, Stern, Greifinger, and Mellow posit that overburdened correctional healthcare workers warrant a phased implementation of the standards.[60] The authors find that financial constraints serve as barriers for some systems regarding adoption of healthcare standards. However, Olson, Khatri, and Winkelman contend that correctional facilities in the U.S. lack universal guidance on what health services inmates should receive.[61] Because of this, there is great variance between states regarding correctional

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[57] Eric J. Topol, *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*, 1st ed.(New York: Basic Books, 2019): 11–12.

[58] Thompson and Mays, "State-Local Relations and the American Jail Crisis: An Assessment of State Jail Mandates," 567–568.

[59] Thompson and Mays, 572–573.

[60] Marc F. Stern, Robert B. Greifinger, and Jeff Mellow, "Patient Safety: Moving the Bar in Prison Health Care Standards*," American Journal of Public Health* 100, no. 11 (November 2010): 2108–09, https://doi.org/10.2105/AJPH.2009.184242.

[61] Marin G. Olson, Utsha G. Khatri, and Tyler N. A. Winkelman. "Aligning Correctional Health Standards With Medicaid-Covered Benefits." *JAMA Health Forum* 1, no. 7 (July 27, 2020): 2–3, https://doi.org/10.1001/jamahealthforum.2020.0885.

care delivery. Consequently, Olson, Khatri, and Winkelman advocate for health services that are comparable to those afforded by Medicaid as a means of improving correctional healthcare. Freudenberg and Heller take standards formulation a step further by advocating for the study of clinical outcomes associated with inmate medical health interventions as a means to developing proven and effective medical standards across the penal system.[62] Raising the bar of healthcare delivery to meet Medicaid requirements means better correctional system oversight is needed to ensure compliance.

The literature also examines how telehealth and emerging technology solutions adoption can succeed. Marangunić and Granić discuss how the Technology Acceptance Model (TAM) and theory developed by Fred Davis help us to understand why individuals decide to accept or reject technology adoption.[63] Davis asserts that his TAM derives from analysis of user motivation tied to technology utilization and that these behaviors are rooted in three thought factors: perceived ease of use, perceived usefulness and attitude toward use.[64] Since its development, TAM continues to receive recognition as the most influential theory on technology adoption. For organizations and their decision makers, the decision to acquire and implement technology can be difficult but to ensure technology adoption is successful, TAM and other adoption theories warrant examination of strategies to address each of the behavioral factors that serve as barriers to adoption. However, a one-size-fits-all approach to applying TAM should not be undertaken, especially with telemedicine use in jail settings where multiple stakeholders should be considered. Hu et al. posit that potential telemedicine solutions should include emphasis placed on how this technology will help physicians improve their clinical practice to enhance their willingness to adopt its

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[62] Nicholas Freudenberg and Daliah Heller, "A Review of Opportunities to Improve the Health of People Involved in the Criminal Justice System in the United States," *Annual Review of Public Health* 37, no. 1 (March 18, 2016): 327–28, https://doi.org/10.1146/annurev-publhealth-032315-021420.

[63] Nikola Marangunić and Andrina Granić, "Technology Acceptance Model: A Literature Review from 1986 to 2013," *Universal Access in the Information Society* 14, no. 1 (March 2015): 81–82, https://doi.org/10.1007/s10209-014-0348-1.

[64] Fred Davis, "A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results" (PhD diss., Massachusetts Institute of Technology, 1985): 24–26, http://hdl.handle.net/1721.1/15192.

use.[65] Graves and Doucet contend that barriers to telehealth use include low media quality and perceptual difficulties, privacy concerns, coordination, organizational challenges, and tension and mistrust in professional relationships.[66] Furthermore, the authors mention that costs associated with information and communication technology systems (ICTs) and technology infrastructure required to support ICT can pose as roadblocks to telehealth utilization.

Implementing good healthcare programs in prison systems has proven elusive for many policymakers and prisoner rights advocates for myriad reasons. The literature clarifies that providing prison healthcare is a continuing challenge that jail system administrators and policymakers have had difficulty settling. Existing research points out that budget limitations, differing approaches to providing inmate medical care, and poor access to healthcare affect the quality of healthcare afforded to inmates. Jail system administrators indifferent to their inmate healthcare approach will continue to expose themselves to lawsuits and injunction decrees.

D. RESEARCH DESIGN

This thesis endeavored to determine if telehealth and emerging technologies could help close gaps in inmate healthcare delivery in the U.S. corrections system. The methodology for this thesis used a qualitative assessment to explore literature on topics influencing inmate healthcare delivery to understand how each contributes to or hinders this objective in the American correctional system.

Topics explored in detail include the following:

1. Behavioral medicine and mental health
2. Telemedicine for other medical conditions

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[65] Paul J. Hu et al., "Examining the Technology Acceptance Model Using Physician Acceptance of Telemedicine Technology," *Journal of Management Information Systems* 16, no. 2 (September 1999): 107, https://doi.org/10.1080/07421222.1999.11518247.

[66] Graves and Doucet, "Factors Affecting Interprofessional Collaboration When Communicating through the Use of Information and Communication Technologies: A Literature Review," 4.

3. Electronic Medical Records
4. Emerging technologies that contribute to improved healthcare delivery
5. Cybersecurity issues associated with use of technology solutions for healthcare delivery in the penal system
6. Technology adoption theories
7. Prisoner health screening intake

For each of these topics, I explore effectiveness and efficacy of prior use and application in the penal system. Implementation issues such as cost, infrastructure needs, training requirements, administrative needs, legal implications, and ethical/moral implications receive examination as well.

E. CHAPTER OVERVIEW

Chapter I of the thesis introduces the topic of healthcare delivery in the penal system along with the research question of "How can telemedicine and emerging technologies help improve healthcare in the penal system?" The research focuses on a review of the literature covering penal system healthcare. In this context, the challenge of improving healthcare in the correctional setting receives examination by considering how telehealth and other emerging technologies can help to overcome existing barriers to quality healthcare delivery behind jail walls. The methodology of research design describes how the thesis was developed.

Chapter II of the thesis provides an overview of the problem with correctional system healthcare delivery and the affect that it has on inmates, the criminal justice system and society. Some of these problems include the following: the lack of continuity of care for inmates released, correctional officer staffing limitations, absence of clinical outcome performance measures, poor jail health-screening intake, the Medicaid inmate exception rule, medical care bonds, and the lack of correctional officer training and their obligation to link inmates with required health care.

Chapter III covers the history of telehealth use in the penal system and how the initial focus was on cost savings and safety associated with use of these technology solutions. The chapter also explores how expanded use of telehealth may benefit inmates and the correctional industry with improved record keeping and continuity of care if integrated with EHR solutions, and by addressing gaps in correctional officer shortages. Emerging technologies receive examination with an emphasis on ICT infrastructure and cybersecurity as vital elements needed to support effective use of telehealth and other technology solutions. Benefits and barriers to use of telehealth are reviewed with discussion on how to effectively implement these types of solutions using technology adoption strategies.

Chapter IV includes a discussion of the practical issues associated with pursuit of technology implementations in the penal system. Numerous barriers stall the implementation of technology solutions such as telehealth in the penal system, which merit careful thought and consideration. The problem of organizational culture and change management receive consideration in the context of the correctional industry. Change management principles and effective strategies required to realize organizational change are also examined. Developing protocols to address security risks associated with use of IT also warrants consideration to avoid data breaches, and these issues are also investigated. Finally, the chapter closes with consideration of how existing workflow processes must be adapted to integrate new IT systems.

Chapter V concludes the thesis with a discussion of findings regarding factors that influence healthcare delivery in the penal setting and how technologies such as telehealth can help to address some of the identified gaps created by factors that act against promoting good inmate healthcare. The chapter also discusses recommendations for correctional system administrators, policymakers and criminal justice reform advocates concerning findings in the thesis, limitations to the research as well as recommendations for future research.

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II. INMATE HEALTHCARE DELIVERY

A. CURRENT PERFORMANCE

Inmate healthcare poses a significant problem to the American correctional system of jails, prisons and detention centers. This chapter lays out the current state of correctional healthcare to illustrate the problems that telehealth and emerging technology might help to solve. It explores how healthcare delivery is not standardized and shows why this poses a problem when correctional facilities utilize disparate approaches that are often ineffective or inadequate. The chapter also investigates varied factors that influence healthcare delivery in the penal setting including governance and politics at all levels of government, correctional officer roles regarding linking inmates with healthcare, jail intake procedures, and the problem of suicide in the penal system. The factors investigated illustrate how each can enable or hinder quality healthcare delivery in America's correctional system.

1. Correctional Healthcare Delivery Problems and Reforms

Estelle v. Gamble established the requirement for correctional facilities to provide medical care to inmates, and this mandate creates a financial burden for government officials and jail administrators.[67] In 2008, the costs associated with correctional healthcare in 44 states equated to $6.5 billion out of $36.8 billion in overall institutional correctional expenditures.[68] Furthermore, spending increased in 42 of 44 states examined, with a median increase of 49 percent between 2001 and 2008. During this period, per inmate healthcare expenditures increased in 35 of the 44 states.[69] Factors influencing higher inmate healthcare costs include an aging inmate population, the prevalence of infectious

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[67] Roberto Potter, "Correctional Healthcare," in *Routledge Handbook of Corrections in the United States*, 1st ed., eds. O. Hayden Griffin and Vanessa H. Woodward (New York: Routledge, 2018), 378–379. https://doi.org/10.4324/9781315645179.

[68] "Managing Prison Health Care Spending," The Pew Charitable Trusts, October 2013. https://www.pewtrusts.org/en/research-and-analysis/reports/2014/05/15/ managing-prison-health-care-spending.

[69] The Pew Charitable Trusts, "Managing Prison Health Care Spending."

and chronic diseases and struggles with delivery of efficient and effective healthcare in jail settings.[70]

To limit legal liability, some correctional systems adopt the National Commission on Correctional Health Care (NCCHC) Standards for nine general areas: healthcare services support, patient care and treatment, special needs and services, governance and administration, personnel and training, safety, health records, health promotion and medical-legal issues.[71] The American Correctional Association (ACA) also promulgates jail healthcare standards leaving jail system administrators to determine which accreditation to seek when it comes to adopting standards.[72] Although some corrections systems seek accreditation through NCCHC or ACA, many correctional systems do not, and this leaves stakeholders questioning the quality of inmate healthcare in the U.S. correctional system.

Medical healthcare delivery in correctional settings evolved from a set of court rulings mandating requirements for jail systems across the United States. Prison rebellions sparked such prison reform and subsequent court cases. For example, the Attica Correctional Facility riot in 1971 highlighted the penal system's treatment of prisoners after the 4-day inmate rebellion led to the death of 39 individuals; fatalities included ten prison employees.[73] The prisoners requested improved conditions, including the provision of adequate medical treatment for every inmate and access to outside dentists and doctors at inmate expense.[74] Although the Attica prison facility riot highlighted poor medical care in the penal system, court cases such as *Newman v. Alabama* compelled the State of

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[70] The Pew Charitable Trusts, "Managing Prison Health Care Spending."

[71] "Jail and Prisons," National Commission on Correctional Health Care, accessed November 3, 2020, https://www.ncchc.org/jail-prison-standards.

[72] Potter, "Correctional Healthcare." 378.

[73] Michael Winerip, Tom Robbins, and Michael Schwirtz, "Revisiting Attica Shows How New York State Failed to Fulfill Promises," *New York Times*, August 25, 2016, sec. New York, https://www.nytimes.com/2016/08/26/nyregion/revisiting-attica-shows-how-new-york-state-failed-to-fulfill-promises.html.

[74] Winerip, Robbins, and Schwirtz, "Revisiting Attica Shows How New York State Failed to Fulfill Promises."

Alabama to institute prison reforms and improved healthcare for prisoners.[75] These measures helped to address the U.S. Constitution's Eighth Amendment addressing cruel and unusual punishment. In this context, *Bowring v. Godwin* (1977) also found that psychiatric care should be treated as a "serious medical need" when considering inmate healthcare.[76] Court cases and humanitarian proponents have had success in instituting improved healthcare in the penal system. Although the courts have mandated medical and psychiatric care for prisoners, correctional systems use discretion to determine how to fund and provide care, and this situation has led to myriad approaches aimed at delivering quality medical care in jail settings.

Modern state prison intake of prisoners has improved, including various screenings covering chronic health conditions, psychiatric evaluation, and communicable diseases. Essential health services are now available at state prisons, while diagnostic and specialty services not available on-site entail coordination for care through another prison facility or community provider.[77] Only the Federal Bureau of Prisons (BOP) and some large state systems have such capability for medical care. Other prisons arrange for hospitals in close proximity to assist in delivering such services. Care for seriously mentally ill inmates happens at a designated prison in the state system or the nearest state-operated mental hospital. The same concept applies to inmates with poor health as designated correctional facilities provide diagnostic and specialty care.[78] Advocates for improved healthcare in jail settings also petition for other reforms, as it is evident that scarcity of medical resources leads to less-than-optimal medical care delivery that may compromise the health of inmates.

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[75] Tinsley Yarborough, "The Alabama Prison Litigation," *The Justice System Journal* 9, no. 3 (1984): 276.

[76] Bowring v. Godwin, 551 F.2d 44 (4th Cir. 1977), https://casetext.com/case/bowring-v-godwin.

[77] B. Jaye Anno, "Prison Health Services: An Overview," *Journal of Correctional Health Care* 10, no. 3 (April 2004): 290, https://doi.org/10.1177/107834580301000304.

[78] Anno, 291.

2. Penal System Medical Professionals and Healthcare Delivery Approaches

To contend with healthcare deficiencies, correctional systems pursue use of credentialed medical practitioners and explore varied approaches of medical care delivery. Medical education and the qualifications of those who provide medical care to inmates has improved. Modern medical practitioners in the prison setting possess licensure, certification, or registration to practice medicine. Correctional physicians are board-certified or qualify for certification in some aspects of medical specialty care, and states continue to contract delivery of health services to private companies.[79] Regarding professional standards, the NCCHC dictates that all medical care experts should possess accreditation consistent with services rendered and that certification and registration requirements are met for the jurisdiction in question.[80] Attaining NCCHC accreditation means correctional systems could champion the professionalism and training of individuals who render care to inmates in their facilities.

However, correctional facilities across America provide medical practice that is questionable, as demonstrated in media investigative reports that reveal a disproportionate number of malpractice or ethics complaints against these individuals. Some of the physicians practicing in the corrections system have been reprimanded at a disproportionately higher rate when compared to other physicians.[81] Chang discusses that in the extreme case of Louisiana, nearly two-thirds of doctors serving correctional facilities had received discipline by the state board for various issues.[82] Chang also highlights the suspect quality of Louisiana's doctors serving the penal system, as approximately 60 percent of them have been reprimanded, and this is in stark contrast to other state licensed

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[79] Anno, 291.

[80] National Commission on Correctional Health Care, "Professional Credentials," accessed December 21, 2020, https://www.ncchc.org/professional-credentials.

[81] David Reutter, "Prison Doctors, Tainted by Regulatory Board Discipline, Administer Wisconsin Prisoner Care," *Prison Legal News*, May 2008.

[82] Cindy Chang, "Many Doctors Treating State's Prisoners Have Disciplinary Records Themselves," Nola.com, July 29, 2012, https://www.nola.com/news/crime_police/article_98a136d7-c201-5b55-a7f5-5428b4be1439.html.

physicians with only 2 percent of these individuals receiving discipline.[83] Chang shares that in Louisiana, medical licensing boards have restricted troubled physicians from practicing medicine in the public setting but not the correctional setting. Because of this, the NCCHC has rebuked the Louisiana decision. Eldridge also addresses correctional healthcare and how it enables problematic doctors to remain viable.[84] Eldridge discusses how recruitment of physicians to work at prisons in rural areas poses as a significant challenge for the penal system and because of this, privatization of healthcare is an outcome. However, the author points out that even private healthcare partnerships continue to imperil the lives of inmates. Eldridge reports that Wexford, a private company used for inmate medical care outsourcing in Illinois neglected to recruit appropriately certified doctors, and this expanded the danger of medical malpractice as evidenced by approximately 12 inmate deaths between 2016 and 2017. The problems of attracting and retaining qualified medical professionals have pushed the corrections industry to explore different approaches to meeting inmate healthcare mandates imposed by the American court system.

These factors also influence the ways in which jail systems approach healthcare delivery. Some state jail systems hire medical practitioners, and some contract with private entities or university medical professionals, while still other states adopt a hybrid approach to providing inmate healthcare.[85] Although states have leveraged use of university medical schools to provide healthcare in state prisons, fewer and fewer states are using these arrangements. Some private prison and jail management companies also use healthcare providers for ancillary services in contracts with state and local governments.[86] The blended approach followed by state jail systems makes it difficult to understand which (if any) system of healthcare delivery is improving the lives of inmates. In 2005, 40 percent

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[83] Chang, "Many Doctors Treating State's Prisoners Have Disciplinary Records Themselves."

[84] Taylor Eldridge, "Why Prisoners Get the Doctors No One Else Wants," *The Appeal,* November 8, 2019, https://theappeal.org/why-prisoners-get-the-doctors-no-one-else-wants/.

[85] Potter, "Correctional Healthcare," 378.

[86] Potter, 378.

of all inmate healthcare entailed delivery by private entities.[87] However, state audits deemed private company outsourcing of inmate healthcare to be substandard.[88] Enns and Ramirez analyze public sentiment toward privatization of prisons and discuss how various influences and philosophies continue to promote contracting for this service.[89] This includes the notion that privatization of public services leads to operational efficiencies as well as how the prevailing political climate with pull-and-push forces sometimes leads to privatization of jail operations across the country at the local, state and federal level.[90] The Pew Charitable Trusts survey of state prisons revealed that in 17 states, Department of Corrections staff provided healthcare during fiscal 2015, but these states relied on outsourcing services at some detention centers for specialized functions such as mental health treatment and pharmacy management.[91] In contrast, 20 states outsourced most healthcare services while eight states—Colorado, Louisiana, Michigan, Minnesota, Montana, Pennsylvania, Rhode Island, and Virginia—employed a hybrid approach to healthcare with an even blend of state employees and contracted vendors. Finally, the survey revealed that a few states (Connecticut, Georgia, New Jersey, and Texas) rely on state medical schools or affiliated organizations for prisoner healthcare.[92]

While the quality of healthcare provided through private-public partnerships has led to mixed results, partnerships with academic institutions has experienced positive benefits. Reeves et al. report that benefits of the partnership between the state of New Jersey and Rutgers University included improved quality of care and cost savings for

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[87] Alexandria Macmadu and Josiah D. Rich, "Correctional Health Is Community Health," *Issues in Science and Technology* 32, no. 1 (2015): 67.

[88] Macmadu and Rich, 67.

[89] Peter K. Enns and Mark D. Ramirez, "Privatizing Punishment: Testing Theories of Public Support for Private and Immigration Detention Facilities," *Criminology* 56, no. 3 (August 2018): 546, https://doi.org/10.1111/1745-9125.12178.

[90] Enns and Ramirez, 549–50.

[91] Kil Huh et al., *Prison Health Care: Costs and Quality: How and Why States Strive for High-Performing Systems* (Washington, DC: The Pew Charitable Trusts, October 2017), 10. https://www.pewtrusts.org/-/media/assets/2017/10/sfh_prison_health_care_costs_and_quality_final.pdf.

[92] Huh et al., 10.

inmates while medical students and health professionals at the university benefited from training and research in the healthcare of inmates.[93] The authors also share that the quality of care afforded to New Jersey state prison inmates is achieving better outcomes when compared to the community while the Rutgers University partnership advances the institution's efforts to promote improved healthcare for vulnerable populations across the state. Rao et al. discuss how Texas has addressed inmate medical care delivery through partnership with University of Texas Medical Branch and Texas Tech University Health Services Center in Lubbock.[94] Rao et al. also describe the partnership with academic institutions as one that has led to improved inmate healthcare but highlight persisting problems associated with inadequate staffing, correctional system overcrowding, and overall physical and social environment constraints that serve to hinder good healthcare delivery. The authors also mention that these problems compound because of Texas legislative action that reduces budgets for inmate hospital and clinic care and health services in the 2019–2020 biennium state budget.

B. EFFICACY OF HEALTHCARE IN THE U.S. PENAL SYSTEM

1. Performance Measures Systems

Although the penal system across the U.S. uses varying healthcare delivery approaches, it provides poor quality healthcare to inmates, especially for behavioral health problems. A longitudinal study of inmates revealed that individuals with a pattern of jail confinement experience more persisting health problems after release than before.[95] This study raised the question of the quality of healthcare afforded to prisoners. A 2002 survey of local jail inmates reveals how mental illness disproportionately afflicts inmates when

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[93] Rusty Reeves et al., "Benefits of a Department of Corrections Partnership with a Health Sciences University: New Jersey's Experience," *Journal of Correctional Health Care* 20, no. 2 (April 2014): 146, https://doi.org/10.1177/1078345813518635.

[94] Sanjana Rao et al., "The Evolution of Health Care in the Texas Correctional System and the Impact of COVID-19," *Baylor University Medical Center Proceedings* 34, no. 1 (January 2, 2021): 76–77, https://doi.org/10.1080/08998280.2020.1826258.

[95] Michael Massoglia and William Alex Pridemore, "Incarceration and Health," *Annual Review of Sociology* 41, no. 1 (August 14, 2015): 293, https://doi.org/10.1146/annurev-soc-073014-112326.

contrasted with the general population.[96] As previously cited, the penal system's inmates are afflicted by increased rates of mental illness, illustrated by the approximately 50 percent of individuals who had a mental illness compared to a rate of 11 percent for the general population.[97] However, only approximately 33 percent of prison inmates and about 17 percent of jail inmates receive mental health treatment.[98] Jail systems have struggled to serve the needs of those afflicted by medical and behavioral health maladies. Evaluating health program efficacy in jail settings has also proven to be a daunting task even when considering inmates who do receive medical services.

To address deficiencies associated with healthcare administration in the penal system, certain state correctional organizations and the Federal Bureau of Prisons (BOP) have developed quality assurance systems to gauge the level of care provided.[99] Damberg et al. discuss how RAND Corporation surveyed the existing correctional systems indicators of quality performance for development of quality measures applicable to state prison populations. This exercise revealed variance in the number and types of metrics used as well as information systems employed to develop performance-gauging programs.[100] The performance metrics systems used to review healthcare quality in correctional settings mimics the same measurement systems used in the public and private health sector.[101] Correctional administrators and criminal justice reform advocates desired to improve the quality of healthcare delivery by promoting use of performance feedback tools. Damberg et al. highlight prison systems that struggled not only with development of quality

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[96] Doris James and Lauren Glaze, *Mental Health Problems of Prison Jail Inmates* (Washington, DC: U.S. Department of Justice, Office of Justice Program, September 2006): 3, https://www.bjs.gov/content/pub/pdf/mhppji.pdf.

[97] James and Glaze, 3.

[98] Anasseril E. Daniel, "Care of the Mentally Ill in Prisons: Challenges and Solutions," *Journal of the American Academy of Psychiatry and the Law Online* 35, no. 4 (December 1, 2007): 406.

[99] Cheryl L. Damberg et al., "A Review of Quality Measures Used by State and Federal Prisons," *Journal of Correctional Health Care* 17, no. 2 (April 2011): 122, https://doi.org/10.1177/1078345810397605.

[100] Damberg et al., 122.

[101] Damberg et al., 123.

healthcare measures but also with implementation of health information technology that would ease the burden of quality assessment.[102] For correctional systems that have outsourced inmate medical care to private companies, vendor contracts impose a carrot-and-stick approach to help drive clinical care improvements through use of fines and financial incentives clauses.[103] In the correctional setting, lack of performance measures to gauge medical care delivery performance will continue to expose the corrections industry to skepticism about the quality of inmate medical care.

2. Clinical Outcomes in Jail Healthcare since *Estelle v. Gamble*

A 2009 review of 2004 U.S. jail inmate surveys revealed that among inmates with a chronic medical issue, only 68.4% of local jail inmates, 20.1% of state inmates, and 13.9% of federal inmates had received medical assessments since incarceration.[104] The low level of medical screenings prompts questions about the quality of healthcare in jails. The Pew Charitable Trusts conducted a survey of state prisons to investigate healthcare practices and policies, and their findings concluded that states varied in their approaches to healthcare delivery and use of quality monitoring programs to gauge efficacy.[105] The survey also detected that of the 35 states that used quality-monitoring systems in fiscal 2016, only six states based their decision-making and legislative oversight from data and findings from their systems. This approach was credited for helping to clarify priorities, enhancing consistency associated with employee staffing levels as well as aligning operations with objectives.[106]

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[102] Damberg et al., 134.

[103] Huh et al., *Prison Health Care: Costs and Quality: How and Why States Strive for High-Performing Systems*, 40.

[104] Wilper et al., "The Health and Health Care of U.S. Prisoners: Results of a Nationwide Survey," 669.

[105] Huh et al., *Prison Health Care: Costs and Quality: How and Why States Strive for High-Performing Systems*, 56.

[106] Huh et al., 2.

Although some correctional system administrators participating in the Pew survey acknowledged the positive attributes of quality monitoring systems to gauge medical care performance, four states did not agree that these systems could improve the quality of care afforded to inmates.[107] Comparing the quality and efficacy of jail healthcare can be a challenging prospect when performance systems and other feedback instruments needed to measure clinical care and outcomes fail to receive priority from correctional systems administrators.

C. REHABILITATION OF INMATES THROUGH CORRECTIONAL HEALTHCARE

Poor clinical outcomes arising from medical care delivered to inmates may contribute to recidivism rates. The Bureau of Justice Statistics data analysis over ten years of information tied to prisoner releases revealed that almost 50 percent of these individuals cycle back into the prison system after only a few years of life outside of jail walls.[108] These statistics suggest correctional facility administrators should address factors that contribute to inmate recidivism. Correctional officers and policy makers who fail to address poor medical care or fail to measure performance in this aspect of jail operations also fail to capitalize on information from performance systems that can help correct medical care deficiencies.

Correctional approaches to behavioral healthcare have shown a relationship to recidivism rates. Landenberger and Lipsey's meta-analysis of cognitive-behavioral therapy (CBT) programs for offenders teased apart how these methods to address behavioral health deficiencies correlated with reduced recidivism rates.[109] The quality of CBT provided also impacts effectiveness of these programs as does using providers with mental health

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[107] Huh et al., 2.

[108] Patrick Langan and David Levin, *Recidivism of Prisoners Released in 1994* (Washington, DC: Bureau of Justice Statistics, June 2002): 3, https://bjs.ojp.gov/content/pub/pdf/rpr94.pdf.

[109] Nana A. Landenberger and Mark W. Lipsey, "The Positive Effects of Cognitive–Behavioral Programs for Offenders: A Meta-Analysis of Factors Associated with Effective Treatment," *Journal of Experimental Criminology* 1, no. 4 (December 2005): 451, https://doi.org/10.1007/s11292-005-3541-7.

backgrounds.[110] Other intervening factors such as frequency of the therapy and coupling with other educational or socialization programs influence CBT effectiveness.[111] In correctional settings across the United States, however, financial resources and technical expertise constraints may pose obstacles to implementing quality CBT or other behavioral health therapies needed to address inmates' behavioral health problems. However, the reduced recidivism rates realized because of CBT therapy in correctional settings warrants investing in resources to implement these therapies as those afflicted by behavioral health problems and society stand to benefit from improved care.

Designing correctional healthcare systems that provide quality inmate care while containing costs challenges correctional administrators in their efforts to operate effective jail operations designed to rehabilitate inmates. Nevertheless, data covering medical care delivery outcomes is often scant or absent. This situation may contribute to failed efforts to rehabilitate inmates in the most effective method. Mears and Cochran assert that failing to identify gaps in correctional medical care hampers U.S. policy development that could lead to a balanced, empirically based treatment approach needed to formulate an evidence-based criminal justice system.[112] Winter defines evidenced-based healthcare as the use of scientifically and rigorously proven medical protocols that if applied consistently, yield reduced costs by mitigating inappropriate variance in treatment remedies.[113] Mears and Cochran contend that failure to diagnose the prevalence of healthcare problems afflicting inmates leads to a situation where resources are mismatched because care provided does not meet the needs of the patient.[114]

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[110] Landenberger and Lipsey, 452–453.

[111] Landenberger and Lipsey, 453.

[112] Daniel P. Mears and Joshua C. Cochran, "U.S. Prisoner Reentry Health Care Policy in International Perspective: Service Gaps and the Moral and Public Health Implications," *The Prison Journal* 92, no. 2 (June 2012): 175–176, https://doi.org/10.1177/0032885512438845.

[113] Sandra J. Winter, "Improving the Quality of Health Care Delivery in a Corrections Setting," *Journal of Correctional Health Care* 14, no. 3 (July 2008): 173, https://doi.org/10.1177/1078345808318125.

[114] Mears and Cochran, "U.S. Prisoner Reentry Health Care Policy in International Perspective: Service Gaps and the Moral and Public Health Implications," 177.

No one size fits all when identifying medical care gaps between correctional systems. Some of the questions that Mears and Cochran emphasize when identifying gaps include the following: Does care provided match the needs of the situation? Is care delivery focused on the correct individuals? Does care remedy the medical condition treated? Does the same type of care need to be increased; do efforts need to be augmented or adjusted to improve care?[115] Intensive gap analysis provides policymakers and correctional system administrators valuable information that helps target deficiencies such as development of programs to address problems or increasing services needed to appropriately care for the medical needs of inmates.[116] Convincing decision-makers to increase medical care funding should entail gap analysis that relies on data and strategic planning designed to narrow the divide between needed medical care and resources available to meet demands. The exercise of correctly although painstakingly conducting gap analysis affords an opportunity to identify medical care gaps, and use of investigative data may also help to develop medical care systems that improve inmate rehabilitation efforts.

D. CONTINUITY OF HEALTHCARE FOR INMATES IN THE UNITED STATES PENAL SYSTEM

The U.S. jail system includes individuals who are often transitory, mostly uninsured, and exhibit higher rates of mental illness, substance abuse, and chronic disease compared to the public. These individuals also lack a continuum of healthcare as they transition in and out of the correctional system. The lack of medical information sharing between jails and community health organizations contributes to delay or inadequate medical care for the population of individuals transitioning in and out of the correctional system. The information age and technology innovations provide an opportunity for the correctional system to close the gap on poor inmate continuity of healthcare. Butler and Murphy posit that adoption of health information technology (IT) by some jail systems has mimicked adoption efforts by external healthcare providers and that these systems afford

115 Mears and Cochran, 181.

116 Mears and Cochran, 187.

an opportunity to improve health information sharing outside of jail walls.[117] Furthermore, some correctional systems have adopted sophisticated information systems that interface with jail management systems, EHRs and other technology solutions that aid in improving inmate healthcare.[118] Because of this, jails operating with simple paper records for medical documentation should research and invest in technologies that could bring about efficiencies while improving correctional healthcare.

An added incentive to adopting technology for medical care practices in jail settings includes the changing government rules and shifting policy landscape that facilitates implementation of technology solutions. Success stories such as Multnomah County, Oregon's jail system demonstrate how EHRs could improve continuity of care for inmates. The Department of Health in Multnomah County implemented an EHR system in the county jail system used across county clinics, and the same system receives use by 80 percent of healthcare providers in the Portland, Oregon, area.[119] These efforts contribute to a health information exchange covering inmate medical records beyond jail walls.

Marks and Turner note that inmate healthcare information shared with community providers affords a means to improve the control of medical and infectious disease in the community.[120] The authors propose policies that would help local communities promote healthier populations as jailed inmates would receive healthcare during their period of incarceration that integrates with community providers. However, Marks and Turner mention that this rarely happens, as healthcare rendered behind bars fails to connect with healthcare provided in local communities. Because of the investment of resources associated with inmate healthcare, the authors also view these efforts as wasted when

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[117] Ben Butler and Judy Murphy, "The Impact of Policies Promoting Health Information Technology on Health Care Delivery in Jails and Local Communities," *Health Affairs* 33, no. 3 (March 2014): 487–88, https://doi.org/10.1377/hlthaff.2013.1125.

[118] Butler and Murphy, 487, 489.

[119] Butler and Murphy, 489.

[120] James S. Marks and Nicholas Turner, "The Critical Link between Health Care and Jails," *Health Affairs* 33, no. 3 (March 2014): 445–46, https://doi.org/10.1377/hlthaff.2013.1350.

individuals integrate into communities where they fail to receive treatment for ongoing health problems.

Implementing technology solutions such as EHRs requires planning, effort and financial expenditures that correctional administrators may not be willing to pursue. Thanks to the Health Information Technology for Economic and Clinical Health (HITECH) Act, healthcare providers aiming to support growth of health information exchange are enticed to do so with incentives.[121] Initially, HITECH did not include correctional institutions because they were not considered Medicaid providers but for Medicaid participating states, correctional institutions are now allowed to pursue funds to support technology investments if they can successfully file and meet requirements to qualify as Medicaid providers.[122] Because of the filing and attestation requirements associated with Medicaid provider qualifications, correctional system administrators may be reluctant to pursue HITECH financial incentives that support technology investment.

The Health Insurance Portability and Accountability Act of 1996 (HIPAA) protects individual private health information, but the act also serves to create confusion when public health organizations and correctional systems collaborate to attempt sharing individual health records.[123] Ordinarily, sharing medical records requires patient consent, but these organizations must also adhere to covered entity requirements needed to facilitate exchange of healthcare information.[124] A covered entity is an individual, organization or agency such as a healthcare provider, health plan or healthcare clearinghouse that obtains,

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[121] Health Information Technology for Economic and Clinical Health Act, Public Law 111-5, 123 Stat. 226 (2009). https://www.hhs.gov/sites/default/files/ocr/privacy/hipaa/understanding/coveredentities/hitechact.pdf.

[122] Butler and Murphy, "The Impact Of Policies Promoting Health Information Technology on Health Care Delivery in Jails and Local Communities," 490.

[123] "Health Insurance Portability and Accountability Act of 1996 (HIPAA)," Centers for Disease Control and Prevention, September 14, 2018, https://www.cdc.gov/phlp/publications/topic/hipaa.html.

[124] "Summary of the HIPAA Security Rule," U.S. Department of Health and Human Services, July 26, 2013, https://www.hhs.gov/hipaa/for-professionals/security/laws-regulations/index.html.

processes, and maintains a patient's health data.[125] The administrative and training requirements involved with becoming a covered entity may deter correctional systems administrators, and this situation hinders sharing individual health records with healthcare providers outside of the correctional system. Overcoming covered entity requirements may entail legal and policy change that permits correctional systems greater ease of accessing and sharing healthcare information with community healthcare providers. Medical information sharing between jails and community health providers may serve to improve continuity of care and potentially expedite medical care delivery in jails systems. Ultimately, inmates who receive quality healthcare may integrate better into their communities upon release with better medical and behavioral healthcare fostering self-sufficiency critical to avoiding recidivism.

Poor continuity of medical care in jail settings can make community reintegration more difficult for inmates if transitional care is not available for those who suffer from chronic or behavioral health conditions after release. The survey of state jail systems conducted by The Pew Charitable Foundation highlighted how progressive jail system administrators can greatly aid continuity of care for inmates outside of their correctional institutions.[126] Some jail systems have forged partnerships with other state agencies to hand off inmate medical and behavioral health information that helps to preserve medical care provided by correctional facilities. Collaboration between the penal system and community stakeholders may serve to provide individuals freed from confinement with a system of transitional medical care, but many jail systems have failed to capitalize on these initiatives.[127] Neglecting to establish a lifeline of medical care and social services outside of jail settings likely contributes to declining health for individuals and communities where inmates reintegrate into communities. Annually, significant financial investment is committed to supporting inmate healthcare, but transitional healthcare is often

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125 "Covered Entities and Business Associates," U.S. Department of Health and Human Services, accessed February 27, 2021, https://www.hhs.gov/hipaa/for-professionals/covered-entities/index.html.

126 Huh et al., *Prison Health Care: Costs and Quality: How and Why States Strive for High-Performing Systems*, 44–45.

127 Huh et al., 45–46.

neglected.[128] However, the importance of transitional care for re-entry of inmates released from jail has drawn the attention of the court system, with a New York State judge ruling that comprehensive discharge plans be required for the serious mentally afflicted inmates released from the New York City Department of Corrections.[129] Although a positive step to ensuring transitional healthcare for a vulnerable class of inmates, having such plans in place for all inmates could serve to establish or strengthen continuity of healthcare after release from prison.

Mellow and Greifinger discuss how jail systems fail to avail themselves of transitional healthcare programs because of barriers that include lack of policymaker and correctional system administrator attention to this issue, limited financial resources, and nonexistent electronic medical records and electronic databases that promote continuity of care.[130] Transitional service programming that goes ignored only contributes to undermining medical care and other rehabilitation efforts that may benefit inmates during their period of incarceration. Mellow and Greifinger also acknowledge barriers to developing transitional care programs; however, their suggested recipe to overcome challenges includes input from a roundtable of participants who encourage setting up a discharge template covering services that help inmates address medical needs once they are released from the confines of jail.[131] These templates would of course require financial commitment and stakeholder involvement to support transitional care.

E. INMATE HEALTHCARE AT THE LOCAL AND COUNTY LEVELS

Inadequate inmate healthcare in local and county jails periodically surfaces in news accounts of deficient jail intake medical screening and healthcare during an inmate's period of incarceration that at times results in severe injury or death. The case of Sandra Bland

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[128] Mellow and Greifinger, "Successful Reentry: The Perspective of Private Correctional Health Care Providers," 85, https://doi.org/10.1007/s11524-006-9131-9.

[129] Brad H. v. City of New York, 276 A.D.2d 440, 716 N.Y.S.2d 852.

[130] Mellow and Greifinger, "Successful Reentry: The Perspective of Private Correctional Health Care Providers," 89.

[131] Mellow and Greifinger, 91.

involved an African-American female arrested by a Texas state trooper for making an illegal lane change, leading to her booking into the Waller County jail in Hempstead, Texas, on July 10, 2015; her wrongful death led to a $1.9 million settlement in 2016.[132] Three days after her arrest, Bland hanged herself and because of the incident, Waller County jail officials endured local and national media scrutiny for mishandling her custody after she admitted on an intake questionnaire that she had previously attempted suicide by taking pills in 2015 after she lost a baby.[133] To explain this tragedy, Hautala posits that when jails have disparate intake procedures, the fragmented approach contributes to poor quality of medical care and jail operations mismanagement.[134]

To add to this problem, Hautala points out that staffing shortfalls at independent governing agencies such as the Texas Commission on Jail Standards combined with the absence of such oversight agencies in other states contributes to poor prisoner intake.[135] Sandra Bland's custody entailed deficient monitoring as established by Texas state law, which calls for observation checks on inmates every 60 minutes and at least on a cycle of 30-minute intervals when considering areas of the jail where at-risk inmates may pose harm to themselves or to others at the facility.[136] Inadequate jail staffing or poor correctional officer training associated with observational safety checks should give policymakers and jail system administrators motivation to address these needs if they hope to avoid repeating incidents such as Bland's death. Otherwise, penal system administrators will fail their obligation to ensure safe custody and reform of inmates.

Robust jail intake, which appropriately addresses behavioral health screening, may contribute significantly toward ensuring the safety of jailed inmates at local and county

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[132] David Montgomery, "The Death of Sandra Bland: Is There Anything Left to Investigate? (Published 2019)," *New York Times*, May 8, 2019, sec. U.S., https://www.nytimes.com/2019/05/08/us/sandra-bland-texas-death.html.

[133] Montgomery, "The Death of Sandra Bland: Is There Anything Left to Investigate?

[134] Matti Hautala, "In the Shadow of Sandra Bland: The Importance of Mental Health Screening in U.S. Jails." *Texas Journal on Civil Liberties & Civil Rights* 21, no. 1 (September 22, 2015): 126.

[135] Hautala, 93.

[136] 37 Texas Administrative Code § 273.6 (2013).

jails. The International Association for Correctional and Forensic Psychology (IACFP) along with the American Correctional Association (ACA) promulgate standards associated with jail intake. In the third edition of the IACFP standards manual, the organization stresses that adhering to the guidelines aid correctional organizations in reducing the likelihood of expensive litigation, facilitates offender rehabilitation, and contributes to reduced recidivism.[137] Recommended intake includes many support components such as adequate staffing, suicide prevention and assistance programs, correctional officer training, and humane treatment, to name a few.[138] However, local and county jails may not be equipped to handle all of these components due to financial constraints or because policy design and implementation in support of the standards may be needed. The deinstitutionalization of the mentally ill in the 1980s has created great strain on the U.S. jail system, making the corrections system hold more of the mentally ill than psychiatric hospitals.[139] In light of these circumstances, U.S. policy-makers and correctional system administrators need to consider quality intake that addresses the needs of individuals in a way that ensures appropriate care and custody of this vulnerable population.

Indiscriminate treatment of mentally ill individuals during incarceration intake violates humane treatment and ethical practice expected by our society. The IACFP cautions against lowering its standards of care as stopgap measures due to economic shortfalls because of the costs recidivism imposes on society as well as potential litigation and breach of public faith in the criminal justice system.[140] However, the standards do impose obligations on correctional systems such as on-site or on-call psychological expertise and services, recommended staff-to-inmate ratios, drug treatment management

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[137] IACFP Practice Standards Committee, "Standards for Psychology Services in Jails, Prisons, Correctional Facilities, and Agencies: International Association for Correctional and Forensic Psychology (Formerly American Association for Correctional Psychology)," *Criminal Justice and Behavior* 37, no. 7 (July 2010): 755–56, https://doi.org/10.1177/0093854810368253.

[138] IACFP Practice Standards Committee, 755.

[139] Fred Cohen, *The Mentally Disordered Inmate and the Law* (Kingston, NJ: Civic Research Institute, 2008): 1–4.

[140] IACFP Practice Standards Committee, "Standards for Psychology Services in Jails, Prisons, Correctional Facilities, and Agencies," 761.

and other programs geared to meet the needs of inmates.[141] Meeting the standards may be a tall order for cash-strapped local- and county-level governments across the United States.

IACFP also covers standards associated with non-mental health services staff including corrections officers with at least one staff member per shift required to undergo instruction on how to help render aid to individuals afflicted with behavioral health problems as well as how to involve trained mental health professionals based on established protocols.[142] Initial and refresher training is suggested for corrections staff along with a host of other recommendations serving to provide guidelines on appropriate inmate intake and ongoing healthcare during their time in jail.[143] Standards guide correctional system administrators and policy-makers on how to care for individuals with mental illness to ensure their viability and rehabilitation.

Local and county jails vary significantly in their inmate intake and jail operations when standards are not followed, but these institutions may be challenged to support intake standards because of staff turnover and the high level of churn associated with individuals cycling through the local-level corrections system. When considering jail populations at the local level, 13.6 million individuals were processed in 2008, but there was an approximately 14 percent population drop when comparing to inmates admitted in 2013.[144] Nonetheless, the high rate of inmate processing through local and county jails may be contributing to correctional staff complacency and indifference when it comes to medical screening or to rapid evaluations. The high profile death-in-custody case involving Jeffrey Epstein in 2019 highlighted failures of local level corrections officers when the disgraced financier committed suicide by hanging in a Manhattan, New York, jail cell.[145] The death investigation determined that correctional officers failed to check on Epstein

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[141] IACFP Practice Standards Committee, 767–68.

[142] IACFP Practice Standards Committee, 777.

[143] IACFP Practice Standards Committee, 778.

[144] Bureau of Justice Statistics, "Local Jail Population Declines from 2008 to 2013," accessed November 16, 2020, https://www.bjs.gov/content/pub/press/jim13stpr.cfm.

[145] Azi Paybarah, "Inside the Jail the Night Jeffrey Epstein Died," *New York Times*, November 20, 2019, sec. New York, https://www.nytimes.com/2019/11/20/nyregion/jeffrey-epstein-death.html.

every 30 minutes as required, and the officers falsified documents to conceal their negligence.[146] Failures such as Epstein's death draw media attention and scrutiny that may reveal shortcomings with correctional system staffing and training deficiencies.

Suicide plagues the American correctional system, especially at the local and county level. From 1999 through 2014, the age-adjusted rate of suicide in the United States inflated by 24%, from 10.5 to 13.0 per 100,000 population.[147] In contrast, death by suicide in jails happens with much more frequency. The 2014 suicide rate per 100,000 population in federal and state prison was 14 and 20 inmates per 100,000 inmates, respectively.[148] In 2014, the rate of death by suicide in the local jail system was 50 individuals per 100,000 local jail inmates.[149] Outside of the jail setting, the suicide rate from 2004 through 2014 increased from 11.0 (per 100,000) in 2004 to 13.4 in 2014.[150] Regrettably, individuals held in jails may not cope well with the condition of incarceration. In 2013, greater than one-third of all local jail inmate deaths linked to suicide.[151] Suicide leads the causes of death for inmates held at local jails since 2000, and rates have increased over the years.[152] Suicide at the local jail level seems to be a significant problem that needs more policy-maker and criminal justice reform advocacy.

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146 Paybarah, "Inside the Jail the Night Jeffrey Epstein Died."

147 Sally Curtin, Margaret Warner, and Holly Hedegaard, "Increase in Suicide in the United States, 1999–2014," Centers for Disease Control and Prevention, June 7, 2019, https://www.cdc.gov/nchs/products/databriefs/db241.htm.

148 Margaret Noonan, "Mortality in State Prisons, 2001–2014-Statistical Tables," U.S. Department of Justice, December 2016: 5,6, https://www.bjs.gov/content/pub/pdf/msp0114st.pdf.

149 Noonan, 1.

150 Christopher Drapeau and John McIntosh, "U.S.A. Suicide 2014: Official Final Data," American Association of Suicidology, December 20, 2015, 2.

151 Margaret Noonan, Harley Rohloff, and Scott Ginder, "Mortality in Local Jails and State Prisons, 2000–2013 - Statistical Tables," U.S. Department of Justice, August 2015: 1,3, https://www.bjs.gov/content/pub/pdf/mljsp0013st.pdf.

152 Noonan, Rohloff and Ginder, 3.

F. CORRECTIONAL SYSTEM EXPANSION WITH LAGGING SERVICE EXPANSION

While healthcare service delivery may be deficient in the correctional system, another problem that compounds this situation includes expansion of the correctional system. As cited previously, local jails also serve to address prison overcrowding at the state level. The largest jails in the United States such as Rikers Island (New York City), Los Angeles County Jail, Miami-Dade County (Florida) Jail, and Cook County (Chicago) Jail garner the greatest focus from policy-makers and the media. These larger jails have not experienced increased population growth, and they do not reflect jails with the highest incarceration rates.[153] "Super jails" are typified as jails with more than 1,000 bunks, and these facilities were previously associated with the largest urban cities in the United States, but these detainment centers have proliferated in smaller jurisdictions.[154] Furthermore, the contrast of incarceration rates between large jail systems such as Dallas County (367 per 100,000) and mid-size county systems such as Clayton County, Georgia, (962 per 100,000) and Shelby County, Tennessee, (876 per 100,000) highlights the disproportionate increase of smaller jail systems.[155] Subramanian, Henrichson, and Kang-Brown highlight how smaller and mid-size jurisdictions across the U.S. have contributed to the tremendous growth in jail construction and inmate population since 1970.[156] Minton and Zeng report that in 2015, 68 percent of inmates detained had a felony offense nexus, while the remaining 32 percent of incarcerations linked to misdemeanor (27 percent) or other offenses (5 percent).[157]

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153 Ram Subramanian, Christian Henrichson, and Jacob Kang-Brown, *In Our Own Backyard: Confronting Growth and Disparities in American Jails* (New York: Vera Institute of Justice, December 2015): 7–8, https://www.vera.org/downloads/publications/incarceration-trends-in-our-own-backyard-fullreport.pdf .

154 Subramanian, Henrichson, and Kang-Brown, 9.

155 Subramanian, Henrichson, and Kang-Brown, 11.

156 Subramanian, Henrichson, and Kang-Brown, 8.

157 Todd Minton and Zhen Zeng, "Jail Inmates in 2015," U.S. Department of Justice, December 2016, 1, https://www.bjs.gov/content/pub/pdf/ji15.pdf.

Building more jails to expand inmate capacity seems like a solution to address overcrowding. However, an unintended outcome of building more capacity means that policy-makers shy away from addressing policies and practices that promote high rates of incarceration, and this lends to a situation where expanded jail capacity only provides temporary relief from overcrowding.[158] Another pitfall of expanded jail capacity entails growth of the jail population that does not see a concomitant increase of services. These services include medical care provision or correctional officer staffing increases needed to monitor inmates effectively.[159] Taken together, the dynamics of local jail systems sets up a recipe for promoting poor inmate healthcare delivery.

G. COST AVOIDANCE STRATEGIES ASSOCIATED WITH INMATE MEDICAL CARE AND THE MEDICAID EXCLUSION RULE

Medicaid helps economically disadvantaged individuals meet their healthcare needs, and U.S. inmates are disproportionately represented among this vulnerable population. As the U.S. Congress laid out provisions of Medicare and Medicaid in 1965, it prohibited benefits from the legislation to pay for healthcare that would focus on inmates in jails and prisons.[160] The exclusion of inmates from Medicaid benefits, known as the "inmate exception" rule, contributes to a significant neglect of under-resourced inmate healthcare that seems overlooked when considering quality care delivery afforded to the public.[161] The legislation authorizing Medicaid and Medicare programs requires that participating healthcare providers meet minimum care standards, and if jails could be included in the provision of aid, this means benefits derived would potentially place corrections administrators in the position of elevating inmate healthcare standards.[162]

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158 Mai, Subramanian and Kang-Brown, "Broken Ground: Why America Keeps Building More Jails and What It Can Do Instead," 6.

159 Mai, Subramanian and Kang-Brown, 34.

160 Social Security Act Amendments of 1965, Pub L No. 97, 42 USC §1396d (April 9, 1965).

161 Kevin Fiscella, Leo Beletsky, and Sarah E. Wakeman, "The Inmate Exception and Reform of Correctional Health Care," *American Journal of Public Health* 107, no. 3 (March 2017): 384–85, https://doi.org/10.2105/AJPH.2016.303626.

162 Fiscella, Beletsky, and Wakeman, 384–85.

Bipartisan support for repeal of the inmate exception rule exists, but it has not changed policy. However, mitigating strategies exist such as the option for states to take policy adoption action whereby inmate Medicaid benefits would suspend instead of terminate during their period of incarceration.[163]

Recognizing the consequences of the inmate exception rule, organizations such as the National Association of Counties (NACo) have formulated lobbying campaigns to highlight medical coverage gaps created by the rule and to advocate for legislative action. NACo contends that jailed individuals are prohibited from deriving federal health coverage immediately after being arrested and before going to trial.[164] Additionally, NACo points out that when Medicaid benefits stops during incarceration, released inmates contend with significant delay to requalify for Medicaid, and this coverage gap contributes to recidivism.[165] Failing to act on the inmate "exclusion rule" associated with Medicaid benefits will continue to have perceptible negative consequences for individuals.

However, elected officials at all levels contend with competing interests and priorities, and this competition makes needed legislative action even more challenging.

Stullich, Morgan, and Schak highlight how financial allocations for state and local corrections increased almost 90 percent while spending on higher education remained stagnant over more than 20 years culminating in 2012–13.[166] Additionally, some states increased their corrections budgets five times more quickly than their allocation for public education.[167] This disproportionate budget growth in the correctional system sector may serve to undermine efforts to improve inmate healthcare delivery.

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163 Fiscella, Beletsky, and Wakeman, 385.

164 National Association of Counties, *Federal Policy Impacts on County Jail Inmate Healthcare & Recidivism* (Washington, DC: National Association of Counties, March 2019): 2–3, https://www.naco.org/sites/default/files/documents/Medicaid%20and%20County%20Jails%20Presentation.pdf.

165 National Association of Counties, 14.

166 Stephanie Stullich, Ivy Morgan, and Oliver Schak, *State and Local Expenditures on Corrections and Education: A Brief from the U.S. Department of Education, Policy and Program Studies Service* (Alexandria, VA: U.S. Department of Education, July 2016): 1, https://www2.ed.gov/rschstat/eval/other/expenditures-corrections-education/brief.pdf.

167 Stullich, Morgan, and Schak, 7.

The unfunded requirement to provide inmate healthcare places pressure on correctional system administrators to meet this need and the Medicaid inmate exclusion rule stymies this effort. Malfeasance in corrections and law enforcement practices do not always receive public scrutiny. Sheets discusses the practice of "medical bond" whereby, sheriffs in Alabama deploy a tactic of releasing inmates to avoid paying bills when these individuals experience medical emergencies behind bars, and once they recover, they are promptly rearrested and returned to jail.[168] This practice calls into question the abuse of power and integrity of Alabama's county sheriffs. Lamar County, Alabama's sheriff, Hal Allred, stated that his jail has no medical staff so there is pressure to avoid incarcerating sick criminals, and in some cases, inmate bond release occurs before a judge's approval.[169] These abuses raise questions about what kind of accountability exists for individuals elected to sheriff positions. Hamrick discusses that Georgia state law has created healthcare delivery problems for individuals placed under arrest.[170] The author notes that various court cases in Georgia have pitted hospital systems against municipal and county jails that shirk responsibility for medical bills covering healthcare provided to individuals arrested by law enforcement officials. Hamrick posits that court cases have favored municipal and county governments in their contention that individuals arrested and transported to hospitals for care are not technically under their custody. Because of this, hospital systems do not receive compensation for care rendered, and the court rulings do not encourage hospitals to provide quality care to indigent inmates and arrestees transported by law enforcement.[171] Ultimately, Hamrick discusses that hospitals retaliate against law enforcement by discharging minimally treated inmates through its back doors.[172]

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[168] Connor Sheets, "These Sheriffs Release Sick Inmates to Avoid Paying Their Hospital Bills," ProPublica, September 30, 2019, https://www.propublica.org/article/these-sheriffs-release-sick-inmates-to-avoid-paying-their-hospital-bills?token=Vrx_-uDyO_Oj63BwWNyG1VS8s7LM-wDl.

[169] Sheets, "These Sheriffs Release Sick Inmates to Avoid Paying Their Hospital Bills."

[170] L. Taylor Hamrick, "Where Healthcare and Policing Converge: How Georgia Law Promotes Evasion of Financial Responsibility for Indigent Arrestees' and Municipal Inmates' Medical Care." *Mercer Law Review* 67, no. 3 (March 22, 2016): 742.

[171] Hamrick, 765–66.

[172] Hamrick, 743.

Markham discusses how jails develop techniques to limit liability for inmates' medical expenses and illustrates the case of an unconscious North Carolina inmate released from jail because of a district court judge's order for an unsecured bond after he became severely ill.[173] While Alamance County in North Carolina sought to avoid a medical bill of approximately $100,000 by arguing that the ailing prisoner was no longer under their custody, a North Carolina appellate court ruled that the county "remained duty bound" to secure and cover care expenses.[174] The strategy of custody release to avoid inmate medical care costs has led to great conflict in the criminal justice system when it comes to ensuring vulnerable populations receive medical care and humane treatment. Sheets also discusses that Washington County Sheriff's Office in Alabama has endured three lawsuits over the past decade for releasing inmates just prior to hospitalization, and that jail administrator Sandy Cooley renders medical decisions for inmates although she lacks any formal medical training.[175] Sheets also discusses that Washington County's jail operations continues to neglect inmate medical care as it has failed to employ medical staff. Correctional systems that continue to neglect inmate medical care or to use questionable tactics to avoid costs for this care will continue to imperil the health and safety of inmates and their communities.

H. THE NEXUS BETWEEN CORRECTIONS OFFICERS AND QUALITY HEALTHCARE DELIVERY

Ross, Liebling, and Tait discuss how prison culture and climate contribute to undermining quality medical care delivery to inmates as corrections workers may filter requests for medical assistance and only facilitate referrals for serious medical

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[173] Jamie Markham, "Releasing Jail Inmates to Limit Medical Expenses," UNC Chapel Hill School of Government (blog), May 20, 2014, https://nccriminallaw.sog.unc.edu /releasing-jail-inmates-to-limit-medical-expenses/.

[174] University of North Carolina v. Hill, 96 N.C. App. 673 (1990).

[175] Connor Sheets, "An Inmate Needed Emergency Medical Help. The Jail's Response: See If She Has Insurance," ProPublica, October 1, 2019, https://www.propublica.org/article/an-inmate-needed-emergency-medical-help-the-jails-response-see-if-she-has-insurance.

problems.[176] Prisons function as a subsystem of government in a bureaucratic, authoritarian manner with correctional staff imposing strong disciplinary control of inmates; subsequently, they may withhold medical care as a form of punishment.[177] As intermediaries between inmates and healthcare personnel, corrections officers play a role regarding inmate access to quality healthcare. The critical role of corrections officers in facilitating quality medical care for inmates gained attention from the U.S. Supreme Court case *Canton v. Harris*, whereby the justices decided that municipalities risked liability for failing to provide training to corrections officers that addresses deprivation of a person's constitutional rights.[178] Because of this decision, correctional healthcare improvements require a modification of the prison climate as well as correctional officer views toward inmates.

As correctional officers are part of the jail milieu, these individuals work in emotionally stressful conditions. In their roles as disciplinarians and supporters of control and custody over inmates, correctional officers may relegate rehabilitation programs as a secondary concern.[179] However, Johnson and Price contend that correctional officers are responsible for influencing prison environments in a way that positively affects the mental health of inmates entrusted to their care.[180] Hostile environments that deny services such as healthcare significantly affect a vulnerable population behind correctional facility walls, including those afflicted by mental illness.

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[176] Michael W. Ross, Alison Liebling, and Sarah Tait, "The Relationships of Prison Climate to Health Service in Correctional Environments: Inmate Health Care Measurement, Satisfaction and Access in Prisons: The Relationships of Prison Climate to Health Service in Correctional Environments*," The Howard Journal of Criminal Justice* 50, no. 3 (July 2011): 262–64, https://doi.org/10.1111/j.1468-2311.2011.00658.x.

[177] Ross, Liebling, and Tait, 264, 271.

[178] Canton v. Harris, 489 S. Ct. 378 (1989).

[179] Robert Johnson and Shelley Price, "The Complete Correctional Officer: Human Service and the Human Environment of Prison," *Criminal Justice and Behavior* 8, no. 3 (September 1981): 345–46, https://doi.org/10.1177/009385488100800307.

[180] Johnson and Price, 366–367.

When considering inmate and correctional officer interpersonal dynamics, training of corrections officers that espouses constructive relations offers an opportunity to foster human environments that are nurturing. In this context, Tajfel discusses in-group outgroup dynamics that arise because of conflict between groups in his Social Identity Theory (SIT) construct.[181] Furthermore, Tajfel describes four linked concepts of SIT, which include "social categorization, social identity, social comparison and psychological distinctiveness."[182] Each of these elements interact with each other to contribute to or blunt conflict that arises between groups. Training for corrections officers that teaches SIT and addresses conditions that create conflict helps to promote attitudinal thinking that fosters a more positive environment for inmates and corrections officers alike. Instead of promoting differences among groups, which creates competition, embracing shared values of physical and psychological security would serve to reduce conflict between correctional officers and inmates. Johnson and Price advocate for a prison community where officers actively participate to meet the emotional and physical support needs of inmates under their custody.[183] Johnson and Price discuss that prison operations entail discrete functions, such as treatment and custody, but for correctional officers, cross-pollination between controlling and helping activities is discouraged out of concern that performance will be diminished regarding an officer's primary function of custodial care.[184] Herein lies one of the challenges to providing quality medical care in jail environments as corrections officers play a role in linking inmates with needed healthcare. Johnson and Price advocate for cooperative problem-solving between treatment and corrections officers so that activities are coordinated to meet organizational objectives.[185] Technologies adopted in the corrections setting require coordinating activities between healthcare providers and

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181 Henri Tajfel, "Social Identity and Intergroup Behaviour," *Social Science Information* 13, no. 2 (April 1974): 66–68, https://doi.org/10.1177/053901847401300204.

182 Tajfel, 69–70.

183 Johnson and Price, "The Complete Correctional Officer: Human Service and the Human Environment of Prison," 345.

184 Johnson and Price, 345–46.

185 Johnson and Price, 347.

corrections officers to meet the objectives of delivering quality medical care as safely and effectively as possible. As correctional officers escort inmates, the officers should ensure that scheduled appointments are met and that they help medical attendants as required to promote safety for all involved in the cycle of correctional healthcare.

Correctional officer training that heightens human relations, conflict resolution, and use of referral sources to promote nurturing care for inmates is a goal that jail system administrators fail to pursue with purpose.[186] This advocacy for correctional officer training to raise an ethos supporting humane inmate care is not without its challenges. Pont et al. champion the notion of clinical independence as a means to improve healthcare in jail settings, but they acknowledge challenges of meeting this goal when little information exists about ethical healthcare practices in the corrections industry.[187] This process includes understanding the relevance of clinical independence that allows medical practitioners to provide inmate healthcare without the undue influence of jail system corrections officers and administrators.[188] For this reason, support for training on medical ethics and clinical independence is needed for corrections employees and prison system healthcare workers. This training also helps address concerns raised by Pont, Stöver, and Wolff concerning dual loyalty for healthcare workers in prison healthcare, which they describe as conflicted allegiance to patients and prison authorities that may have negative consequences regarding inmate access to quality medical care.[189]

Because of the critical role of correctional officers when it comes to monitoring inmates and linking them to healthcare as circumstances dictate, correctional administrators should support their needs in a way that promotes performance success. A way to provide support includes achieving appropriate staffing of jail facilities. However, Fifield discusses that many correctional facilities experience correctional officer shortages

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186 Johnson and Price, 363.

187 Jörg Pont et al., "Prison Health Care Governance: Guaranteeing Clinical Independence," *American Journal of Public Health* 108, no. 4 (April 2018): 473–474, https://doi.org/10.2105/AJPH.2017.304248.

188 Pont et al., 472–473.

189 Jörg Pont, Heino Stöver, and Hans Wolff, "Dual Loyalty in Prison Health Care," *American Journal of Public Health* 102, no. 3 (March 2012): 475, https://doi.org/10.2105/AJPH.2011.300374.

leading to long work hours, fatigue, and stress for corrections officers.[190] The author contends that when correctional officer staffing is suboptimal, inmate recreational and social programs may decline due to the lack of supervision needed to ensure safety.[191]

Additionally, when the U.S. economy is doing well, attracting state prison staff as potential workers proves difficult as local jail or federal prisons provide better salaries. To compound this situation, an overworked correctional officer workforce tends to take more sick days and this exacerbates a negative jail climate where tensions may already run high.[192] The shortage of correctional officers likely influences inmate accessibility to healthcare in the jail setting. Because of this, telehealth and emerging technologies may afford an opportunity to tap into medical specialist resources that would otherwise go unmet while helping to reduce conflict between correctional system employees and healthcare workers tasked with delivery of inmate healthcare.

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[190] Jen Fifield, "Many States Face Dire Shortage of Prison Guards," Pew Charitable Trusts March 1, 2016, http://pew.org/1pJOyu3.

[191] Fifield, "Many States Face Dire Shortage of Prison Guards."

[192] Fifield, "Many States Face Dire Shortage of Prison Guards."

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III. TELEHEALTH AND EMERGING TECHNOLOGIES AS ENABLERS OF QUALITY HEALTHCARE DELIVERY IN THE PENAL SYSTEM

This chapter focuses on telehealth and emerging technologies as potential solutions to addressing inmate healthcare gaps. The penal system has used telehealth for over two decades, but the literature explores how telehealth can integrate with other technologies to close healthcare gaps in correctional facilities. The chapter also focuses on benefits and obstacles entailed with use of technology in the penal system. The chapter closes with considerations regarding integration and use of technology solutions to improve healthcare.

A. TELEHEALTH UTILIZATION IN THE PENAL SYSTEM

Telemedicine use in the correctional setting began proliferating during the 1990s, and in 2001, over 50 percent of the U.S. correctional systems employed telehealth solutions as a mode to provide healthcare to inmates with a focus on mental health assistance.[193] Ax et al. analyze studies to determine how benefits derived from telehealth use in jail settings include improved safety for communities where corrections institutions are located because offenders assessed and treated through this technology tool reduce the number of hospital trips for services as well as improved safety for corrections officers.[194] Benefits derived from telehealth use also align with the correctional system's efforts to improve inmate healthcare in a safe manner for all parties involved while controlling costs.[195] Because of the enhanced safety and cost savings linked to telehealth use, jail administrators with limited budgets may continue to look to this technology as a means to reduce costs and liability.

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[193] Debra Larsen et al., "Prison Telemedicine and Telehealth Utilization in the United States: State and Federal Perceptions of Benefits and Barriers," *Telemedicine Journal and E-Health* 10, no. supplement 2 (November 2004): 85–86, https://doi.org/10.1089/tmj.2004.10.S-81.

[194] Ax et al., "Innovations in Correctional Assessment and Treatment," 901.

[195] Charles R. Doarn et al., "Integration of Telemedicine Practice into Correctional Medicine: An Evolving Standard," *Journal of Correctional Health Care* 11, no. 3 (April 2005): 255, https://doi.org/10.1177/107834580401100304.

Telemedicine has proven to be effective when it comes to providing patients improved access to healthcare specialists who would otherwise require a face-to-face visit thanks to telecommunications hardware and software advancements. Although corrections system administrators may be hesitant to dispense with traditional approaches to medical delivery, positive clinical outcomes derived from telemedicine help to overcome objections to in-person visits with healthcare specialists. Sharp, Kobak and Osman found little evidence to dispute telehealth's efficacy when mental health clinicians situated in remote locations treated patients presenting with psychosis.[196] The impetus for exploring use of telemedicine results from demand to meet mental health services for vulnerable populations such as those in rural settings or individuals detained in penal system facilities.[197]

The use of telemedicine to treat mentally ill patients in jail settings met initial skepticism. However, not only has telemedicine proven to be effective, but it actually has been deemed superior to live therapy in some instances because of its tendency to reduce rater bias and improve reliability during interview sessions.[198] Eliminating bias when treating patients afflicted with behavioral health conditions is just another reason to support telemedicine's role in healthcare delivery. Sharp, Kobak and Osman also vetted use of videoconferencing for remote application of mental health therapy in a rural county jail clinic, and patients accepted technology readily while quality of care did not perceptibly diminish.[199] Zaylor also conducted a retrospective study of clinical outcomes to compare patients treated with interactive television (IATV) and those treated in person to determine

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[196] Ian R Sharp, Kenneth A Kobak, and Douglas A Osman, "The Use of Videoconferencing with Patients with Psychosis: A Review of the Literature," *Annals of General Psychiatry* 10, no. 1 (2011): 2–3, https://doi.org/10.1186/1744-859X-10-14.

[197] Sharp, Kobak, and Osman, 1.

[198] Kenneth A. Kobak et al., "Why Do Clinical Trials Fail?: The Problem of Measurement Error in Clinical Trials: Time to Test New Paradigms?" *Journal of Clinical Psychopharmacology* 27, no. 1 (February 2007): 1–5, https://doi.org/10.1097/JCP.0b013e31802eb4b7.

[199] Sharp, Kobak, and Osman, "The Use of Videoconferencing with Patients with Psychosis: A Review of the Literature," 3.

if IATV reduced quality of care.[200] These types of studies help understand efficacy of telemedicine's role in healthcare delivery compared to traditional approaches. In his analysis, Zaylor used a Global Assessment of Functioning (GAF) score, which was assessed for each patient in the study and control groups at initiation and at successive visits. For 49 patients with either major depression or schizophrenia, no great variance was detected in the change associated with GAF scores between the populations evaluated.[201] For correctional administrators, these kinds of results can reassure them that telehealth affords access to mental health clinicians in remote locations while instilling confidence that distance therapy is making a difference for inmates afflicted with mental health disease.

Quality also matters when it comes to bandwidth and communications infrastructure that support video use during mental health delivery. Zarate et al. tested this theory using varying quality and speeds of bandwidth, and higher bandwidths helped achieve higher reliability assessment of negative symptoms associated with mental illness.[202] This finding should encourage correctional administrators about the proven efficacy of telehealth as well as the importance of establishing reliable technology infrastructure that supports its use.

Telemedicine use in correctional settings may require careful consideration and planning but correctional administrators may lack knowledge or resources needed to implement this technology. To develop such knowledge, the National Institute of Justice arm of the U.S. Department of Justice developed a report that serves as guidance regarding consideration factors covering implementation of telemedicine in correctional facilities.[203]

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[200] Charles Zaylor, "An Adult Telepsychiatry Clinic's Growing Pains: How to Treat More than 200 Patients in 7 Locations," *Psychiatric Annals* 29, no. 7 (July 1999): 408.

[201] Charles Zaylor, "Clinical Outcomes in Telepsychiatry," *Journal of Telemedicine and Telecare* 5, no. 1_suppl (March 1999): 59–60, https://doi.org/10.1258/1357633991932577.

[202] Carlos A. Zarate et al., "Applicability of Telemedicine for Assessing Patients with Schizophrenia: Acceptance and Reliability," *The Journal of Clinical Psychiatry* 58, no. 1 (January 15, 1997): 22–25, https://doi.org/10.4088/JCP.v58n0104.

[203] Peter Nacci et al., *Implementing Telemedicine in Correctional Facilities* (Washington, DC: U.S. Department of Justice, May 2002): 2–3, https://www.ncjrs.gov/pdffiles1/nij/190310.pdf.

Nacci et al. developed a guide, which includes a decision process, planning process, cost estimation model, technology evaluation, and other factors that merit review and consideration when approaching telehealth implementation projects.[204]

In 1987, an inmate transported to a hospital from a federal prison in Lewisburg, Pennsylvania, attempted escape, and an unarmed guard died during the botched escape.[205] This event spurred the Federal Bureau of Prisons (BOP) to examine telehealth to increase corrections officers' safety, but at the time, prohibitive costs associated with telemedicine equipment and communications service did not make implementation possible.[206] The decision to use telehealth warrants research to gain understanding about its efficacy in helping to deliver medical care. To establish such understanding, the U.S. Department of Justice contracted with Abt Associates Inc. in 1999 to have researchers determine how telehealth could help medical practice in the correctional setting.[207] The decision to hire consultants to handle investigative work needed to validate telehealth's use in the penal system over 20 years ago focused on a cost-benefit analysis.

When the Abt Associates Inc.'s backed report published in 1999, BOP reported that telemedicine had already launched in some of its facilities and that the report would help state and local entities determine whether and in what way telemedicine could ease healthcare delivery in their systems.[208] Since the penal system's initial use of telemedicine in the 1990s, technology equipment and communications systems costs have dropped to a level that makes telemedicine more practical for use in jails systems. Early evaluations of telemedicine use in correctional settings touted its effectiveness as a substitute for in-person consultations when considering psychiatry and dermatology, but it was less reliable

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204 Nacci et al., 10–26.

205 Associated Press, "Prison Guard Dead, Gunmen and Escapee Captured in Ambush-Escape Attempt," accessed November 19, 2020, https://apnews.com/article/bf68aed67ce7feff5570d9a78041ab98.

206 Douglas McDonald et al., "Telemedicine-Can Reduce Correctional Health Care Costs: An Evaluation of a Prison Telemedicine Network," Research (Washington, DC: U.S. Department of Justice, March 1999), V, https://www.ncjrs.gov/pdffiles1/175040.pdf.

207 McDonald et al., XIV.

208 McDonald et al., V.

for cardiology or orthopedics.[209] Because of this, initial primary use of telemedicine focused on mental illness therapy behind jail walls. This technology-backed medical delivery also helped to avert hospital transports while expanding access to more specialists at lower costs.[210] The technology continues to evolve.

B. TELEHEALTH'S ROLE IN CLOSING HEALTHCARE GAPS IN THE PENAL SYSTEM

1. Telehealth to Improve Clinical Outcomes

The COVID-19 global pandemic raised the prominence of telehealth use for medical delivery as a means to mitigate disease spread. Blandford et al. discuss how technologies supporting telehealth are proliferating including wearable devices, smart phones and smart homes equipped with environmental and personal sensors that interconnect with the internet.[211] Blandford et al. also note that because the cost of health monitoring devices and internet service has continued to fall, more healthcare providers are looking to telehealth for healthcare delivery. In the penal setting, correctional administrators would welcome approaches to healthcare that help keep costs contained. However, the use of telehealth across a broad range of medical maladies raises questions about efficacy. Shigekawa et al. assert why one should not assume that telehealth is effective for all patients as efficacy varies by application and modality.[212] The researchers undertook a meta-analysis of telehealth interventions from January 2004 to May 2018 to understand if services were equivalent to in-person services. Shigekawa et al. deemed no significant difference in the effectiveness of treatment for varied mental health conditions when comparing between telehealth assisted and face-to-face care.[213] The researchers also

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209 McDonald et al., XV.

210 McDonald et al., XV.

211 Ann Blandford et al., "Opportunities and Challenges for Telehealth within, and beyond, a Pandemic," *The Lancet Global Health* 8, no. 11 (November 2020): 1364–65, https://doi.org/10.1016/S2214-109X(20)30362-4.

212 Erin Shigekawa et al., "The Current State of Telehealth Evidence: A Rapid Review," *Health Affairs* 37, no. 12 (December 2018): 1975, https://doi.org/10.1377/hlthaff.2018.05132.

213 Shigekawa et al., 1977.

detected that telehealth use for musculoskeletal rehabilitation was usually on par with or an improvement from face-to-face care while dermatology problem care with telehealth rated as acceptable or good when compared to in-person care. Shigekawa et al. also discuss why conferencing about other medical ailments, such as musculoskeletal and brain injury rehabilitation therapy, yielded mixed and inconclusive results when comparing teleconferencing to in-person visits. In general, the studies in the meta-analysis showed how teleconferencing contributed to fewer healthcare provider visits; however, two studies indicated an increased demand for return consultations.[214] In the penal setting, these findings suggest that certain medical conditions require in-person healthcare delivery to avoid injury to inmates or perhaps a blend of telehealth and in-person healthcare.

The impact of telehealth for medical care delivery in any setting requires collection and analysis of information to understand efficacy from sustained use. McLean et al. highlight how many studies on use of telehealth fail to capture efficacy of interventions, and this hinders the capability of understanding the contribution of technology and human factors that go into rendering medical care.[215] However, McLean et al. deemed from evaluation of the studies that there was no detectable difference in quality of care when contrasting telehealth and in-person delivery although fewer hospitalizations resulted from application of telehealth. Furthermore, the authors noted that the clinical effectiveness of telehealth interventions was greatest for patients with more severe disease at high risk of hospitalization and death. Although the use of telehealth services helped to address concerns about COVID-19 disease spread, McLean et al. discuss the importance of designing a system of categorizing varying telehealth applications.[216] This includes improved definition of specific care rendered, consensus on healthcare objectives, development of gauging instruments and performance measure designed to promote

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[214] Shigekawa et al., 1979.

[215] Susannah McLean et al., "The Impact of Telehealthcare on the Quality and Safety of Care: A Systematic Overview," ed. Christian Lovis, *PLoS ONE* 8, no. 8 (August 19, 2013): 1, https://doi.org/10.1371/journal.pone.0071238.

[216] McLean et al., 2.

healthcare rooted in science when considering telehealth..[217] Eze, Mateus, and Hashiguchi also highlight that generalizability of telemedicine use faces hurdles because of poor quality and reporting standards.[218] For the corrections industry, use of a system to document telehealth interventions and outcomes would contribute to refining medical care practice across the penal system.

Because telemedicine is still under investigation for use with patients presenting with various medical maladies, this technology is still limited to certain patients. Senanayake et al. analyzed databases (2000 to 2018) covering penal system telehealth use revealing that 58 percent of telemedicine interventions entailed synchronous or real-time videoconferencing while 22% described asynchronous interventions.[219] Furthermore, the review spanning telemedicine interventions focused on mental health and ophthalmology healthcare needs. To ensure safety in application of telemedicine, it is important to understand this technology's efficacy to treat certain health conditions that lead to positive outcomes. Of the 153 studies reviewed by Senanayake et al., telemedicine use was limited to one instance involving acute care for prisoners through a tele-cardiology intervention. Senanayake et al. also found that telemedicine interventions were focused on disease management, diagnosis and screening objectives. The authors also discovered that studies involving use of telemedicine in the correctional setting helped to reduce healthcare costs because of fewer hospital transports and related custody expenses. However, investment in hardware was required as some of the telemedicine interventions involved video recording and forwarding methods or use of digital images, fax and emails to share patient information with medical specialists. From the inmates' perspective, telemedicine use may also be preferred for certain mental health interventions. Tucker et al. concluded from

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[217] McLean et al., 2–5.

[218] Nkiruka D. Eze, Céu Mateus, and Tiago Cravo Oliveira Hashiguchi, "Telemedicine in the OECD: An Umbrella Review of Clinical and Cost-Effectiveness, Patient Experience and Implementation," ed. Hannah E. Carter, *PLOS ONE* 15, no. 8 (August 13, 2020): 2, https://doi.org/10.1371/journal.pone.0237585.

[219] Buddhika Senanayake et al., "Telemedicine in the Correctional Setting: A Scoping Review," *Journal of Telemedicine and Telecare* 24, no. 10 (December 2018): 669, https://doi.org/10.1177/1357633X18800858.

evaluations involving childhood sexual abuse and sexual concerns that a random sample of New York State Department of Corrections inmates surveyed indicated a preference for outside consultation involving visiting specialists and telemedicine.[220] For penal system administrators, prospective use of telehealth should entail engagement of many stakeholders and medical experts to understand how to deploy this technology while bearing in mind safe medical care practices.

2. Continuity of Care and Telehealth's Contribution

Telemedicine may interplay with EHR systems to give a more complete patient history beneficial for treating medical conditions. EHR implementation and use has not been without its challenges. Rotenstein and Friedman emphasize since passage of the HITECH Act in 2009, EHR system use has led to benefits that allow patients and doctors ready access to medical records.[221] However, the authors discuss EHR systems use has contributed to physician disenchantment and burnout because of the extensive documentation reporting requirements. Furthermore, Rotenstein and Friedman discuss how interoperability between EHR systems is often lacking and this leads to duplication of effort, inhibits provider collaboration and increases time required for patients and providers when it comes to obtaining external records. Telemedicine systems use has also experienced challenges with interoperability between systems. Rotenstein and Friedman also discuss that telemedicine platforms also fail to integrate medical records systems that efficiently integrate with other systems, and this situation hinders continuity of care and communication among providers. To add to the problem of capturing patient medical conditions and interventions within EHRs, the proliferation of remote health sensing devices poses as another element of health information collection. Dorsey and Topol evaluate sophisticated sensors and how peripheral diagnosis derived from them may

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[220] William Tucker et al., "A Pilot Survey of Inmate Preferences for On-Site, Visiting Consultant, and Telemedicine Psychiatric Services," *CNS Spectrums* 11, no. 10 (October 2006): 786–87, https://doi.org/10.1017/S1092852900014905.

[221] Lisa Rotenstein and Lawrence Friedman, "The Pitfalls of Telehealth—and How to Avoid Them," *Harvard Business Review*, November 20, 2020, https://hbr.org/2020/11/the-pitfalls-of-telehealth-and-how-to-avoid-them.

provide clinicians with valuable information before or during a telehealth visit.[222] Medical information from remote sensing devices may also require EHR system integration as well as review to safeguard private health data.

As cited previously, continuity of care for inmates in the correctional setting is nonexistent when considering that very few correctional systems share inmate medical records with community healthcare providers.[223] In this area, the COVID-19 pandemic has also focused concerns about how telehealth can contribute to promoting continuity of patient care. Thomas et al. advocate for healthcare providers to have ready access to patient health records as a means to improve care.[224] For the correctional system, integration and use of EHR systems that considers telehealth data promotes comprehensive medical record keeping. Of course, EHR systems would have to be accessible to community providers so that released prisoners can be cared for safely and effectively. Often, apprehension about data breaches may be a concern for those looking to telehealth as solutions to healthcare delivery. Thomas et al. discuss how fewer restrictions associated with medical records security could facilitate implementation of telehealth with less resistance.[225] The authors also advocate for cloud-based platforms, which enable efficient clinical document exchange, as these records are accessible on remote servers by multiple users with access rights.[226] However, in the penal system, corrections systems administrators would need to champion data technology acquisitions and ICT infrastructure that supports telehealth use.

Bashshur et al. champion how telemedicine poses as a solution that can help overcome some of the disjointed and ineffective methods used to provide care in an

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[222] E. Ray Dorsey and Eric J. Topol, "State of Telehealth," ed. Edward W. Campion, *New England Journal of Medicine* 375, no. 2 (July 14, 2016): 157,159, https://doi.org/10.1056/NEJMra1601705.

[223] Butler and Murphy, "The Impact of Policies Promoting Health Information Technology on Health Care Delivery in Jails and Local Communities," 487.

[224] Emma E Thomas et al., "Building on the Momentum: Sustaining Telehealth beyond COVID-19," *Journal of Telemedicine and Telecare*, (September 26, 2020): 5, https://doi.org/10.1177/1357633X20960638.

[225] Thomas et al., 3.

[226] Thomas et al., 5.

environment that entails complexity.[227] This coordination happens as Bashshur et al. discuss through technology that triages patients, coordinates care throughout a system, and streamlines the clinical process between diagnostic and clinical services.[228] Furthermore, the authors contend that telehealth enables medical practitioners to realize a heightened level of coordination among varied stakeholders involved in patient care. Integration of telemedicine with EHR systems is vital to ensuring that full medical and economic benefits are derived from utilization of both technologies. In the penal system, use of telemedicine should seek to integrate telemedicine delivered healthcare within EHR systems to capture all patient care interventions with a goal of sharing these records with community healthcare providers. In this way, inmates released to their communities could also reap the benefits of personal healthcare handed off to community healthcare providers. Prestigiacomo discusses that integrating telehealth sessions into EHRs poses as a challenge when medical experts fail to document consultation work or interventions administered to the patient.[229] For corrections system administrators looking to address inmate continuity of care, this issue warrants engaging stakeholders to ensure use of telemedicine happens in a way that captures medical care interventions and other information needed to document patient and healthcare provider interactions. Video recording and archiving telehealth sessions as a part of the patient's electronic health record may serve to address instances of poor medical intervention and history documentation.

It is important that EHR systems capture diverse data sets to document patient health histories in a comprehensive manner. Tuckson, Edmunds, and Hodgkins contend that a multitude of new and emerging health sensing devices providing valuable medical data should also integrate with EHR systems to avoid overwhelming medical practitioners

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[227] Rashid L. Bashshur et al., "National Telemedicine Initiatives: Essential to Healthcare Reform," *Telemedicine and E-Health* 15, no. 6 (July 2009): 601–02, https://doi.org/10.1089/tmj.2009.9960.

[228] Bashshur et al., 603.

[229] Jennifer Prestigiacomo, "Integrating Telehealth and the EHR." *Healthcare Informatics* 29, no. 6 (June 2012): 60, http://libproxy.nps.edu/login?url=https://www.proquest.com/trade-journals/integrating-telehealth-ehr/docview/1027231895/se-2?accountid=12702.

because of manual documentation requirements.[230] The use of EHR systems produces risks of negative outcomes for patients as medical practitioners often experience frustration because of EHR systems that are difficult to navigate.[231] The distraction creates risks arising from poorly designed EHR systems so correctional administrators should engage stakeholders to pursue systems that are user friendly and meet objectives of good medical practice while considering correctional system operations. Middleton et al. stress the importance of carefully constructing user interface solutions that help realize heightened productivity as poor design only serves to stymie efficient medical care delivery.[232] In the penal system where correctional officer staffing may be suboptimal, expediently treating inmates makes pursuit of well-designed EHR interfaces worthwhile. Middleton et al. also assert that medical practitioners should lead efforts to design EHR programs that will achieve their organizational goals and efficient use of the system. However, the authors caution that EHR and other data capture systems such as telehealth solutions require effort aimed at monitoring for and limiting negative consequences associated with system use. This monitoring should lend to vendor reporting that seeks guidance on remediation. While telehealth and EHR systems have potential to contribute to promoting continuity of care, correctional administrators should not rush decisions to purchase and implement these solutions.

3. Patient Medical Monitoring and Telehealth

Haque notes that in the correctional system telehealth technologies deliver information in real time (synchronous) through live video or by storing and forwarding

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[230] Reed V. Tuckson, Margo Edmunds, and Michael L. Hodgkins, "Telehealth," *New England Journal of Medicine* 377, no. 16 (October 19, 2017): 1589, https://doi.org/10.1056/NEJMsr1503323.

[231] Institute of Medicine (U.S.), ed., *Health IT and Patient Safety: Building Safer Systems for Better Care* (Washington, DC: National Academies Press, 2012): 81, 96.

[232] B. Middleton et al., "Enhancing Patient Safety and Quality of Care by Improving the Usability of Electronic Health Record Systems: Recommendations from AMIA," *Journal of the American Medical Informatics Association* 20, no. e1 (June 1, 2013): 2, https://doi.org/10.1136/amiajnl-2012-001458.

medical data as well.[233] Stored remote patient monitoring (RPM) data may be transferred to medical specialists from correctional settings. According to the U.S. Department of Health and Human Services, (DHHS) RPM serves as a method of telehealth delivery used primarily to manage chronic illnesses.[234] In the penal setting, RPM use could help with ongoing medical monitoring of inmates with protocols developed to address medical abnormalities or the frequency of medical specialist data evaluations. RMP could also serve to limit the in-person visits of medical specialists to correctional facilities as a means to control costs associated with healthcare delivery. Haque discusses that RPM has proven valuable with diabetes disease management as blood glucose monitors transmit information about patients to providers, and this can help with remote physician guidance associated with interventions.[235] In contrast to use of stored RPM data, Pandey et al. describe how a wireless body area network (WBAN) is a "type of wireless communication technology used as an underlying network architecture for different types of sensors designed to mitigate different medical and non-medical" conditions.[236] The authors also contend that WBAN architecture standardization will aid with efforts to use sensor devices for continuous monitoring of patient health with instantaneous information updating. In the correctional system, as these technology enhancements develop, there is significant potential to improve healthcare delivery.

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[233] Saira Haque, "Uses of Telehealth to Support Identification and Treatment of Health Disorders in the Criminal Justice System," *Telehealth and Medicine Today*, November 27, 2020, 2–3, https://doi.org/10.30953/tmt.v5.205.

[234] Office of Health Policy, "E-Health and Telemedicine" (Washington, DC: U.S. Department of Health and Human Services, August 12, 2016): 5, https://aspe.hhs.gov/system/files/pdf/206751/TelemedicineE-HealthReport.pdf.

[235] Haque, "Uses of Telehealth to Support Identification and Treatment of Health Disorders in the Criminal Justice System," 2.

[236] Indrajit Pandey, Himadri Sekhar Dutta, and Jyoti Sekhar Banerjee, "WBAN: A Smart Approach to Next Generation e-Healthcare System," in *2019 3rd International Conference on Computing Methodologies and Communication* (ICCMC) (Erode, India: IEEE, 2019), 344, https://doi.org/10.1109/ICCMC.2019.8819713.

4. Correctional Officers and Telehealth as a Remedy to Improve Inmate Healthcare

Delivery of quality medical care in the penal system may pose as a challenge when correctional officer staffing is deficient. Kaftarian discusses that videoconference therapy for inmates reduces the requirement to transport these individuals and because of this, correctional officers can shift focus to other operations.[237] Kaftarian discusses that mental health providers are often reluctant to seek employment inside a prison or jail for various reasons, but personal safety is a foremost consideration.[238] Because of this, telehealth helps to address various reservations that providers may have regarding interacting with inmates. However, Kaftarian acknowledges that some of the drawbacks to telehealth delivery to treat mental health includes providers lacking a situational awareness of prison dynamics that have bearing on an inmate's mental and emotional condition.[239] For this reason, he advocates for close communication between mental health providers and correctional system employees. Correctional officers are in the best position to share information on conditions in prisons that warrant consideration by mental health practitioners as they apply therapies to inmates afflicted with mental health conditions. Deslich, Thistlethwaite, and Coustasse also found that use of telehealth helps to address correctional officer understaffing, as two officers are often required to transport inmates to healthcare specialists.[240] The officers provide safety during inmate transport and care, but correctional facilities have to fill the void created by the absence of the officers. Deslich, Thistlethwaite, and Coustasse also concluded that telehealth affords better access to mental health providers and because of this, rates of violent inmate behavior may also be expected as an outcome of telehealth use in the penal system. For correctional officers, having to

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[237] Edward Kaftarian, "Telemental Health in Rural Correctional Institutions," *mHealth* 6 (July 2020): 2, https://doi.org/10.21037/mhealth.2019.12.05.

[238] Kaftarian, 1.

[239] Kaftarian, 2.

[240] Stacie Deslich, Timothy Thistlethwaite, and Alberto Coustasse, "Telepsychiatry in Correctional Facilities: Using Technology to Improve Access and Decrease Costs of Mental Health Care in Underserved Populations," *The Permanente Journal* 17, no. 3 (August 1, 2013): 81, https://doi.org/10.7812/TPP/12-123.

worry less about inmate violent behavior may contribute to lowered job stress and promote positive interpersonal relations with inmates.

Correctional administrators hoping to lessen the burden of limited medical resources in their facilities may look to telemedicine as a means to reduce pressure on correctional officers to act as gatekeepers when medical specialists are in short supply. Shannon and Page discuss their findings that correctional officers who perceive "lower program quality and less adequate staffing resources in their facilities also report higher work stress, feel less supported in doing their work, and espouse more punitive attitudes toward prisoners."[241] Dowden and Tellier validated this point in their meta-analysis associated with investigation of corrections officer work stress whereby they detected how employees who embraced a human service and rehabilitation orientation experienced less job stress.[242] This situation should create concern for correctional administrators because of the legal obligation to ensure inmates receive quality medical care. Strict guidance for correctional officers on when and how to allow inmate access to healthcare in the penal system can help avoid problems associated with denial of this service. Lipsky discusses that when street-level bureaucrats enact or enforce mandates with loose regulations, much discretion transfers to these individuals.[243] He also posits that street-level bureaucrats have wide discretion over the dispensation of benefits or the allocation of sanctions.[244] Because of this, correctional officers may not necessarily contribute to providing quality healthcare to inmates as their discretionary authority may limit access to healthcare. Shannon and Page also posit that due to lack of resources, correctional officers "may emphasize

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[241] Sarah K. S. Shannon and Joshua Page, "Bureaucrats on the Cell Block: Prison Officers' Perceptions of Work Environment and Attitudes toward Prisoners," *Social Service Review* 88, no. 4 (December 2014): 632, https://doi.org/10.1086/678448.

[242] Craig Dowden and Claude Tellier, "Predicting Work-Related Stress in Correctional Officers: A Meta-Analysis," *Journal of Criminal Justice* 32, no. 1 (January 2004): 40, https://doi.org/10.1016/j.jcrimjus.2003.10.003.

[243] Michael Lipsky, *Street-Level Bureaucracy: Dilemmas of the Individual in Public Services*, (New York: Russell Sage Foundation, 1980): 13–14.

[244] Lipsky, 13.

management and containment over rehabilitation."[245] Given that telehealth helps to provide inmates with greater access to healthcare, correctional administrators may also address the stress on correctional officers to act as gatekeepers through use of technology to expand scarce medical specialist availability within correctional facilities.

C. EMERGING TECHNOLOGY'S NEXUS TO IMPROVED PENAL SYSTEM HEALTHCARE DELIVERY

1. Wearables

Technology solutions continue to proliferate while making a difference with improving healthcare for individuals across the globe. The rise of the internet and sensor networks has also given rise to exponential possibilities when it comes to improving healthcare through the emergence of the Internet of Things (IoT). Morgan discusses that this technology age term has emerged because of broadband internet improvements, more wireless fidelity (Wi-Fi) inventions, sensors, technology cost decreases and connected communication networks that capture information through nodes fed by Wi-Fi devices.[246] Because of these technology advancements, tremendous amounts of data can be exchanged across communication networks. Technology analyst firm Gartner predicted that by 2020, there would be over 20 billion devices connected to the internet and that this would facilitate new business models through improved efficiencies while increasing employee and customer engagement.[247] However, Hung cautions that a huge obstacle to the IoT is that most companies will not know how to leverage innovative solutions or how to lead the charge to leverage a world with data nodes that provide vast amounts of data that could improve business processes.[248] Furthermore, Hung posits that although IoT will afford

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[245] Shannon and Page, "Bureaucrats on the Cell Block: Prison Officers' Perceptions of Work Environment and Attitudes toward Prisoners," 636.

[246] Jacob Morgan, "A Simple Explanation of 'The Internet of Things,'" *Forbes*, accessed November 16, 2020, https://www.forbes.com/sites/jacobmorgan/2014/05/13/simple-explanation-internet-things-that-anyone-can-understand/.

[247] Mark Hung, *Leading the IoT-Gartner Insights on How to Lead in a Connected World* (Stamford, CT: Gartner Incorporated, 2017): 2, https://www.gartner.com/imagesrv/books/iot/iotEbook_digital.pdf.

[248] Hung, 6.

solutions to business problems, organizations should correctly frame their problems to determine how technology systems customization meets customer needs. IoT will require strategic thinking about how technology can improve businesses processes or in the case of medicine, improve the condition of patients with serious medical problems.[249]

In jail settings, IoT may mean that remote medical monitoring systems built to meet varying correctional security requirements has the potential to elevate the quality of medical care provided to inmates. Data are stored on a remote farm of servers in a data storage system known as "the cloud." Wearable devices and other applications could be used to feed healthcare information that is made available to healthcare providers. For all its potential, IoT system architecture will require serious consideration of how organizations should design it in a way that promotes ease of technology integrations, optimizes use, protects against breaches and complies with laws associated with use, storage and transfer of data.[250] Harnessing the IoT will require diligent investment of human and financial resources that the public sector has so far been unable or unwilling to meet, but the threat of legal liability because of poor inmate healthcare incentivizes investigation of emerging technology that could improve jail operations.

Many individuals have adopted use of wearable devices such as "smart watches" to track physical exercise activity and provide real-time analytics on heart rate activity. However, wearable technology continues to be researched and adapted for improving healthcare. Wearables use and application are evolving at a rapid rate, and researchers are now delving into helping manage diabetic patients as well as exploring how biometric-sensing capabilities can aid with remote monitoring of various patient health conditions.[251] Because of the advent and proliferation of the glucose sensing market, researchers are looking to other biological-sensing capabilities that expand the bounds of remote medical monitoring. Kim et al. contend that biosensors wield significant potential for wearable

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[249] Hung, 7–9.

[250] Hung, 11–15.

[251] Jayoung Kim et al., "Wearable Biosensors for Healthcare Monitoring," *Nature Biotechnology* 37, no. 4 (April 2019): 389, 399, https://doi.org/10.1038/s41587-019-0045-y.

devices because of their "high specificity, speed, portability, low cost and low power requirements."[252] Biosensor research is now looking to secreted body fluids or interstitial fluid (ISF) for ready biomarker access that avoids disrupting skin to draw blood for sampling and diagnosis, and this technology lessens the risk of harm or infection to humans.[253] These types of improvements afford real-time medical evaluation and thereby enhances management of chronic diseases by providing alerts about physiological abnormality triggers. In the jail setting, remote medical monitoring affords great value as corrections officers and medical attendants can achieve heightened awareness of inmate health conditions.

In fact, wearable medical monitoring equipment has expanded to textiles. Kim et al. describe some of the advancements in wearable textile materials and energy-charging methods that are pushing the envelope toward commercializing these technologies.[254] Forward-thinking corrections administrators may be inclined to explore how to adapt these and other emerging technology solutions in a way that suits their needs. In a local or county jail setting, wearable devices or garments could afford expanded capacity for medical monitoring of individuals remotely while improving safety of inmates and corrections officers. Maintaining and electronically charging wearable equipment would require developing procedures or protocols to ensure optimal functionality and use. Kim et al. analyze power consumption of wearables, as each solution requires differing power requirements because of the data processing, analysis and wireless communication entailed with use.[255] The options for powering equipment entails multiple approaches including high-energy wearable batteries, alternative energy collection and storage devices such as biofuel cell, solar cell, and thermoelectric, and to extend battery life, data evaluation and transmission cycles could be adjusted.[256] For correctional settings, technology

[252] Kim et al., 389.

[253] Kim et al., 389.

[254] Kim et al., 402.

[255] Kim et al., 401.

[256] Kim et al., 401.

infrastructure and procedures that support wearable device use would require financial and other resource investment to realize these solutions.

Kim et al. advocate for protocol development on appropriate use of technology as this vital step helps to address breaches where technology solutions are utilized for corrective medical interventions.[257] While wearable technology may be viewed as a silver bullet for improving medical monitoring, the IoT and sensor networks that support wearable solutions pose security risks. Kim et al. also caution that the threat of security and privacy breach requires managing access to an individual's biomedical data, as permitting access only to approved system users helps limit risk of unauthorized access. Gable discusses how surveillance technology such as medical wearables and ankle monitors infringe on humanistic values and because of this, criminals often attempt to circumvent devices intended to physically and mentally rehabilitate them.[258] Correctional administrators should consider damage and hacking of wearables as a potential risk of using this technology. Gable illustrates the risk of surveillance equipment to circumvention when he describes how William "AmmonRa" Turner demonstrated his method to thwart tracking at the 2015 DEFCON hacking conference.[259] Of course, it does not help that this kind of information is widely available through YouTube videos or other social media platforms. Design and use of the wearables or garments with biosensors should also include consideration regarding how inmates may repurpose them to harm themselves or others. Wearables may also pose a threat to freedom of movement or deter the use of illicit drugs in jail settings, considering that drugs may lead to vital sign abnormalities. Because of this, inmates may oppose use of wearables to monitor their health.

Technology security in the age of cybercrime proliferation is big business and for healthcare, breach of private health information has significant consequences. Safavi and Shukur developed a conceptual privacy architecture for health information covering

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257 Kim et al., 402.

258 Robert Gable, "Let's Stop Using Ankle Bracelets to Monitor Offenders," *IEEE Spectrum*, July 20, 2017, https://spectrum.ieee.org/consumer-electronics/portable-devices/lets-stop-using-ankle-bracelets-to-monitor-offenders.

259 Gable.

wearable solutions based on stringent HIPAA principles for information security including consideration of popular personal and electronic health record systems architecture.[260] The framework for security incorporates what Safavi and Shukur deem as ten fundamental rules for wearable healthcare systems and a checklist that aids developers and fabricators to improve the quality and privacy safeguards of their wearable solutions.[261] For adopters of sensor networks and wearable technology, hardening technology hardware and software solutions will require consideration of safeguards such as data encryption, systems integrity, multi-layered access authentication and other factors needed to avoid medical data breaches. Although wearable solutions afford efficiencies in medical monitoring, careful planning for its adoption may need to consider technology failure and include protocols that help overcome these risks. Perhaps remote medical monitoring requires less frequent physical observation of inmates, but in the event of complete failure, corrections administrators may need to consider protocols that address these events.

2. Augmented and Virtual Reality and Behavioral Medicine

Mental illness treatment is a significant need in the penal system and the corrections industry may need to look to technology innovation for solutions needed to combat this affliction. One cutting-edge innovation includes augmented reality (AR), which is becoming more sophisticated and recognized as a solution for realizing improved efficiencies. AR refers to technology that intertwines computer-generated information and objects on realistic settings while synchronizing the user experience in real time to create an artificial environment.[262] As an example, a Gatwick airport phone application won awards for creative use of AR technology as it utilizes 2,000 simulated beacons strategically situated in its two terminals to allow passengers equipped with smartphones

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[260] Seyedmostafa Safavi and Zarina Shukur, "Conceptual Privacy Framework for Health Information on Wearable Device," ed. Muhammad Khurram Khan, *PLoS ONE* 9, no. 12 (December 5, 2014): 1, 9, https://doi.org/10.1371/journal.pone.0114306.

[261] Safavi and Shukur, 14.

[262] Bernard Marr, "9 Powerful Real-World Applications of Augmented Reality (AR) Today," *Forbes*, July 30, 2018, https://www.forbes.com/sites/bernardmarr/2018/07/30/9-powerful-real-world-applications-of-augmented-reality-ar-today/.

to find their way to their destination, and in the medical field, a telemedicine option enables medical professionals to use AR for patient interactions.[263] When human resources needed to combat mental illness are in short supply, AR may provide an avenue to fill the void of absent face-to-face expertise needed to provide therapy. In contrast to virtual reality (VR), which places users in a simulated artificial environment, AR facilitates "augmentation" of real user experience by raising the bar on human sense engagement through use of stimulation that engages each of the human senses and helps provide patient care that can be adjusted based on response to therapy.[264] In jail settings where there is a comorbidity nexus between substance abuse and behavioral health problems, VR research seeks to address substance abuse disorders. In the jail setting, use of VR and AR to treat mental disorders could help address mental health clinician and budgetary shortages or even augment existing mental health therapies. Additionally, humans experience physical and emotional fatigue so AR and VR mental health solutions if standardized, could ensure a consistent approach to mental health therapy delivery. Cieślik et al. posit that a technological revolution in behavioral health therapy is on the horizon with VR serving as a highly effective method for individuals to acquire knowledge that addresses their psychological well-being.[265]

For all its potential, viable AR and VR solutions geared toward behavioral health therapy require much development. Freeman et al. posit that VR's emergence as a solution to delivering mental health therapy will require that VR place the user at the heart of design so that traditional science-based interventions integrate and apply effectively with use of this emerging technology.[266] Freeman et al. share optimism about VR's extraordinary

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263 Marr, "9 Powerful Real-World Applications Of Augmented Reality (AR) Today."

264 Irene Alice Chicchi Giglioli et al., "Augmented Reality: A Brand New Challenge for the Assessment and Treatment of Psychological Disorders," *Computational and Mathematical Methods in Medicine* 2015 (2015): 9, https://doi.org/10.1155/2015/862942.

265 Błażej Cieślik et al., "Virtual Reality in Psychiatric Disorders: A Systematic Review of Reviews," *Complementary Therapies in Medicine* 52 (August 2020): 2, https://doi.org/10.1016/j.ctim.2020.102480.

266 D. Freeman et al., "Virtual Reality in the Assessment, Understanding, and Treatment of Mental Health Disorders," *Psychological Medicine* 47, no. 14 (October 2017): 2393, https://doi.org/10.1017/S003329171700040X.

potential to aid people overcoming behavioral health problems.[267] However, the authors feel that high fidelity realism is required considering that mental health afflictions entail personal challenges to interacting with the real world. In real life, stressors drive disorders but thanks to VR, certain disorders could be treated without therapist input while other disorders would require less intervention from skilled therapists. For the corrections industry, VR therapies may help to address mental health clinician shortages or augment therapy with telehealth clinician sessions.

Freeman et al. also posit how VR also has potential to address dependence on drugs as individuals are placed in situations where technology is used to create conditions that contribute to their urges for drug use.[268] These desires drive associated problem behaviors such as abuse of drugs and alcohol or gambling addiction while VR therapy delivers treatment that suppress negative behavior.[269] However, Freeman et al. posit these solutions as innovations requiring more research and development, but early results forebode endless possibilities. The authors describe how there is high potential for VR to be employed for effective diagnosis of psychiatric symptoms, but rigorous testing and validation are needed to elevate this solution as a remarkable tool for assessing mental health problems.[270]

Freeman et al. reviewed literature covering VR and AR research and concluded that three overarching questions need addressing when exploring the viability of VR and AR for behavioral health treatment:

> (1) What is the best way to immerse individuals in VR so that learning most readily transfers to the real world, balancing the need to use affordable equipment? (2) Can key theory-driven psychological treatment techniques (beyond simple exposure) be successfully delivered in VR? (3) Do engaging, personalized, theory-driven treatments implemented in

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[267] Freeman et al., 2394.

[268] Freeman et al., 2396–2397.

[269] Freeman et al., 2397.

[270] Freeman et al., 2397.

> affordable VR, with limited use of clinicians, produce large real-world benefits for patients?[271]

Technology innovation seeks to fulfill needs, bring forth efficiencies and ultimately, to turn a profit. Because of this, global research on VR and AR application beyond gaming will likely continue to proliferate and eventually lead to adaptation of these technologies for medical and behavioral health treatment purposes.

Innovation in corrections may help to address the size of the population under correctional control, the cost of corrections, and assist corrections workers to perform more effectively. For prisoners, technology may also have positive benefits. As Jewkes and Reisdorf discuss, confinement behind jail walls limits social interaction opportunities for inmates.[272] The authors view ICT and the internet as tools that could reform prisoners and address social isolation if these tools are used correctly. Exposing prisoners to new media technologies may also help address what Jewkes and Reisdorf discuss as personal feelings of ignorance and marginalization, which is reinforced when these individuals reenter their communities. Jewkes and Reisdorf also mention that innovation has transformed the world we live in but for the correctional industry, it has both enabling and controlling property implications.[273] The authors also contend that conflict with use of technology also arises because of data security risks, associated laws and political influence. For prisoners and their healthcare providers, media technologies pose as another way to foster successful rehabilitation. Similarly, while VR and AR may also help rehabilitate incarcerated individuals with behavioral health affliction, corrections industry leaders will have to reconcile views on use of technology in the correctional setting. While risk of misuse and misapplication of technology is a reality, potential benefits to be derived from effective and well-designed use merits analysis of innovative solutions.

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[271] Freeman et al., 2398.

[272] Yvonne Jewkes and Bianca C Reisdorf, "A Brave New World: The Problems and Opportunities Presented by New Media Technologies in Prisons," *Criminology & Criminal Justice* 16, no. 5 (November 2016): 534, https://doi.org/10.1177/1748895816654953.

[273] Jewkes and Reisdorf, 545.

Beyond sensor technology and use of VR and AR in medicine, futurists are looking at how artificial intelligence (AI) and machine learning can shape the future of medicine. Topol posits that AI has helped achieve better medical and mental health diagnosis when compared to medical professionals. He cites the example of a machine interpreting speech patterns and phrases to predict whether patients at risk of schizophrenia would transition to psychosis.[274] Because of this, NeuroLex Diagnostics formed to make a tool commercially available for primary-care doctors to diagnose schizophrenia, bipolar disorder, and depression. Amazon has adapted these advancements with development of a prototype that works on its Alexa virtual home assistant product.[275] Imagining that these future advancements receive use in the correctional setting gives promise to mental health and criminal justice reform advocates about what the future may hold. Topol shares other AI success stories such as how companies named Mindstrong and DeepMood developed algorithms to diagnosis and predict cognitive function and mood. The application entails recognition tools using keyboard behavior to understand how keyboard typing speed links to how a person is thinking.

Topol also discusses breakthroughs in cognitive behavioral therapy (CBT) because of AI use. Digital versions of CBT are simply talk therapy, which normally involves labor-intensive sessions, but with smart applications such as Lantern, Joyable, and MoodGYM, technology helps treat patients.[276] Firth et al. discuss how their analysis of studies covering over 3,400 patients who used smart devices to treat depression experienced substantial progress, and technology apps focused on CBT also proved beneficial.[277] Topol posits that virtual counselors will never fully replace humans, but AI-developed tools can help augment or reinforce the treatments provided by real clinicians.[278] For example,

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[274] Topol, *Deep Medicine*, 169.

[275] Topol, 83.

[276] Topol, 178.

[277] Joseph Firth et al., "The Efficacy of Smartphone-Based Mental Health Interventions for Depressive Symptoms: A Meta-Analysis of Randomized Controlled Trials," *World Psychiatry* 16, no. 3 (October 2017): 287, https://doi.org/10.1002/wps.20472.

[278] Topol, *Deep Medicine,* 179.

depressive mood predictions with AI led to high accuracy in a pilot study.[279] In jail settings where rendering mental health diagnosis and treatment poses as an expensive and sometimes neglected proposition, technology that lessens the burden on corrections administrators to meet this need would likely be welcome.

Futurists and technology researchers are excited about the prospect of technology breakthroughs on the horizon, but policy and ethical considerations are lagging behind. There is ethical concern about people talking to machines and sharing intimate experiences and emotions. For example, Pugh likens this to a "cloth monkey," referring to an unethical experiment from 1959 when baby monkeys were provided with an option between simulated mothers with one constructed of metal and the other from terry cloth material.[280] The infants opted for the cloth mother, even though the metal surrogate afforded milk and with this comparative basis, AI-driven patient care can be viewed as a lesser and inhumane version of traditional human-to-human interaction.[281] As policymakers look ahead at the prospect of using innovative technology for medical and psychiatric care, ethical considerations on use and application of these solutions will warrant scrutiny. For the corrections industry, while these technologies pose as significant adoption challenges or fantasy, practical solutions such as telehealth also pose as hurdles to implementation without the required ICT infrastructure.

Government views toward human rights can vary across the globe and because of this, technologies each country is willing to adopt influences the level of inmate security and safety. In Hong Kong, government officials are testing wristbands at Lo Wu Correctional Institution to help prevent suicides, and the bands help corrections officers

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[279] Topol, 69.

[280] Allison J. Pugh, "Automated Health Care Offers Freedom from Shame, But Is It What Patients Need?" *New Yorker*, May 22, 2018, https://www.newyorker.com/tech/annals-of-technology/automated-health-care-offers-freedom-from-shame-but-is-it-what-patients-need.

[281] Pugh, "Automated Health Care Offers Freedom from Shame, But Is It What Patients Need?"

monitor inmate heart rates and whereabouts at all times.[282] Hong Kong is also testing a video surveillance system installed inside prison dormitories and restrooms that detects abnormal behavior, such as self-harming acts, fighting or if an inmate has collapsed, and these acts trigger an alarm at a monitoring station.[283] These types of systems could make monitoring inmates less cost-prohibitive if it means less correctional guard staffing or correctional officers may redeploy to high-risk areas. However, in the United States, policymakers and corrections administrators would have to consider how technologies interact with jail operations requirements and enacted legislation. In the past, courts held that the electronic surveillance of prisoners falls short of meeting monitoring effectiveness of correctional officers entrusted to ensure safety of inmates.[284] However, the court decision is old, and views on technology and policies continue to take shape based on needs of the changing times and potential efficiencies realized. U.S. laws on issues such as privacy also pose as hurdles to correctional industry leaders hoping to mimic how other countries have instituted technology to promote heightened security and control of inmates.

D. TECHNIQUES AND STRATEGIES FOR ADOPTION AND DIFFUSION OF TECHNOLOGY

Telehealth and emerging technology afford many benefits; however, planning for use and implementation of technology solutions requires careful and strategic planning that helps to ensure successful adoption. For telehealth, Van Dyk posits that numerous factors influence the technology's integration and success including technological issues, supporting infrastructure, laws, and efforts to implement change along with needed financial planning.[285] Thus, implementation may be more complex than imagined by those hoping to leverage this technology in their organization.

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[282] Sum Lok-kei, "Prisons Get 'Smart' with Tracking Wristbands and Robotic Drug Testing," *South China Morning Post*, February 14, 2019, https://www.scmp.com/news/hong-kong/law-and-crime/article/2186163/tracking-wristbands-video-monitoring-systems-and-drug.

[283] Lok-kei, "Prisons Get 'Smart' with Tracking Wristbands and Robotic Drug Testing."

[284] Daniels v. Anderson, 237 N.W. 2d 397 (Neb. Sup. Ct. 1975).

[285] Liezl Van Dyk, "A Review of Telehealth Service Implementation Frameworks," *International Journal of Environmental Research and Public Health* 11, no. 2 (January 23, 2014): 1280, https://doi.org/10.3390/ijerph110201279.

To address systematic technology adoption, a branch of research has focused on how to facilitate adoption of new technologies. Attewell posits that while many organizations struggle with technology research and implementation, enterprising organizations possess knowledge and market themselves to help entities overcome many barriers associated with adoption and use of technology solutions.[286] Furthermore, simplification of the technology and leveraging consultants are examples of how to overcome barriers to technology adoption while promoting more rapid diffusion throughout an organization.[287] Implementing strategies associated with technology adoption may involve contracting with consulting firms that can assist organizations to embark on such endeavors. Organizations may also commit substantial finances toward acquisition of technology solutions and because of this, proven technology adoption strategies are a worthwhile pursuit. For correctional system administrators at all levels of government, tight budgets place added pressure to ensure technology acquisitions meet operational objectives and that employee receptivity and use happens in a seamless and effective manner.

Straub posits that successful technology adoption means that human cognitive, emotional and contextual concerns require attention.[288] Adoption theory helps guide organizations on how to handle systematic implementation of technology solutions. Successful implementation is vital not only for users but also for individuals downstream that stand to benefit from improved operational efficiency.

1. Rogers Innovation Diffusion Theory

Implementation and use of technology is a prospect that can be daunting considering that employees must leave their comfort zones when they jump into situations

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286 Paul Attewell, "Technology Diffusion and Organizational Learning: The Case of Business Computing," *Organization Science* 3, no. 1 (February 1992): 1, https://doi.org/10.1287/orsc.3.1.1.

287 Attewell, 8, 12.

288 Evan T. Straub, "Understanding Technology Adoption: Theory and Future Directions for Informal Learning," *Review of Educational Research* 79, no. 2 (June 2009): 625–27, https://doi.org/10.3102/0034654308325896.

requiring disruption of their day-to-day routine. Rogers discusses five elements that promote diffusion or spread of innovation in organizations:

- *Relative advantage* is the degree to which an innovation is perceived as better than the idea that it supersedes.
- *Compatibility* is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters.
- *Complexity* is the degree to which an innovation is perceived as difficult to understand and use.
- *Trialability* is the degree to which an innovation may be experimented with on a limited basis.
- *Observability* is the degree to which the results of an innovation are visible to others. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it.[289]

Organizations seeking to adopt new technologies can look to these factors and develop strategies to address each to promote more rapid technology diffusion.

2. Technology Acceptance Model (TAM)

Davis developed this model for information systems to describe strategies to influence individuals to embrace new solutions.[290] Davis defines behavioral intention as an element that brings people to adapt and use technology. The behavioral intention (BI) derives from the attitude (A) which is the perception of innovation under consideration. The TAM outlines various elements of an innovation that have bearing on a user's willingness to employ it under certain situations. Davis describes TAM's decision factors as follows:

a.) Perceived usefulness (PU)–Davis defined this as "the degree to which a person believes that using a particular system would enhance his or her job performance."[291]

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289 Everett M. Rogers, *Diffusion of Innovations*, 5th ed. (New York: Free Press, 2003), 15, 16.

290 Fred D. Davis, "A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results," Massachusetts Institute of Technology, 1985.

291 Davis, 26.

b.) Perceived ease-of-use (PEOU)–Davis defined this as "the degree to which a person believes that using a particular system would be free from effort."[292] Technologies deemed as easy to use are readily accepted but those that are not will cause users to develop negative attitudes about the technology.[293]

3. Unified Theory of Acceptance and Use of Technology

The unified theory of acceptance and use of technology (UTAUT) is a technology acceptance model developed after review of eight leading models that Venkatesh et al. describe as follows: "theory of reasoned action, the technology acceptance model, the motivational model, the theory of planned behavior, the model of PC utilization, the innovation diffusion theory, and the social cognitive theory".[294] From analysis of these models, Venkatesh et al. developed a unified model called the Unified Theory of Acceptance and Use Technology Model.[295] UTAUT was empirically tested and performed better than the eight individual models. The technology adoption model used by correctional systems when considering technology solution implementations may be constrained by project deadlines, funding and expertise availability and level of effort required. Venkatesh et al. describe UTAUT as consisting of "three direct determinants of intention to use (performance expectancy, effort expectancy, and social influence) and two direct determinants of usage behavior (intention and facilitating conditions)."[296]

Adoption of technologies such as telehealth, which have existed for decades, continues to pose challenges to organizational leaders seeking to implement its use. In this context, Alvandi advises that facilitating transition to use of technology should consider providing employee continuing education, developing a communication and change management plan, and incorporating innovation advocates into the program who render

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[292] Davis, 26.

[293] Davis, 24.

[294] Viswanath Venkatesh et al., "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly* 27, no. 3 (2003): 425, https://doi.org/10.2307/30036540.

[295] Venkatesh et al., 425.

[296] Venkatesh et al., 447–52.

help to project leaders and end-users to understand technology while addressing gaps in understanding.[297] Alvandi's recommendations address elements of Rogers Innovation Diffusion Theory, TAM and UTAUT that help build the organizational workforce psyche needed to embrace innovation adoption efforts. In addition, Alvandi also advises implementers to develop a plan that addresses ancillary but important aspects of technology. Ancillary dimensions include development of standards and procedures to ensure compliance, technical problem contingency planning, and business process requirements to name a few.[298]

Although implementation of telemedicine poses as a challenge, the COVID-19 pandemic created an exigent situation that thrust this technology on the health industry. This situation led to a forced diffusion of telemedicine as a tsunami of patients and medical practitioners sought to use this technology to address social distancing and infectious disease control. Zanaboni and Wootton discuss how adoption of technology occurs in stages including Acquaintance, Persuasion, Decision, Initial Adoption and Diffusion but the rate of adoption is influenced by many factors requiring more research to develop effective adoption strategies.[299] Rogers' Innovation of Diffusion Theory suggests that under normal circumstances, the different kinds of new technology users identified as 1) innovators (2.5 percent), 2) early adopters (13.5 percent), 3) early majority (34 percent), 4) late majority (34 percent), and 5) laggards (16 percent) require different influencing strategies to achieve diffusion of technology throughout any organization.[300] Evidence of telehealth use efficacy and economic advantage helps to promote adoption among medical professionals.[301] However, deregulation of telehealth use because of COVID-19 also

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297 Maryam Alvandi, "Telemedicine and Its Role in Revolutionizing Healthcare Delivery," *The American Journal of Accountable Care*, March 2017, 5, no. 1 (March 10, 2017), https://www.ajmc.com/view/telemedicine-and-its-role-in-revolutionizing-healthcare-delivery.

298 Alvandi, e4-e5.

299 Paolo Zanaboni and Richard Wootton, "Adoption of Telemedicine: From Pilot Stage to Routine Delivery," *BMC Medical Informatics and Decision Making* 12, no. 1 (December 2012): 2, 3, 7. https://doi.org/10.1186/1472-6947-12-1.

300 Rogers, *Diffusion of Innovations,* 22.

301 Zanaboni and Wootton, "Adoption of Telemedicine: From Pilot Stage to Routine Delivery," 2.

served to eliminate the barriers of financial reimbursement and HIPAA compliant platform use. These types of regulatory changes facilitate expedient uptake of telehealth use by medical practitioners.

The exigent crisis created by the COVID-19 pandemic helped to overcome resistance to telehealth implementation. This situation may have also aided the corrections industry to overcome barriers to telehealth use. Although leaders and policymakers formulate strategies to overcome barriers to technology adoption, they must also forecast what kind of impact innovation adoption will have on organizations targeted and determine whether changes align with goals and objectives. In the budget-constrained penal system of competing interests, correctional administrators should diligently examine how technology can improve operations while also seeking to understand strategies for effective adoption and use.

IV. PRACTICAL ISSUES WITH TELEHEALTH IMPLEMENTATION IN THE PENAL SYSTEM

A. EMPLOYEE CULTURE AND CHANGE MANAGEMENT

Implementing change in organizations requires careful and strategic planning to ensure success. Durant and Wilson discuss how large-scale change is difficult to achieve because of an organization's cultural resistance and this may mean an approach of targeting small, relatively easy to adapt reforms.[302] In the case of technology enhancements such as telehealth, a pilot program to test workflow and performance of the system may be a way to evaluate and correct these solutions in a way that promotes incremental use in correctional facilities. However, Hammons and Maddux emphasize that top management must be involved with process improvement efforts as top management has great influence on activities inhibiting or promoting change..[303] Furthermore, the authors discuss how employee empowerment and teamwork are vital to realizing success. With these principles in mind, Durant and Wilson also emphasize that continuing education and instruction for the workforce, internal surveys of processes and addressing system hurdles to quality improvement require consideration. For the correctional system, this may mean investment in financial and human resources required to develop structures that will support ongoing use and evaluation of programs such as telehealth. In some instances, if such expertise is lacking, correctional administrators may also need to consider contracting with consultants who provide services needed to shepherd employees through implementation and use of telehealth. Nonetheless, Durant and Wilson contend that organizational culture change happens when a multi-level leadership commitment to change exists. Additionally, Durant and Wilson stress the importance of promoting change with value propositions. As the authors share that if notable results are not perceptibly making a positive difference,

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[302] Robert F. Durant and Laura A. Wilson, "Public Management, TQM, and Quality Improvement: Toward a Contingency Strategy," *The American Review of Public Administration* 23, no. 3 (September 1993): 216, https://doi.org/10.1177/027507409302300303.

[303] Charles Hammons and Gary A. Maddux, "Total Quality Management in the Public Sector," *Management Decision* 28, no. 4 (April 1990): 17–18, https://doi.org/10.1108/00251749010002928.

innovation change efforts may fail. Thus, correctional system administrators must learn about and advocate to their employees about the benefits of telehealth and associated workflow changes.

Orchestrating organizational change can be a daunting task. Battalino, Beutler, and Shani highlight some of the barriers to change management such as disagreement over the appropriate level of effort; workflow disagreements; varied perceptions about the change; misaligned demands from customers and other stakeholders; or conflict with an organizations culture, objectives and guiding procedures.[304] For the correctional administrator, vigilance for employee performance dysfunction arising due to resistance to new change may be critical to successful integration of new initiatives or technologies. The authors also note that vigilance for employee resistance to change also affords an opportunity to learn how to use strategies to overcome barriers to change. External forces such as regulatory or legal threats impose a requirement to promote change. To do so in the penal system, correctional administrators may need to learn change management techniques that help overcome organizational resistance. Given the benefits of telehealth previously cited and pressures to contain healthcare costs, embracing this technology may require diligent involvement of correctional administrators in a manner that expedites use and implementation.

However, telehealth may pose correctional system workflow challenges that detract from how corrections officers traditionally interact with inmates and other staff. In the correctional setting, administrators may need to help sell corrections officers on the benefits of proposed changes affecting medical care delivery to inmates. Dixon expounds on this proposition by discussing how intentional use of learning processes at the individual, team and system levels must continuously transform an organization to achieve improved satisfaction among impacted individuals.[305] Dixon also emphasizes the

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[304] John Battalino, Lisa Beutler, and Abraham B. (Rami) Shani, "Large-System Change Initiative: Transformation in Progress at the California Department of Corrections," *Public Productivity & Management Review* 20, no. 1 (September 1996): 28–30, https://doi.org/10.2307/3380601.

[305] Nancy M. Dixon, *The Organizational Learning Cycle: How We Can Learn Collectively*, 2nd ed. (Routledge, 2017), 6,67, https://doi.org/10.4324/9781315554945.

importance of leaders such as correctional system administrators in their charge to linking learning goals and processes to the enterprise's strategic vision and objectives. Failure to link proposed changes to organizational mission might contribute to employee resistance even if the change is beneficial to them and their customers.

An organization's cultural influence seems to permeate all facets of its operations and may have bearing on how change management is carried out. Borkovich, Breese-Vitelli, and Skovira discuss the relevance of organizational culture when viewed in the context of technology change implementation.[306] The authors conclude that understanding and factoring for organizational culture into innovation implementation helps to foster successful adoption.[307] In the corrections system, culture may require diligent consideration when deciding on a strategy needed to implement new technologies such as telehealth. Breslin also emphasizes that leadership soft skills are just as important as technical skills and knowledge when it comes to forecasting the success of IT implementation efforts.[308] However, the organizational leader can achieve success by appointing a talented and responsible individual to manage successful implementation. Borkovich, Breese-Vitelli, and Skovira stress how a good project manager can help leaders such as correctional officers by keeping them informed, team-focused and on-task.[309] These individuals must juggle technology, people and process management. Furthermore, the project manager may help correctional administrators and telehealth vendors with beta-testing and system implementation. Borkovich, Breese-Vitelli, and Skovira also stress that the project managers should integrate technology solutions in a manner that considers organizational objectives while mitigating employee resistance.[310] In the penal system,

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306 Debra Borkovich, Jennifer Breese-Vitelli, and Robert Skovira, "New Technology Adoption: Embracing Cultural Influences," *Issues in Information Systems* 16, no. III (2015): 139–40, https://doi.org/10.48009/3_iis_2015_138-147.

307 Borkovich, Breese-Vitelli and Skovira, 145.

308 Mary Breslin, "Data Warehousing Battle of the Giants: Comparing the Basics of the Kimball and Inmon Models," *Business Intelligence Journal* 9, no. 1 (Winter 2004): 19.

309 Borkovich, Breese-Vitelli, and Skovira, "New Technology Adoption: Embracing Cultural Influences," 142.

310 Borkovich, Breese-Vitelli, and Skovira, 144.

correctional administrators may need to reconcile a past outlook of punitive behaviors toward inmates to one of empathy and regard for the welfare of these individuals when seeking to improve healthcare through use of telehealth.

B. DESIGN AND EVALUATION OF TELEHEALTH SOLUTIONS

Telehealth has proven to be a valuable mode for delivery of healthcare when providers and patients may have difficulty coming together for face-to-face interactions. However, use of telehealth for inmates is unique and warrants design and evaluation for program efficacy that considers the correctional setting. Agboola et al. emphasize the importance of careful program design, which considers the elements of planning, integration and gauging efficacy of medical interventions.[311] As previously cited, the increase of inmates with chronic disease, shortage in national healthcare workforce, rising healthcare costs and most recently, the COVID-19 pandemic may place pressure on correctional system administrators to look at telehealth as a means to overcome challenges to healthcare delivery. However, diligent planning to articulate why and how telehealth will be used along with how its efficacy is to be measured are steps that may also influence key decision makers to make investment in this type of technology. Bashshur, Shannon, and Sapci describe a telehealth evaluation framework that includes four components: (1) evaluability appraisal, (2) documentation appraisal, (3) formative or process appraisal, and (4) summative or outcome gauging as well.[312] The evaluation aspect articulates how telehealth will be developed, used and evaluated. Bashshur, Shannon, and Sapci describe evaluability assessment to include features that frame the research query, prescribe research design, and identify performance metric methodologies. Documentation evaluation assists to describe the implementation of telehealth programs through description of procedures and protocols while also addressing strategies to deal with barriers. Bashshur, Shannon, and Sapci also address formative evaluation that brings to

311 Stephen Agboola et al., "'Real-World' Practical Evaluation Strategies: A Review of Telehealth Evaluation," *JMIR Research Protocols* 3, no. 4 (December 17, 2014): 1, 9, https://doi.org/10.2196/resprot.3459.

312 Rashid Bashshur, Gary Shannon, and Hasan Sapci, "Telemedicine Evaluation," *Telemedicine and E-Health* 11, no. 3 (June 2005): 299–300, https://doi.org/10.1089/tmj.2005.11.296.

light how program design and modifications influences the process of care. The authors also discuss how this aspect of the evaluation framework may convince correctional administrators and other stakeholders to support implementation and use of telehealth. Finally, summative evaluation is used to gauge efficacy of the program. For the correctional system administrator, all of these evaluative components of telehealth may require heavy personal and stakeholder involvement to formulate a program that is well designed and understood. Agboola et al. also stress the importance of developing robust summative evaluations as failing to do so may short-circuit capacity to conduct effective telehealth program evaluation.[313] Because of this, correctional facility administrators should support such efforts. The correctional administrator should undertake a review of telehealth program evaluation models and identify associated shortcomings in a way that helps them understand how they may positively influence development efforts.

Telehealth continues to evolve as advancements in technology influence healthcare delivery and because of this, Agboola et al. discuss how analysis models help to depict telehealth as a complicated health intervention with many elements that require attention and high stakeholder involvement.[314] Some evaluation themes may look at the "holistic" impact of telehealth delivery. Khoja et al. describe how implementation evaluation models seek focus on not only improved diagnosis and treatment but also on improved decision support, better clinical safety and equity of care.[315] Because of this, the exercise of using evaluation models to implement telehealth may have spillover benefits for the correctional system.

C. SECURITY RISKS ASSOCIATED WITH TELEHEALTH SOLUTIONS

Technology solutions and protocols for their use contain much data and information, and this justifies serious planning to avoid data security breaches. Deslich et

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313 Agboola et al., "'Real-World' Practical Evaluation Strategies: A Review of Telehealth Evaluation," 3–4.

314 Agboola et al., 9.

315 Shariq Khoja et al., "Conceptual Framework for Development of Comprehensive E-Health Evaluation Tool," *Telemedicine and E-Health* 19, no. 1 (January 2013): 51, https://doi.org/10.1089/tmj.2012.0073.

al. posit that use of telehealth solutions are susceptible to data breaches because videoconferencing that works over Internet Protocol (IP) networks may be intercepted.[316] As the authors discuss, point-to-point systems are more secure, but use of IP networks requires data encryption or establishing a virtual private network (VPN) and/or virtual local area networks (VLANs) to decrease exposure to data breaches. Hall and McGraw discuss how components of telehealth such as insulin pumps have been susceptible to hacking.[317] The authors also note that unauthorized use of software such as file-sharing software led to an unnecessary data breach of personal information. These vulnerabilities pose as security risks that correctional officers should consider and plan for when looking to telehealth as a means to improve healthcare behind jail walls.

While data encryption may serve as a means to protect data from compromise, manual security controls may also help to limit access to private health information. Watzlaf et al. examined practices in privacy and security associated with use of telehealth by healthcare providers.[318] As the authors discuss, most healthcare providers lack training on data security protocols and laws governing their duty to safeguard patient data. The authors also noted that technology components used in telehealth contributed to security breaches and between 2010 and 2015, laptops (20.2 percent), network servers (12.1 percent), desktop computers (13 percent), and other portable electronic devices (5.6 percent) made up 51 percent of all healthcare data breaches.[319] However, Watzlaf et al. discussed how guidance for providing data security in telehealth application was available in various articles or papers including: American Telemedicine Association, 2014a) "Clinical Guidelines for Telepathology Policy," American Telemedicine Association,

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316 Stacie Deslich et al., "Telepsychiatry in the 21(St) Century: Transforming Healthcare with Technology," *Perspectives in Health Information Management* 1, no. 10 (Summer 2013): 4.

317 Joseph L. Hall and Deven McGraw, "For Telehealth to Succeed, Privacy and Security Risks Must Be Identified and Addressed," *Health Affairs* 33, no. 2 (February 2014): 217, https://doi.org/10.1377/hlthaff.2013.0997.

318 Valerie J.M. Watzlaf et al., "A Systematic Review of Research Studies Examining Telehealth Privacy and Security Practices Used by Healthcare Providers," *International Journal of Telerehabilitation* 9, no. 2 (November 20, 2017): 39, https://doi.org/10.5195/ijt.2017.6231.

319 Watzlaf et al., 9.

2014b) “Core Operational Guidelines for Telehealth Services Involving Provider-Patient Interactions Policy” along with a host of other guiding documents designed to help avoid data breaches.[320] While healthcare providers have implemented manual and automated security protocols, Watzlaf et al. evaluate how organizations vary in their methods and use of technology security protocols when using telehealth. The authors also contend that healthcare providers may lack knowledge about security regulations and their obligation to protect private health information. Because of this, Watzlaf et al. view education on these topics as essential. Without this security protocol education and because of the lack of standardized security protocols, healthcare providers may continue exposing themselves and clients served to unnecessary data breaches. Nonetheless, correctional systems may need to contract for guidance on how to address workflow protocols and automated data security tools that protect against data breaches before, during and after telehealth sessions.

[320] Watzlaf et al., 45–46.

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V. FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

A. FINDINGS

Telehealth use has helped the corrections industry improve healthcare associated with certain types of maladies such as behavioral health afflictions, and as cited, the COVID-19 pandemic removed many of the barriers connected with use of this technology. While the initial focus was on cost savings, other benefits derived from telehealth use also includes helping correctional facilities address safety and correctional officer understaffing because it reduces the number of inmate transfers to off-site healthcare facilities. With emergence of EHR solutions, telehealth also merits consideration as a source of healthcare that requires data capture. Telehealth integration with EHR systems promotes continuity of inmate healthcare as face-to-face and virtual medical interventions are documented in solutions shared between the corrections system and healthcare providers. Although telehealth and emerging technologies afford opportunities for corrections systems administrators to improve inmate healthcare, IT infrastructure investment is required, and these systems must be protected from the risk of hacking or corruption. Furthermore, implementation of telehealth also requires careful planning and consideration of technology adoption theory to ensure successful integration, as these solutions require considerable investment of human and financial resources. While technology is rapidly expanding with innovative solutions that afford the corrections industry an opportunity to improve inmate healthcare, use and application requires careful planning in a way that promotes employee confidence in technology acquisitions. Telehealth data associated with healthcare interventions should also receive analysis to understand the efficacy of medical interventions.

The U.S. Supreme ruling *Estelle v. Gamble* in 1976 established the requirement for the correctional system to provide inmate healthcare. Prisons and jails have struggled to meet this mandate because of many of the factors discussed in this thesis including lean budgets, politics at all levels of our government, failure to adopt technology, disparate correctional administrator operational philosophy and practices, and correctional officer training to name a few. Taken together, these factors play a role with delivery of quality

medical care rendered to inmates in the correctional setting. As discussed in the thesis, inmates have a higher prevalence of behavioral and medical healthcare problems when compared to the public. Failure to address these problems in the correctional setting is a recipe for continued recidivism considering that the criminal justice system may have failed to rehabilitate inmates in a way that makes them self-sufficient upon release from prisons and jails. This has significant homeland security implications, as inmates who cannot sustain themselves remain vulnerable to criminal victimization. For the public, there may also be great concern of the potential for criminal victimization when the penal system fails to reform prisoners released into their communities.

This thesis examined how telehealth has started to help to close healthcare gaps that exist in the penal system although primary use in the correctional setting has focused on behavioral health. The research explored how telehealth and other emerging technologies could address deficient inmate healthcare when comparing to healthcare available to the public.

While telehealth affords some benefits to improved correctional healthcare, the thesis also cited how barriers to its adoption have diminished because of the exigent health crisis posed by the COVID-19 pandemic. For correctional system administrators, how and what diseases telehealth should target requires strategic planning involving many stakeholders to ensure this solution achieves intended goals and objectives.

The research also revealed how telehealth use affords correctional system administrators and criminal justice advocates an opportunity to integrate these solutions with EHR systems in a way that captures information for clinical efficacy analysis and for more effective and efficient handoff of inmate healthcare upon release. This transitional healthcare could also help contribute to reduced recidivism but without enough of these programs, impact analysis will continue to be scant.

B. CONCLUSIONS

This thesis endeavored to understand how telehealth and emerging technologies could improve the quality of inmate healthcare while considering the context of potential

challenges to future use of telehealth and adoption of innovations under development. This thesis's synthesis of the literature yielded the following findings:

1. Clinical Outcomes in Penal System Healthcare since *Estelle v. Gamble*

The U.S. correctional system has struggled with establishing good healthcare for inmates and because of this, accrediting institutions such as the NCCHC and ACA have established standards tied to correctional healthcare. However, many jurisdictions fail to adopt standards due to financial constraints or because they are not deemed as a priority by decision makers. States have also failed in their ambition to monitor jail healthcare at the local level. Even when state authorities conduct audits of jail healthcare practices, local jail leaders raise the defense that they lack funding, and this situation poses as a barrier to adopting medical care standards. The correctional system of healthcare lacks a uniform approach to measuring quality of care. Nonetheless, correctional systems have implemented their own quality assurance (QA) programs to champion use of these tools. However, poorly structured QA systems may fail to measure healthcare outcomes in a meaningful way.

2. Rehabilitation of Inmates through Correctional Healthcare

Recidivism rates remain high and the Federal Bureau of Prisons (BOP) data analysis covering prisoners released in 2012 revealed that nearly half of prisoners released returned to prison within 5 years for a parole or probation violation or because of a new sentence.[321] Behavioral health illness is prevalent in the penal system and where cognitive-behavioral therapy (CBT) is used, the penal system has seen effective treatment delivery for their inmate populations. However, financial constraints or failure of corrections administrators to evaluate effectiveness of CBT use contributes to poor inmate rehabilitation. By measuring CBT and other medical care practice in jail settings, the correctional system can use empirical data to drive decisions that could help to modify and improve healthcare in the penal setting. Neglecting to undertake data analysis associated

[321] Matthew Durose and Leonardo Antenangelia, "Recidivism of Prisoners Released in 34 States in 2012: A 5-Year Follow-Up Period (2012-2017)," Bureau of Justice Statistics, July 2021, 1, https://bjs.ojp.gov/sites/g/files/xyckuh236/files/media/document/rpr34s125yfup1217.pdf.

with medical interventions may promote continued healthcare delivery that fails to rehabilitate inmates.

3. Continuity of Inmate Healthcare

The U.S. correctional system and policymakers have failed to plan for continuity of inmate healthcare. The implementation and use of shared electronic healthcare records (EHR) systems helps to avoid medical care delivery delays or procedures that incur unnecessary expense. Multnomah County's jail system has succeeded with implementation of an EHR system that permits sharing of inmate medical records with the county health system. The success of this model may help forward-leaning policy-makers and jail administrators with implementing EHR systems in their own jails. The U.S. Medicaid system affords financial incentives to healthcare providers when it comes to adopting technologies such as EHR systems, but the caveat is that healthcare providers must be willing and able to implement structures and procedures that support qualifying criteria. Many jail system administrators are unwilling or unable to follow through on the requirements to qualify for financial incentives available through Medicaid. Continuity of healthcare also breaks down when policymakers and jail system administrators fail to setup transitional care programs. Inmates handed off to a network of healthcare and social service providers would have a better opportunity to become self-sustaining. Correctional system administrators and policymakers could look to other jurisdictions that have successfully implemented transitional care as a means to develop their own programs.

4. Inmate Healthcare at the Local and County Level

As compared to the state and federal prison system, local and county jails experience significant turnover of inmates. Local jails admitted an estimated 11.7 million persons during the 12-month period ending on June 30, 2013, and down from a peak of 13.6 million admissions in 2008.[322] This leads to a situation where correctional officer burnout or complacency contributes to poor prisoner intake and ongoing surveillance.

[322] Bureau of Justice Statistics, "Local Jail Population Declines from 2008 to 2013," accessed November 16, 2020, https://www.bjs.gov/content/pub/press/jim13stpr.cfm.

Furthermore, local jurisdictions lack in-house and community behavioral healthcare resources needed to treat inmates with mental illness. The International Association for Correctional and Forensic Psychology (IACFP) promulgates standards associated with jail intake that includes mental illness screening. Regrettably, local and county jails fail to adhere to the standards and this leads to inadequate jail intake operations. Jail and county administrators may also have to contend with limited budgets that pose as barriers to instituting inmate intake and healthcare that meets standards.

5. Correctional Officers' Role with Inmate Healthcare Delivery

Correctional officers play a vital role when it comes to linking inmates with quality medical care behind jail walls. However, these individuals may at times feel conflicted in their dual roles of empathetic caretaker and custodians entrusted to ensure structure and order. Because of this, corrections officers may withhold inmate healthcare access as a form of punishment. It is vital that these individuals receive the training needed to develop skills that help promote the health and well-being of inmates entrusted to their care. Correctional healthcare challenges also entails a shortage of correctional workers and when considering overcrowded jails, this situation contributes to higher stress levels for inmates and corrections officers. Overworked corrections officers exacerbate short-staffed jail facilities as these individuals also take more sick days. If the prevalent theme in prisons and jails entails scarcity of medical care specialists, corrections officers may also be inclined to deny inmates needed healthcare. Because of this, correctional system administrators must properly train corrections officers about their obligation to connect inmates with healthcare as needed. Telehealth and emerging technologies may help address concerns about correctional officers acting as gatekeepers for healthcare because of expanded healthcare capacity.

6. Telehealth and Innovative Technologies as a Means for Improving Healthcare

Telehealth and emerging technologies pose as disruptors for the healthcare industry. Innovations such as AR, VR, machine learning, IoT and sensor networks have already proven to better healthcare. IoT and sensor networks are currently in use for remote

medical monitoring and for treating diabetics. Many of these technologies afford correctional administrators an opportunity to address existing healthcare gaps at all levels of the penal system. For example, remote medical monitoring could help address the problem of suicide in jails. Research is ongoing with these emerging technologies, but early results show much promise with their application.

Emerging technologies such as augmented reality (AR) has also proven to reduce stress levels for individuals who interact with these technologies. An example given was the Gatwick Airport technology application that allows travelers to navigate through the airport terminals by relying on VR. However, without the needed ICT infrastructure, correctional system administrators will not avail themselves of future innovations requiring such investment.

As these technologies develop, however, ethical and legal policy will need consideration to ensure concerns associated with application receive the attention warranted. Cloud computing coupled with telehealth solutions pose as a significant technology innovation. Integrated with EHR systems, telehealth records stored in the cloud may promote enhanced continuity of care for inmates treated in the correctional setting and released into their communities but cloud solutions that promote interoperability will provide flexibility when considering integration of disparate healthcare solutions.[323]

Because of the COVID-19 pandemic, regulations governing use of telehealth warranted investigation and modification. Now, healthcare providers can utilize various media platforms to facilitate telehealth care delivery. Additionally, insurance reimbursement parity between telehealth and in-person healthcare delivery is now a reality. Because COVID-19 elevated telehealth use to greater prominence, fewer barriers to implementation may afford the correctional system great opportunity to adopt or enhance use of this technology. However, prospective adopters of existing and emerging technologies must remain wary about the threat of cyberattack. Telehealth data that is

[323] Bahga, Arshdeep, and Vijay K. Madisetti. "A Cloud-Based Approach for Interoperable Electronic Health Records (EHRs)." *IEEE Journal of Biomedical and Health Informatics* 17, no. 5 (September 2013): 895. https://doi.org/10.1109/JBHI.2013.2257818.

breached could have identity theft implications or worse, prescriptive therapy may be modified in a way that endangers safety to health and life. With infected or corrupted technology systems, the implications of poor security system practices bode as significant.

7. Technology Adoption Strategies

Technology acquisitions entail large financial and human resource commitments. For this reason, technology adoption theory warrants investigation as a means to understand barriers to organizational technology adoption. Planning for adoption should not happen in a vacuum and, as many stakeholders as possible need to be engaged to facilitate effective technology adoption and diffusion. Technology adoption that diffuses efficiently is an objective that is not easy to achieve. Champions such as organizational leaders and early adopters as well as use of proven strategies help to infuse the organization's employees with interest and willingness to adopt innovations. Technology adoption strategy entails science and art combined in a way that helps overcome organizational resistance that often hampers or delays implementation of technology. For this reason, consultants often help organizations when internal expertise or resources are not available. However, before embarking on a technology adoption strategy, decision-makers must understand how and if technology solutions sought will meet organizational goals and objectives.

C. RECOMMENDATIONS

The thesis reveals that many healthcare gaps exist in the penal system and a myriad of factors influence quality healthcare delivery in the correctional setting. As previously cited, telehealth has proven to contribute to improved and efficient healthcare delivery in the public and correctional healthcare setting. However, adoption and use of telehealth requires careful planning to ensure its success and efficacy in the correctional setting.

To criminal reform advocates and correctional system leaders, I recommend the following:

1. Information and Communications Technology Investment

We live in the information age where the internet and telecommunications advancements have created tremendous opportunities to improve our lives and to bring about operational efficiencies in the workplace. The correctional industry does not seem to lean forward or embrace the possibilities afforded by technologic innovation when it comes to improving jail healthcare. The corrections industry should focus effort at developing the technology support infrastructure that allows telehealth and other emerging technologies to integrate readily with existing jail healthcare operations. Although the correctional industry may lack IT expertise, consultants could help the penal system use existing IT infrastructure frameworks and best practices to design ICT infrastructure that promotes a forward leaning posture when it comes to adopting technology such as telehealth.

The problem of suicide in jail settings and deficient medical care behind jail walls warrants correctional facility retrofitting or new construction that considers ICT infrastructure features. Correctional officer shortages, poor training and other facilitating factors lead to poor inmate intake and ongoing monitoring. Because of this, jail systems are susceptible to inmate suicide, injury, and death. ICT and remote medical monitoring sensor use has proliferated in the public healthcare setting. This technology may serve as "low hanging" fruit that can help the U.S. correctional system close gaps in healthcare including the risk of inmate suicide. Correctional administrators and policymakers should pursue remote medical monitoring.

2. COVID-19's Implications for Telehealth Use

The COVID-19 pandemic has led to less regulation when it comes to use of technology platforms required to support telehealth operations. More and varying communication platforms may provide flexibility to correctional system administrators when it comes to implementing telehealth and their facilities. As some of the regulatory barriers for telehealth use no longer exist, correctional system administrators must also take a leadership role to promote adoption and use of telehealth. This will include a high level of personal engagement to design a system that achieves objectives tied to improving healthcare while also focusing on a system that captures clinical practice outcomes. Data

drives decisions and by capturing data, correctional system administrators and their partner healthcare attendants can strengthen justifications for investment and use of technology that helps improve healthcare.

3. Cybersecurity and EHR

Research findings revealed that healthcare delivery in the penal system often comes under scrutiny due to deficiencies, and at times, lawsuits have enforced this obligation. Although telehealth has benefited the penal system, use of this and other emerging technologies likely causes angst for correctional system administrators when considering potential security breaches. However, this concern may be addressed with a robust cybersecurity system and end-user training that focuses on good design and practices that limit risk. The benefits of telehealth solutions that integrate with EHR systems pose as significant contributors to improved healthcare in and out of the correctional setting. Although a high-level of commitment and effort is required to achieve adoption of technology, correctional administrators who devote energies toward these initiatives provide the best opportunities for successful integration and use. Correctional system administrators, criminal justice advocates and other concerned stakeholders should collaborate to promote integration of technologies in the penal system as a means to improve inmate healthcare.

4. Correctional Officer Staffing Shortages and Telehealth

As cited in the research, the corrections industry suffers from correctional officer staffing shortages at facilities across the nation. At the local and county jail level, the problem of suicide is a problem as are poor jail intake practices. Correctional facilities often lack psychologists or officers trained to conduct mental health screenings. Inmates at higher risk for committing suicide also fail to be monitored with greater frequency per jail industry guidelines. Because of this, telehealth may afford a means to connect inmates with behavioral health clinicians who can thoroughly evaluate jailed individuals. Across the penal system, corrections officers require training on their evolving roles and responsibilities when considering use of telehealth or other emerging technologies.

Training should include how they are to collaborate with healthcare providers when rendering inmate medical care.

5. Policy Challenges

As discussed, emerging technologic innovations provides potential to improve our way of life but ethical and legal issues envelope many of these applications. Without considering these issues and enacting policy that addresses them, correctional system administrators and policymakers may fail to take corrective measures needed to address poor adaption that may even harm users and consumers of services. Adoption of technology also requires development of robust training and procedures that addresses potential misuse or exposes systems to cyberattack. Policy development in these areas will require a best practices approach to ensure systems design affords effective protection of computer hardware and software systems from cyberattack.

6. Research Limitations

While research entailed use of the internet and online library resources available through the NPS Dudley Knox Library, it is impossible to investigate all of the research associated with topics written about in the thesis. Research focused on investigating issues associated with challenges to provision of quality healthcare in jail settings. Collaborating with correctional system administrators, criminal justice reform advocates and policymakers may have also provided more information about the challenge of providing quality medical care to inmates as well as barriers to use of existing and emerging technologies.

The COVID-19 pandemic led to relaxing regulations associated with use of telehealth platforms. As COVID-19 caused policy makers and the medical industry to pivot quickly, the corrections industry may have also altered its approach to healthcare delivery. The research did not yield if or how the penal system pivoted quickly to adopt and use telehealth because of the COVID-19 pandemic. Any such instances may afford more opportunities to learn how to adopt telehealth and other technologies within the correctional system.

7. Recommendations for Future Research

There are many technologic innovations under development. Because of their potential to improve healthcare in the correctional system, future research should endeavor to understand the practicality of implementing these technologies in the short and long term. This type of research would help set expectations regarding the type of potential effort and resources needed to implement technology innovations. Leveraging existing and emerging technologies could help to overcome some of the myriad barriers that make quality healthcare delivery for inmates a challenging proposition for the penal system. The emergence of cloud computing and capacity to store tremendous amounts of data affords many opportunities to improve health. Because of this, research to understand how cloud computing can improve penal system continuity of care for inmates should warrant further investigation. The application of some technologies such as wearables may be more conducive to lower security correctional settings.

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