Report to the Virginia Department of Corrections

In partial fulfillment of Memorandum of Agreement DOC-15-098 Mod 001

September 1, 2017

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Introduction

Virginia's 2017 Budget Bill HB 1500 Item 393 #1c states:

> *"The Department of Corrections, through its contract with the Virginia Commonwealth University Department of Health Administration, shall review the management of a selected number of inmates who account for the largest share of total inpatient and outpatient medical care costs within the department. The review shall include inmates who have been enrolled in Medicaid for qualifying inpatient hospitalizations; for these individuals, the Department of Medical Assistance Services shall provide the requisite enrollee data. The review shall address the number and characteristics of these inmates (including demographic background, offense history, and security classification) who account for the highest costs for medical care. The review shall also consider, to the extent available, their medical history and current medical issues and address potential case management strategies and other steps to reduce costs for these inmates in the long term. Copies of the review shall be provided by October 1, 2017 to the Secretary of Public Safety and Homeland Security, the Secretary of Health and Human Resources, the Chairman of the Joint Commission on Health Care, and the Chairmen of the House Appropriations and Senate Finance Committees."*

This report is intended to assist the Virginia Department of Corrections (DOC) in fulfilling its obligations to respond to this legislative mandate. We use data supplied by DOC including demographic, sentencing, security level, and documented disability and disease data, as well as paid claims data provided to DOC from its third-party administrator, Anthem Blue Cross and Blue Shield and from Diamond Pharmacy and Medical Supply. The study period for which claims data were provided is the 12-month period ending June 30, 2017. Our work was conducted following the human subjects protocols approved for this project by Virginia Commonwealth University's Institutional Review Board July 28, 2017 (IRB HM20010830).

We begin with an analysis of these data, then present the results of a literature search regarding best practices for disease management specific to the correctional setting. The literature review targeted journals and resources related to population health and correctional settings, especially those merging the two. Included resources were located using the National Criminal Justice Reference Center, the Federal Bureau of Prisons, the American Correctional Association, and the Centers for Disease Control and Prevention among others. Finally, we discuss possible programs and strategies to mitigate costs and improve inmate health outcomes via care coordination and peer-to-peer counseling, and offer some conclusions.

Background

The DOC is responsible for the healthcare needs of 35,706 offenders housed in 45 state prison facilities. DOC delivers care to offenders in 30 facilities through a combination of provider contracts and state employees. For the remaining 17 facilities, DOC contracts with outside vendors, Armor Correctional Health Services (14 facilities), Mediko Correctional Healthcare (two facilities), and Geo Group, Inc. (one facility) to provide on-site care and arrange for off-site care. The facilities in which Armor and Mediko provide services house over 50% of the VADOC offender population (Weiss, 2016).

DOC facilities are located throughout the Commonwealth, and vary in size, security level, demographics, and health status of their offender populations. While all facilities provide access to routine, outpatient specialty, and inpatient acute health care services (including mental health and dental services) as required by law (U.S. Const. Amend VIII; § 53.1-32, Code of Virginia), each has a different set of services available on-site. Because offenders are transferred around the system for a variety of reasons, comparing one facility's population to another can be difficult. The overall average cost per offender was $5,230 in 2012, and $6,362 in 2016 (Weiss, 2016).

All facilities have medical clinics that provide routine care for offenders housed at that facility, including medication administration, sick call, chronic care services, medical screening and triage, specialty referral, and discharge planning. On-site mental health and psychiatry services vary by facility, but all are able to dispense psychotropic medications. All facilities have the

ability to host a variety of specialty clinics to help manage the specific needs of the offender population, although their capacity differs. To expand the range of services available on-site, DOC has enabled 100% of its facilities to be telemedicine compatible. Telemedicine clinics are provided through partnerships with VCU Health and the University of Virginia Health System.

Payment for healthcare services for DOC offenders varies by service and location. Anthem Blue Cross Blue Shield is responsible for administering health care claims for all off-site care, including outpatient and inpatient care, drugs dispensed in those settings, and off-site dental care. For care delivered at the prison facility, DOC contracts with the vendors (Armor, Mediko) on a capitated per member per month rate to cover the cost of on-site and off-site outpatient care and outpatient pharmacy products. The contract with Geo Group covers both healthcare and general prison management services. When an offender from one of these facilities seeks outpatient services off-site, the management company is responsible for paying incurred outpatient claims through Anthem. DOC is responsible for paying the Anthem claims for inpatient and dental services. Medicaid pays for a limited number of eligible offenders but only during their inpatient stay. In the 30 DOC-managed facilities, DOC contracts with Diamond Pharmacy Services and Medical Supply for pharmaceuticals. While Armor and Mediko also use Diamond as their pharmacy vendor, each does so under a separate contract.

Renal dialysis services are also provided under contract. Dialysis treatment has been delivered under contract at the Greensville facility for many years. These services are currently provided under a May 2013 contract with PTX Dialysis, LLC at Greensville and Sussex II. Dialysis is subcontracted by Armor Correctional Health at Fluvanna under its comprehensive health services contract (Watts et al, 2016).

High Cost Offenders

The focus of this report is on offenders who incur the highest healthcare cost. Because of the way healthcare services are provided to offenders and the data sources available for this report, we have defined our task as follows:

- "High cost" offenders are defined as those for whom Anthem paid claims exceeded $25,000 in the 12-month period ended June 30, 2017.
- These expenditure figures necessarily include some claims for services provided before the study period but for which claims were paid after July 1, 2016. They also omit expenditures for services rendered during the study period but for which claims were not paid by June 30, 2017.
- Anthem only pays claims for services provided outside DOC facilities. Thus, DOC expenditures incurred for services provided either by DOC directly or through contracts with prison health vendors are not included. This approach necessarily misses some offenders who fall under the threshold for off-site care, but whose healthcare expenses would exceed $25,000 if on-site pharmacy and/or dialysis services were included.
- Claims for pharmaceuticals dispensed inside the 30 DOC-managed prison facilities are paid by Diamond Pharmacy Services and Medical Supply. We had access to these claims data for this analysis. However, expenditures for pharmaceuticals dispensed inside the 17 vendor-managed prison facilities were not available. Thus, the pharmaceutical expenditure figures provided in this report are not complete.
- Because utilization and cost data were not available from PTX, Armor, Mediko, or Geo Group, services provided under these contracts are not included in our analysis.
- Medicaid only pays inpatient claims for incarcerated individuals who are eligible for the program. For the study period, Medicaid-paid claims totaled $959,555.00 for 31 Medicaid-eligible offenders. Of this total, 50% is the federal share; Virginia Medicaid paid the other 50%. Expenditures for pharmaceuticals that qualify for the federal 340B program (Hepatitis C, HIV, and Factor medications when care is supervised by a 340B qualified provider) are paid separately to VCU Health at the discounted rate.

Characteristics of High Cost Offenders

There were 523 offenders whose Anthem-paid claims exceeded $25,000 for the 12-month period ending June 30, 2017.[1] Claims paid by Anthem during this period for these 523 offenders totaled $44,616,962.41, or $85,309.68 per high cost offender. These high cost offenders represent 1.5% of the total offender population of 35,706. Anthem reports that the claims cost of these offenders comprised 70.7% of all its DOC paid claims in the study period.

The data in Table 1a indicate that the gender representation among high cost offenders (8% female; 92% male) reflects the gender mix in the overall offender population. The data also indicate that roughly 70% of high cost offenders are classified as either Level 2 or 3 (Moderate or Medium) security level. Women in this high cost sample are more likely to be classified in lower security levels than men. All 41 women are in Level 1 to 3 facilities; all 83 offenders in the higher security level facilities (Levels 4 through 6) are men.[2] In addition, there are 37 high cost offenders serving single life terms and 22 serving multiple life terms. All but two of these offenders are male; the two females are serving single life sentences.

From Table 1b, it is evident that high cost offenders skew older than the general offender population. While 67% of the overall offender population is under 45, only 26.3% of the high cost offenders fall into this age range. In the overall offender population, 26% are between 45 and 60, and only 6% of the overall population is age 60 or over. Among high cost users, however, 42.1% are between 45 and 60, and nearly a third (31.6%) are age 60 or older. These are not surprising results, as they mirror the age-related burden of illness in the non-incarcerated population.

Table 2 categorizes high cost offenders by sentence length. Just under one quarter (23.2%) of high cost offenders are serving terms of five years or less. At the other end of the sentencing scale, 28% of high cost offenders are serving terms of more than 20 years, and another 11.8% are serving life sentences. Just over 18% are serving sentences of 6-10 years, 8.7% are serving sentences of 11-15 years, and 6.7% are serving sentences of 16-20 years.

Health Conditions of High Cost Offenders

The Department of Corrections documents both disability category and disease category for offenders. Table 3 provides information about the documented disabilities and disease categories of high cost offenders.[3] The most prevalent primary documented conditions are respiratory conditions, cardiac conditions, orthopedic conditions, gastrointestinal conditions, and hepatitis. It should be noted these designated documentations come from DOC data and are not generated by the Anthem paid claims data used in this report.

We used Anthem paid claims data to identify the most common and most resource intensive health conditions of high cost offenders. Anthem has identified the five broad conditions for which their paid claims during the period were the highest (see Table 4). These conditions include neoplasms, diseases of the circulatory system, infectious/parasitic diseases, injuries and poisonings, and diseases of the digestive system. Taken together, these conditions consumed $20,610,032 during the study period, nearly half (46.2%) of total paid claims for high cost offenders. Of this total, 67% of claims dollars were for inpatient services, 19.4% for outpatient services, 12.6% for professional services, and 1.0% were for pharmacy services. While there are 523 offenders whose paid claims exceeded $25,000 in the study period, claims for these top five conditions were incurred by only 123 offenders.

Table 5 presents Anthem paid claims data by type of service. Once again, inpatient hospital claims account for the majority of resources spent, with outpatient hospital claims at roughly 20% of claims. Emergency room services make up about 6% of claims, and ambulance (air and ground together) account for about another 4.5%. The small share of pharmacy claims in Table 5 results from the fact noted above that Anthem does not pay for all prescription drugs for offenders. Thus, these data include only drug claims that were paid by Anthem. Total pharmacy claims paid by Diamond for drugs administered on-site at the 30 DOC-managed facilities during the study period for the sample of high cost offenders totaled $2,208,645.85 or $4,223.03 per offender.

In Table 6, claims paid are presented by age group and by primary condition category as defined (and categorized) by Anthem.[4] These data underscore the data in Table 1b regarding the contribution of the over 50 population to paid claims. Two-thirds (66%) of all claims paid were for offenders age 50 or older. Table 7 presents the claims data as percentages. Two primary condition categories, Circulatory System and Neoplasms – Malignant, accounted for nearly half (44.26%) of all paid claims. Infectious/Parasitic and Injury and Poisoning contributed nearly another quarter (23.47%).

We examined paid claims (excluding Diamond Drug claims) by the facility in which the offender was housed at the time of the claim. Offenders housed at the 17 facilities for which vendors

manage the healthcare services incurred 68% of paid claims with the remaining 32% were incurred by offenders housed in facilities for which DOC manages the healthcare services. This is as expected, since the vendor-managed facilities in general have more complex healthcare services on-site and so house offenders with more and more complex healthcare issues (Watts et al, 2016).

As noted above, DOC contracts with an outside vendor for kidney dialysis services at two facilities and includes dialysis in the health services contract at a third. Thus, claims for these services do not appear as Anthem paid claims. The share attributable to high cost offenders is not available. In addition, $224,567.13 in claims was paid by Anthem during the study period for 83 high cost offenders for services with a primary diagnosis of "Acute kidney failure and chronic kidney disease." The claims were for a variety of services in a range of settings, including inpatient hospital, outpatient hospital, emergency room, ambulance, and provider's office.

Chronic Diseases and Care Management Strategies

Healthcare providers and payers across the country are seeking ways to reduce expenditures and improve the care outcomes of high cost individuals. In general, these strategies involve prevention, early disease detection, and disease management. In this section of the report, we discuss disease management efforts underway in other settings that might have applicability in Virginia state prisons.

Diabetes

Diabetes is one of the most common and most costly chronic diseases in the U.S. population. Lack of proper treatment can lead to a multitude of health problems, including blindness, end-stage renal disease, nerve damage and amputations, heart disease, or stroke. About 60 to 70% of people with diabetes have mild to severe forms of diabetic nerve damage which may require amputation. These individuals are two to four times more likely to have heart disease or suffer a stroke than individuals without diabetes (Villagra & Ahmed, 2004).

Treatment protocols for diabetics depend on the severity of the illness. In mild cases, patients are counseled on diet and exercise regimens that will delay the onset of more severe disease. Patients

with more severe cases can be prescribed medications in addition to insulin injections. There are two types of guidelines for diabetes management. The first focuses on day-to-day lifestyle choices of patients. These approaches may have less applicability to incarcerated individuals who may have difficulty implementing lifestyle changes such as reducing stress and staying active in the prison environment. Second, there are recommended processes for managing the care delivered to diabetic patients. Targets exist for test frequencies and parameter levels such as twice annual testing of Hemoglobin A1c levels; daily patient self-monitoring of blood sugar levels; and annual blood pressure tests, testing of cholesterol (LDL) levels, and an annual examination of patients' eyes and feet (Beaulieu et al, 2003).

According to a study by Villagra and Ahmed (2004), diabetes disease management programs can significantly lower the costs of care. In their study comparing sites that did and did not utilize a management program, they found a 22% to 30% decrease in hospitalizations in one year alone in the care managed population. Physician visits also fell in this group. Pharmacy costs can increase with the initiation of a diabetes disease management program, however, because of increased use of appropriate drugs and better adherence to medical regimens. The authors found that remote patient-provider interactions, via telephone or through video conferencing with telemedicine, were effective tools for the program.

According to Rice, et al (2010), health care professionals play an important role in helping patients make informed self-management decisions, but cannot control patients' self-care decisions, which have the greatest impact on their health. The Baylor Health Care System (BHCS) uses a patient empowerment counseling model as a coordinated effort with the Diabetes Health and Wellness Institute. The model is based on best practices developed by the American Association of Diabetes Educators. It lists seven self-care behaviors for patients with diabetes: healthy eating, regular physical activity, regular monitoring of body metrics, medication adherence, problem solving, risk reduction, and healthy coping (Rice et al, 2010).

These behaviors can to some extent be promoted and monitored in the prison setting, and efforts can be made to help offenders continue these behaviors when they are released. DOC already has programs that are consistent with the BHCS model. In a 2015 article in *Virginia Currents,*

Catherine Komp detailed a weekly wellness class at Deep Meadow Correctional Center led by a registered nurse. Komp noted that weekly goals to improve physical and psychological health are important components of the program. Offenders are able to share success and provide encouragement. The six-week program uses the book "Living a Healthy Life with Chronic Conditions" so that offenders can understand the interplay between diet and exercise, and learn about healthy eating practices in the cafeteria and commissary.

Clinical guidance for the management of diabetes for incarcerated individuals was updated in March 2017 by the Federal Bureau of Prisons (Federal Bureau of Prisons, 2017). The guidelines are thorough and cover protocol beginning with the initial diagnosis of the disease through periodic evaluations and treatment plans. Several lifestyle interventions in the correctional setting are outlined, such as offering heart-healthy meals, listing the carbohydrate content of foods at the commissary, and improving physical activity availability for offenders with the disease or those at risk of Type II diabetes.

While initial costs of disease management programs may be substantial, their long-term effects could benefit DOC and the offenders served. Over time, set-up and operating costs can be offset by reduced use of acute services and therefore reduced expenditures (and better outcomes). In Beaulieu et al's (2003) review of the cost-effectiveness literature, the authors report that there is evidence that diabetes and other chronic disease management programs can generate net cost savings within six to ten years.

Hepatitis C

The hepatitis C epidemic was first recognized in U.S. correctional facilities in the 1990s. Twelve to 35% of prisoners were already infected at that time. Correctional medicine programs were overwhelmed because treatment options were poorly tolerated, costly, and minimally effective. Since then, short-course, easily tolerated, and highly effective treatments have been developed. The availability of such treatments is important since there are many complications and long-term effects of chronic hepatitis infection including liver failure, hepatocellular carcinoma, and mortality (Rich et al, 2014).

Treatment of hepatitis C in prisons can also have a substantial impact on the health of the general population since most offenders will eventually return to their communities. A 2006 survey of state correctional department medical directors and health administrators estimated that the prevalence of hepatitis C among offenders was 17.4%, while prevalence in the general population was approximately 1%. Incarcerated individuals are especially at risk for hepatitis C virus (HCV) because of behavioral and social determinants such as sharing needles and syringes, sharing razors, unprotected sexual contact, and tattooing or piercing (Schiff, 2014).

There are relatively new hepatitis C drugs that are highly effective, but they are costly. Costs can vary as widely from $43,418 to $94,500 for treatment with direct-acting retrovirals and combination drugs. These prices do not reflect the additional costs for security, special diets, and accommodations that offenders may need during treatment. These costs can be prohibitive in the correctional setting with severely constrained budgets. Beckman et al (2016) suggest that correctional departments collaborate with other state agencies to negotiate discounts with pharmaceutical companies and with qualified health care facilities to provide medications through the federal 340B Drug Discount Program.

Project ECHO (Extension for Community Healthcare Outcomes) at the University of New Mexico Health Sciences Center offers an alternative for the provision of complex care for incarcerated individuals (https://echo.unm.edu/). Project ECHO is a “movement to de-monopolize knowledge and amplify local capacity to provide best practice care for underserved people” (https://echo.unm.edu/wp-content/uploads/2016/12/ECHO_One-Pager_11.17.16.pdf). This model has four components: using technology to leverage scarce resources, sharing best practices to reduce disparities, applying case-based learning to master complexity, and evaluating and monitoring outcomes (Project ECHO Flyer, 2017). The program began in New Mexico after soaring HCV incidence rates in rural communities where many are without access to specialists, live in poverty, or are uninsured. The project assists practitioners in dealing with treatment side effects, which include drug toxicities, treatment-induced depression, and co-occurring conditions such as substance abuse and mental health issues.

ECHO enables specialists at the University of New Mexico Health Sciences Center to partner with primary care clinicians in underserved areas to deliver complex specialty care to patients with hepatitis C, diabetes, HIV/AIDS, and cardiovascular conditions. Through the use of telementoring, the participating clinician retains responsibility for managing the patient, but receives guidance on best practices for case management of patients from ECHO staff. ECHO trains and supports primary care providers in the communities they serve to develop knowledge and self-efficacy on a variety of diseases not usually considered within their scope of practice. As a result, these providers can deliver best-practice care for complex health conditions where this specialty care was previously unavailable (Arora et al, 2011).

The model begins with a three-day, in-person orientation in Albuquerque, or another superhub site, conducted by ECHO staff members. The orientation explains the hepatitis C treatment protocol as well as the communications technology and case-based presentation format for the weekly two-hour telemedicine clinics. Primary care physicians, nurses, and physician assistants are organized into disease-specific learning networks that meet weekly via videoconference to present cases. These virtual rounds are led by a team of University of New Mexico Health Sciences Center specialists, including a hepatologist, a pharmacist, a psychiatrist, and a nurse. These specialists do not assume the care of the patient; in fact, the team from the Health Sciences Center never sees the patient (Arora et al, 2011).

This model could be beneficial for clinical staff at DOC facilities to assist with the coordination of care for offenders with complex chronic diseases, such as HCV. Recruiting and retaining clinical staff for state prisons can be challenging in part because of the remote locations of many DOC facilities. Location is a particular barrier for specialty care. The Project ECHO model could help to address this barrier. The project demonstrates that care delivered by primary care providers in prisons can be safe and effective, with providers needing less support over time and using the main ECHO clinic primarily for complex cases (Arora et al, 2011).

HIV

Offenders bear a disproportionate burden of infectious diseases, particularly HIV. Groups known to be at an inordinately higher risk of the disease, including minorities, the addicted, the mentally

ill, and the impoverished are overrepresented within offender populations. Not only does the prevalence of the disease pose risks for the incarcerated population, the risk is transitioned to the community upon an offender's release.

Providing HIV care in prisons poses unique opportunities and challenges. With a controlled population, there is an opportunity for testing, diagnosis, treatment, and linkage to care and prevention. However, barriers to confidentiality, access to medication and prior records, and lack of comprehensive discharge planning are barriers to effective care.

When appropriate clinical HIV care is provided within correctional facilities, outcomes are comparable to community cohorts (Springer et al, 2004). Testing is crucial. Currently, DOC tests offenders for HIV if they request it (Fish et al, 2014). The Centers for Disease Control (CDC) guidelines recommend routine opt-out HIV testing for offenders. The CDC also recommends testing before release and voluntary testing to be offered periodically during incarceration (National Commission on Correctional Health Care Position Statement, 2017). A study examining the initiation of routine testing in a New York jail found that 28% of HIV-infected offenders were undiagnosed (Wakeman & Rich, 2010). Clearly offenders who are unaware of their disease status will be less likely to take precautions not to spread the disease.

According to Wakeman and Rich (2010), some involved with offender populations have argued for rapid testing for HIV where incarceration periods are short. This approach to testing may be acceptable to offenders according to a study in Rhode Island (Beckwith et all, 2007). Feasibility and effectiveness of rapid testing in correctional settings have been demonstrated in other studies (Kavasery et al, 2009). Testing at entry can not only identify new disease, it can also re-enforce the need for care for those who have already been diagnosed but are not seeking care.

There are a unique set of issues in the corrections system regarding HIV treatment. Maintaining confidentiality is particularly important because of the potential for stigmatization and violence related to HIV status. If physicians are prohibited from closing the door when speaking with patients, other offenders and correctional officers may hear discussions between offenders and their clinicians. In addition, treatment protocols including specialty clinics and medication

administration that involve calling HIV-positive patients to the infirmary for care at different times than the general population can destroy confidentiality. An alternative to medication administration at the infirmary would be the "keep-on-person" method. However, medication adherence is difficult to monitor using this approach (National Commission on Correctional Health Care Position Statement, 2017).

Clinical outcomes improve when the patients are informed and motivated. Correctional administrators can foster successful HIV care and services by ensuring that HIV-positive offenders receive effective education that considers the common characteristics or lifestyles that put offenders at risk for noncompliance with HIV treatment. Peer education, discharge planning, transitional case management, and harm reduction techniques can be successful strategies to prevent exposure. Administrators could support peer educators (discussed below) with training and maintenance as effective and cost-reducing methods (Fish et al, 2004).

Project Bridge, a multi-disciplinary, team-based approach in Rhode Island, provides care for addicted and mentally ill HIV-infected offenders upon their release. The program provides a link between the Rhode Island Department of Corrections and an affiliate of Brown University. Offenders begin working with Project Bridge 30 to 90 days prior to discharge and are followed for 18-24 months post release, meeting first daily and then weekly with case managers. An estimated 96% of Project Bridge clients were regularly receiving medical care at 12-month follow up. Project Bridge also provides legal, mental health, housing, and other case-management services (Wakeman & Rich, 2010). Virginia's CHARLI program (discussed below) is similar.

Prison-Based Peer Education

Offenders represent an often untapped resource in most rehabilitation frameworks. They can have a positive, powerful influence on fellow offenders. Peer education – education of offenders by offenders – covers a range of different approaches including peer training, peer facilitation, peer counseling, and peer modeling. Peer education programs for offenders with chronic and infectious disease can provide a low-cost intervention that is highly effective.

An analysis by the Center for Public Policy Priorities found that peer to peer health education programs can increase medication adherence, illness management, coping ability, and overall quality of life (Randall & Ligon, 2014). “Pairing offenders together that are managing similar health conditions creates a culture of mutual support and accountability. They can give advice about what to expect for procedures and share responsibility of living out their treatment plan between health care visits. Peer-to-peer support programs can empower offenders to learn more about their conditions and heal together” (Galligan et al 2016, page 3).

Peer-education programs may be particularly appropriate for such conditions as HIV/AIDS. Practices associated with HIV/AIDS are either illegal or stigmatized in the prison setting. Thus, peer-education may be the most accessible resource for offenders. Fellow offenders have “walked in their shoes” and have specific knowledge about risk behaviors occurring inside and outside of the prison. There are several key aspects of peer education programs that make them attractive. Peers can be effective “identity models” for offenders. Peer support is necessary because offenders view professional staff as authority figures and therefore potentially less available or effective as educators. Peer to peer programs are cost-effective, and the approach can build social capital and resilience within correctional communities (Fletcher & Batty, 2012).

There are several strengths to this approach. The peer status of offenders can allow them to engage with groups that are hard to reach via typical treatment and counseling options. Individuals are more likely to listen to and act on information if it is presented by someone they can identify with, whom they respect, and from whom they can model behavior. Peer mentors can act as successful role models, and will have increased confidence and skills that can translate to work after release. Lastly, professional time can be deployed elsewhere for the most serious cases. In one study, highly trained peers reduced staff turnover (Fletcher & Batty, 2012).

There are, however, limitations to this approach. Individuals who possess the requisite experience, attitude, and skills may be insufficient at the correctional facilities where they could be deployed. High rates of peer turnover resulting from transfers or release can undermine sustainability. The ambiguity of the role can present challenges for the clinical provider and the patient. Peer mentors can develop friendships with mentees that jeopardizes their support role.

Peer competence and confidentiality are extremely important, especially when tasked with counseling those with HIV. Boundaries must be established between correctional staff and peer educators; recognizing the value of peer health workers as a resource in prison does not negate the authority of professional staff (South et al, 2015).

Care Coordination Using Community Partnerships

Throughout the healthcare system, providers and administrators are coming to understand the power of collaboration in reducing expenditures and improving outcomes. Effective integration of care will not occur without cross-sector, cross-disciplinary collaborations. In the correctional environment, these collaborations must occur between prison-based and community-based settings, and can improve population health and clinical outcomes, in addition to reducing costs (Patel et al, 2014). Technology such as an interoperable electronic health record is essential to assuring that offenders receive continuity of care both within the correctional system when they are transferred between facilities, and when they receive care off-site. EHRs can also provide important information to the correctional system at entry and to an offender's community provider at release.

An important consideration for both continuity of care and expenditure control within DOC is the coordinating of patient transport for off-site care. Ensuring that offenders arrive at the right time and right place for inpatient or outpatient procedures prevents the provider from being unprepared and the value of the trip (and the resources it consumed) heavily devalued. Knowledge of and ability to follow post-discharge instructions are also key to appropriate care coordination and reduced readmissions. Finding ways to convert off-site visits to on-site care provision could have a significant impact on both healthcare costs as well as transportation and security costs.

Release planning for offenders with chronic diseases is critical. Navigating the healthcare delivery system is difficult in the best of circumstances. Offenders may have no community provider to turn to upon release and may not have health insurance or the ability to pay for services. In a study by Solomon et al (2014), fewer than 20% of prisons and jails conform to the CDC's recommendations regarding discharge planning services for offenders transitioning to the

community. The CDC recommends that offenders with a chronic illness leave the correctional setting with an appointment with a community health provider, assistance with enrolling in any entitlement program for which they might be eligible, a copy of his/her medical record, and an initial supply of medications.

Virginia was one of six states to receive a grant from the US Health Resources and Services Administration. The purpose of the grant is to "design, implement, and evaluate innovative strategies to integrate different components of the public health system such as surveillance, counseling and testing, and treatment to create new and effective systems of linkages and retention in care for hard-to-reach populations who have never been in care, have fallen out of care, or are at-risk for falling out of care. Populations of interest are limited to: those persons who at high risk for and/or infected with HIV but are unaware of their HIV status, are aware of their HIV infection but have never been referred to care, or are aware but have refused referral to care" (https://hab.hrsa.gov/about-ryan-white-hivaids-program/spns-systems-linkages-and-access). In Virginia, the 4-year grant was implemented as the CHARLI program (https://www.nqcsharelab.org/topic/148/191-virginia-dept-of-health) and is administered by the Virginia Department of Health. The grant fosters partnerships between DOC, local and regional jails, and community partners working with incarcerated populations. The program ensures that offenders with HIV are discharged with a 30-day supply of medications (Coordination Manual, 2015). The program also coordinates medical appointments, provides referrals and linkages to medical providers, and follows up with clients, case managers, and local health departments as needed.

Conclusions

Our analysis of the medical expenditures associated with the 523 DOC offenders with paid claims exceeding $25,000 for the 12 month period ending June 30, 2017 suggests several conclusions that may be useful as DOC seeks ways to reduce healthcare expenditures and improve outcomes. High cost offenders are mostly male, and skew older than the prison population as a whole. Nearly one-quarter are serving sentences of less than five years, making disease management programs with longer term goals somewhat challenging (although perhaps still better than such efforts for members of the general population with predominately one-year contracts with their insurers). Nearly 40%, however, are serving sentences exceeding 20 years,

making such approaches not only possible but essential since DOC will be responsible for these offenders' health and healthcare expenditures for many years.

Not surprisingly, many of the high cost offenders have documented disabilities and diseases, the most common of which include hepatitis C, respiratory conditions, cardiovascular conditions, insulin dependent diabetes, orthopedic conditions, and gastrointestinal conditions. Our paid claims analysis indicates that diseases for which care management protocols exist are heavily represented among those most prevalent. This result underscores the potential impact of care coordination and disease management strategies.

Our review of the literature regarding specific disease management and care coordination approaches used in other correctional settings identified several worth pursuing, including the ECHO program at the University of New Mexico, peer to peer educational programs in the prison facilities, and enhanced care coordination strategies both inside DOC facilities and with community care partners.

Electronic health records that can transfer relevant clinical information across prison facilities, with contract vendors, and with outside providers are an essential tool for DOC to be able to appropriately manage its healthcare expenditures and improve outcomes for its offenders regardless of what strategy DOC chooses to pursue.

Footnotes

[1] Paid claims are those medical claims that were paid during the study period. Inpatient expenditures incurred by offenders who are eligible for Medicaid claims are excluded from the threshold determination.

[2] The "other" category includes those in segregation (2), in protective custody (1), serving at work center (3), and unassigned or missing data (2).

[3]Offenders may have multiple documented disabilities and diseases, so the total numbers of offenders in Table 3 exceed the number of unique high cost offenders.

[4] The data for Table 6 were provided by Anthem for a slightly different time period, so the total paid claim amount is somewhat different from that in Table 5.

Table 1a

Gender & Security Level
High Cost Claimants

Security Level	Female	Male	Total	Percent
1 - Minimum	25	38	*63*	*12.20%*
2 - Moderate	10	214	*224*	*43.23%*
3 - Medium	6	134	*140*	*27.03%*
4 - Close	0	46	*46*	*8.87%*
5 - Maximum	0	36	*36*	*6.94%*
6 - Level 6	0	1	*1*	*0.19%*
Other	0	8	*8*	*1.54%*
Total	*41*	*477*	*518*	*100.00%*
Percent	*7.91%*	*92.08%*		

Table 1B

Age of High Cost Offenders

Age of High Cost Offender	<18	18-24	25-34	35-44	45-54	55-59	60-64	65+
#	0	5	59	72	132	86	82	82
%	0%	1.0%	11.4%	13.9%	25.5%	16.6%	15.8%	15.8%
Age of all Offenders								
%	.05%	8%	32%	27%	20%	6%	3.5%	2.5%

Table 2

Sentence Length of High Cost Offenders

Sentence Length	#	%
Less than 5 years	120	23.2%
Between 6 - 10 years	95	18.3%
Between 11 - 15 years	45	8.7%
Between 16 - 20 years	34	6.7%
More than 20 years	145	28.0%
Life Sentence	61	11.8%
Missing data	18	3.5%
Total	518	1

Table 3

Documented Disability and Disease

Documented Disability	# HC Offenders
Non-Insulin Dependent Diabetes	38
Dialysis	14
Severe Cardiac Case	103
Hepatitis C[1]	351
Respiratory Isolation	244
Documented Disease	**# HC Offenders**
Malignancy	83
Respiratory	139
OB/GYN	7
Hepatitis	109
Auto immune	6
Cardiovascular	288
Insulin Dependent Diabetes	84
Orthopedic	204
Renal Dialysis	11
Endocrine	91
Gastrointestinal	157
Urological	70
Infectious Disease	12
Neurological	69
Seizure	53
Hemotological	45

[1]This category reads: Hepatitis C Virus on treatment, Documented systemic allergies, IDDM (insulin dependent diabetic mellitus), Psychotropic medications/narcotics

Table 4

Anthem Paid Claims for Top Five Health Conditions

Category	# Offenders	Inpatient	Outpatient	Professional	Pharmacy	Total	Percent
Neoplasms	44	$2,329,860	$3,103,683	$1,066,358	$188,998	$6,688,898	32.45%
Circulatory System	31	$5,030,163	$244,151	$606,892	$5,937	$5,887,143	28.56%
Infectious/Parasitic	20	$3,060,035	$205,343	$367,867	$9,922	$3,643,167	17.68%
Injury/Poisoning	17	$2,245,240	$329,252	$393,537	$2,536	$2,970,564	14.41%
Digestive System	11	$1,144,595	$109,515	$162,881	$3,269	$1,420,260	6.89%
TOTAL	123	$13,809,893	$3,991,944	$2,597,535	$210,662	$20,610,032	
Percent of Total		67.00%	19.37%	12.60%	1.02%		100%

Table 5

Claims Paid by Type of Service

Type of Service	Total Amount Paid	Percent
Ambulance, Air	$ 585,435.28	1.31%
Ambulance, Ground	$ 1,347,237.04	3.02%
Hospital, ER	$ 2,486,947.04	5.57%
Hospital, Inpatient	$ 29,728,235.66	66.62%
Hospital, Outpatient	$ 8,941,187.28	20.04%
Ambulatory Surgery Facility	$ 6,151.56	.01%
Provider Office	$ 688,113.40	1.54%
DOC Drug Payments	$ 544,828.58	1.22%
Other	$ 288,826.57	1.22%
Total	$ 44,616,962.41	100%

Table 6
Age, Condition, Claims

Primary Condition Category	Ages 20-29	Ages 30-39	Ages 40-49	Ages 50-59	Ages 60-74	Ages 75+	Total
Aftercare	$ 0	$ 139,845.81	$ 80,070.64	$ 108,758.28	$ 78,225.17	$ -	$ 506,899.90
Circulatory System	$ 88,004.89	$ 973,656.47	$1,029,888.23	$ 3,867,209.73	$ 3,073,495.06	$ 587,753.02	$ 9,620,007.40
Congenital Abnormalities	$ 0	$ 0	$ 52,077.06	$ 0	$ 0	$ 0	$ 52,077.06
Digestive System	$ 185,841.99	$ 628,067.92	$ 815,411.87	$ 781,608.88	$ 1,164,107.83	$ 89,296.06	$ 3,664,334.55
Diseases of the Blood	$ 31,992.98	$ 102,772.08	$ 31,191.78	$ 0	$ 126,036.66	$ 0	$ 291,993.50
Diseases of the Eye/skin	$ 31,545.63	$ 0	$ 0	$ 110,776.77	$ 81,672.01	$ 0	$ 223,994.41
Endocrine/Metabolic	$ 35,237.74	$ 0	$ 295,697.59	$ 618,715.19	$ 336,867.27	$ 0	$ 1,286,517.79
Genitourinary System	$ 42,882.35	$ 68,832.67	$ 28,627.72	$ 89,943.22	$ 190,485.67	$ 0	$ 420,771.63
Health Status	$ 26,412.93	$ 0	$ 118,394.42	$ 320,560.05	$ 447,960.36	$ 95,104.37	$ 1,008,432.13
Ill-Defined Conditions	$ 66,148.50	$ 26,992.44	$ 219,994.39	$ 172,195.81	$ 203,455.15	$ 0	$ 688,786.29
Infectious/Parasitic	$ 342,710.60	$ 353,704.86	$ 247,614.31	$ 2,264,999.04	$ 1,384,061.34	$ 309,040.83	$ 4,902,130.98
Injury & Poisoning	$1,109,319.07	$1,616,313.71	$ 816,826.02	$ 1,297,288.61	$ 518,315.27	$ 0	$ 5,358,062.68
Musculoskeletal System	$ 116,162.87	$ 998,733.61	$ 619,391.74	$ 699,673.41	$ 1,439,695.38	$ 69,074.17	$ 3,942,731.18
Neoplasms - Benign	$ 0	$ 0	$ 27,753.63	$ 92,997.74	$ 157,689.34	$ 0	$ 278,440.71
Neoplasms - Malignant	$ 105,004.17	$ 482,216.57	$1,853,233.90	$,975,153.27	$ 3,007,403.71	$ 310,767.57	$ 9,733,779.19
Neoplasms - Uncertain	$ 0	$ 0	$ 0	$ 69,893.26	$ 0	$ 0	$ 69,893.26
Nervous System	$ 119,828.31	$ 612,805.21	$ 82,264.29	$ 269,272.91	$ 26,154.28	$ 0	$ 1,110,325.00
Respiratory System	$ 114,369.88	$ 173,817.37	$ 0	$ 0	$ 272,140.82	$ 0	$ 560,328.07
Grand Total	$2,415,461.91	$6,177,758.72	$6,418,437.59	$ 14,739,046.17	$ 12,507,765.32	$1,461,036.02	$ 43,719,505.73
Percent	6%	14%	15%	34%	29%	3%	

Table 7

Distribution of Paid Claims by Condition

Primary Condition Category	Percent of Paid Claims
Aftercare	1.16%
Circulatory System	22.00%
Congenital Abnormalities	0.12%
Digestive System	8.38%
Diseases of the Blood	0.67%
Diseases of the Eye/skin	0.51%
Endocrine/Metabolic	2.94%
Genitourinary System	0.96%
Health Status	2.31%
Ill-Defined Conditions	1.58%
Infectious/Parasitic	11.21%
Injury & Poisoning	12.26%
Musculoskeletal System	9.02%
Neoplasms - Benign	0.64%
Neoplasms - Malignant	22.26%
Neoplasms - Uncertain	0.16%
Nervous System	2.54%
Respiratory System	1.28%

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