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Operationalizing a Data to Care Strategy in Michigan Through Cross-Agency Collaborations

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Abstract

Background: For persons with HIV infection (PWH), viral load suppression is essential to maintaining health and reducing the likelihood of HIV transmission. Data to Care (D2C) is an important strategy for improving HIV outcomes but may be resource-intensive to execute.

Setting: In 2016, Michigan joined the HIV Health Improvement Affinity Group to strengthen D2C partnerships between its Medicaid and HIV program. Goals included establishing routine data sharing, matching data sources to understand health outcomes, and collaborating to turn data into action.

Methods: Michigan established data use agreements to assess gaps in care for PWH enrolled in Medicaid. The HIV Surveillance Program used Link Plus to match surveillance records on PWH to Medicaid's active beneficiary file to identify PWH who were beneficiaries as of December 31, 2015.

Results: Matching the 2,300,877 Michigan Medicaid beneficiaries with the 15,845 PWH in HIV surveillance yielded 4822 matched PWH enrolled in Medicaid in 2015. Of Medicaid beneficiaries with HIV, 597 had no evidence of receiving HIV care, representing 20% of all Michigan residents with HIV and not in care in 2015.

Conclusion: D2C is an effective strategy for improving HIV care continuum outcomes but can be relatively inefficient if implementation models rely solely on public health infrastructure. Through the HIV Health Improvement Affinity Group, Michigan's Medicaid and HIV programs leveraged their combined data assets to evaluate and improve care quality and outcomes for PWH

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on Medicaid. Partnerships between Medicaid and public health offer attractive mechanisms for potentially increasing efficiency and effectiveness of D2C investments.

Keywords

Data to Care; HIV; HHIAG; Medicaid; affinity

INTRODUCTION

For persons with HIV infection (PWH), viral load suppression (VLS), as measured by an undetectable viral load (VL), is important for both individual and public health.[1] Individuals who attain and sustain VLS earlier in the course of their HIV infection have better health outcomes,[2] including lower risk for both AIDS-defining and non–AIDS-defining complications. PWH who take antiretroviral therapy daily as prescribed and achieve and maintain VLS also have effectively no risk of sexually transmitting the virus to an HIV-negative partner.[3]

As of 2015, just less than 16,000 people living in Michigan had been diagnosed with HIV. The demographic characteristics of PWH in Michigan broadly resemble national epidemiology[4,5]; like other states, Michigan also sees significant disparities in VLS and in-care status by race, sex, age, geography, and risk.[4] The Michigan Department of Health and Human Services (MDHHS) has initiated Data to Care (D2C) as one strategy to address these gaps in care and disparities. D2C is a public health strategy used by state and local health departments to improve outcomes along the HIV care continuum.[6–9] Health departments implementing D2C strategies use HIV surveillance and available data assets to identify PWH who are not in care or have unsuppressed VLs and then (re)engage and link those persons to high-quality medical care, including antiretroviral therapy treatment, and social services that support viral suppression.

Under Michigan’s D2C model, which the state piloted in Detroit in 2017 before expanding to other high-HIV morbidity counties, MDHHS’s HIV Surveillance Program first develops a “not in care,” or NIC list for all PWH in the state. PWH are included on the NIC list if available data indicate they have not had an HIV care visit in the past 15 months or are newly diagnosed and have not received an HIV care visit within 12 months of diagnosis. MDHHS then partners with local and regional public health departments, Ryan White Early Intervention Services–funded agencies, and other health care providers to locate and engage PWH who are on the state’s NIC list.

Although it is an important public health intervention, D2C presents significant limitations such as those associated with data reporting delays and data cleaning. The experience to date of Michigan’s D2C program, specifically in Detroit, illustrates some of these challenges. Of the 700 PWH on Detroit Health Department’s NIC list, outreach was initiated for 610; however, only 80 (13%) have been linked to HIV care. A substantial percentage of persons were classified as “Not located” (35%), or “Not appropriate for D2C services” (eg, deceased, already in care, or moved out of jurisdiction) (27%). Furthermore, 14% of names provided were likely aliases and were untraceable. While linking 80 people to care represents an important success for MDHHS, the time and human effort required for this

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endeavor were significant. At the time of this analysis, the Detroit Health Department had sent 2023 letters, attempted 3816 phone calls, and left 960 voicemails—efforts that amount to an investment of approximately 114 hours or 14 days of staff time. And yet, nearly 50% of Detroit's investigations were ultimately not productive. Consequently, Michigan has been looking at ways to supplement and complement its D2C investments through better use of existing health system infrastructure and partners.

State Medicaid programs and managed care entities are particularly attractive partners for data-driven improvement activities. Nationally, approximately 42% of PWH were covered through Medicaid in 2014,[10] and anecdotal evidence suggested a similar distribution in Michigan. A majority of Medicaid beneficiaries with HIV—both within Michigan and nationally—are enrolled in managed care plans. This overlap in populations of interest creates an opportunity for meaningful and mutually beneficial collaboration between state Medicaid and HIV programs to improve health outcomes and address disparities for PWH. At a minimum, Medicaid enrollee and claims data systems include information valuable to HIV surveillance programs, such as recent address and phone information. Because Michigan's HIV and Medicaid programs share a strong commitment to quality improvement, especially related to health outcomes and cost, they are also well positioned to initiate partnerships aimed at measuring and improving the quality of HIV-related health care services among health plans.

In 2016, the Centers for Medicaid and Medicare Services, the Centers for Disease Control and Prevention, and the Health Resources and Services Administration jointly announced formation of the HIV Health Improvement Affinity Group (HHIAG). Under this initiative, state Medicaid and HIV programs received enhanced technical assistance designed to support collaborative efforts aimed at increasing viral suppression and improving health outcomes for PWH enrolled in Medicaid.[11] Participant programs in the HHIAG received no funding to accomplish these initiatives.

The HHIAG presented an opportunity for Michigan's Medicaid and HIV programs to collaboratively expand D2C strategies and activities to PWH enrolled in Medicaid or eligible for Medicaid coverage. To realize this opportunity, Michigan joined the HHIAG and assembled a team of public health and Medicaid staff with expertise in HIV epidemiology, clinical care, quality improvement, managed care operations, and data system architecture. The Michigan team then established 3 overarching objectives for the HHIAG's 12-month project period: to develop relationships including agreements for routine data sharing; assemble and make sense of disparate data sources (eg, Medicaid claims and HIV surveillance data) to understand care quality and health outcomes among Medicaid beneficiaries with HIV; and identify and begin to execute collaborative strategies for turning those data into action.

METHODS

From Relationships to Data

The first step to achieving Michigan's HHIAG objectives was to build stronger partnerships within MDHHS, including establishing routine data sharing and data use agreements that

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would allow for the assessment of VLS and gaps in care for PWH enrolled in Medicaid. Although HIV prevention, HIV care, and Medicaid programs are all part of MDHHS, state policy requires that programs within MDHHS have a data sharing agreement in place before sharing individual-level data that include Personally Identifiable Information or Protected Health Information. At a minimum, the data sharing agreement must specify the goals of the agreement, potential benefits to both parties, details about how data will be transmitted, and a data dictionary that describes the content and format of the data being shared.

Routine data sharing and matching can be beneficial to both Medicaid and HIV surveillance programs and can support efforts to address incomplete demographic information, assess utilization of care resources, and monitor HIV treatment adherence. Matched Medicaid and HIV surveillance data are especially valuable for D2C activities when matching is performed for all Medicaid beneficiaries—not just those who have a documented HIV diagnosis within their claims history. Accordingly, both programs agreed to more expansive matching; they further agreed that matching would be conducted by the HIV Surveillance Program because it had greater data analytic capacity. Following security and privacy reviews by Michigan’s Compliance Office, which included assessments of threats to the confidentiality associated with exchange of individual-level data and the overall permissibility of the proposed data uses, the data sharing agreement was approved and signed in February 2017. The entire process took approximately 6 months, and the data sharing agreement must be updated annually by both parties.

After the data sharing agreement was established, Michigan’s second HHIAG objective was to assemble and make sense of disparate data sources to understand care quality and health outcomes among Medicaid beneficiaries with HIV. Michigan was able to fully leverage the combined data assets of both its HIV and Medicaid programs, including the state’s “Enhanced HIV/AIDS Reporting System” (eHARS) and Medicaid Data Warehouse. At the time, 2015 marked the most recent year for which full-year data were available from both sources. Data on all beneficiaries with active Medicaid coverage in 2015 were shared with HIV surveillance staff through a secure file-transfer–protocol site established by Optum, the firm that manages Michigan’s Medicaid Data Warehouse.

From Data to Findings

To identify PWH who were Michigan Medicaid beneficiaries as of December 31, 2015, HIV surveillance staff used a probabilistic algorithm for assigning HIV infection status and Link Plus (CDC, Atlanta, GA) to match the entire active Medicaid beneficiary file with eHARS data. Last name Soundex, first name Soundex, and birth year were used as blocking variables. Last name, first name, middle name, birth date, and social security number were used as matching variables. Owing to a high level of data quality in both systems, less than 1% of cases were matched by hand. Demographic information extracted for further analysis from Medicaid data and eHARS data included sex, age, race/ethnicity, Medicaid Health Plan (MHP), benefit plan (ie, type of Medicaid coverage), transmission risk, and in-care status. Sex was categorized as men or women; race/ethnicity was categorized as black (non-Hispanic), white (non-Hispanic), Hispanic, or others. Risk was categorized per eHARS risk categories as men who have sex with men, persons who inject drugs, heterosexuals, and

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others. Benefit type was defined as fee-for-service or managed care; and MHPs were then further categorized as small (less than 100,000 patients), medium (between 100,000 and 200,000 patients), and large (exceeded 200,000 patients) based on total plan enrollment. Medicaid enrollees with HIV were considered NIC if they had been diagnosed before January 1, 2015, and were alive as of December 31, 2015, but had not received at least one CD4, VL, or genotype lab during that year. The first HIV-Medicaid match was performed in 2017, and Michigan intends to replicate similarly comprehensive matches and analyses annually.

RESULTS

At the end of 2015, 2,300,877 Michigan residents had received benefits through the Medicaid program and 15,845 people in the state were living with HIV; 4,822, or approximately 30% of those PWH were enrolled in Medicaid. Table 1 describes the demographic and health plan distribution for all 3 groups. The general Medicaid population had greater proportionate representation from women and children (aged 19 years or younger), and lower proportionate representation from blacks, than both the general population of PWH and PWH who were enrolled in Medicaid. A higher percentage of the general Medicaid population was also still enrolled in fee-for-service than were Medicaid beneficiaries with HIV. PWH enrolled in Medicaid were generally demographically similar to the overall population of PWH in Michigan, although there was a slightly higher percentage of Medicaid beneficiaries with HIV identified as black, non-Hispanic, than the overall population of PWH.

Table 2 describes the percentage of all PWH included on Michigan's NIC list in 2015 who were enrolled in Medicaid by demographic characteristics. Overall, Medicaid beneficiaries with HIV represented 20% (597/2976) of all PWH who were identified as not in care. Among PWH on Michigan's NIC list, the highest percentages enrolled in Medicaid were among persons who were women (26%); black, non-Hispanic (25%); exposed through heterosexual contact (26%); and aged 20–29 years (33%).

DISCUSSION

From Findings to Action

Comprehensively matching all records within its eHARS and Medicaid Data Warehouses took time and effort on the part of MDHSS staff, but Michigan fully expects to realize substantial operational and public health dividends from its investment. The early descriptive analyses detailed in this report have revealed important collaborative opportunities to enhance D2C activities and meet Michigan's final HHIAG objective of turning data into action. In particular, matched state data indicate that approximately 1 in 5 PWH who were not in care in 2015 were enrolled in Michigan's Medicaid program. Locating PWH on the NIC list is resource intensive; by working more closely with the state's MHPs and providers, the HIV program may be able to reach many of those individuals without having to send public health staff into the field. To that end, MDHSS has begun to provide MHPs with information on HIV-infected beneficiaries who were NIC and customized HIV care continuum reports that highlight each plan's performance relative to statewide averages for

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PWH in Michigan. MHPs can use these data to better direct the care coordination services available to their members. Meanwhile, HIV programs can direct more of their attention and scarce public health resources to reaching the remaining 80% of PWH who are not in care.

The descriptive data presented here offer an important starting point for stronger collaboration between Medicaid and HIV program staff, but they have limitations. One is the inability to explore and control for interactions among demographic, geographic, socioeconomic, and health system factors that may be contributing to variance within and between populations. In addition, the matched eHARS and Medicaid data set is extremely rich, but it could still benefit from linkage to additional data repositories such as data on HIV care and support services received through the Ryan White program.

MDHSS staff continue to address data limitations and aim to develop a more holistic picture of HIV care and health outcomes among Medicaid beneficiaries. Through this process, they are identifying new opportunities to improve care access and quality across the state for specific Medicaid populations. Early analyses suggest that the lack of infectious disease providers in rural areas of Michigan creates significant barriers for VLS, and future projects may focus on NIC rates in areas with Ryan White “deserts” to determine how best to address these gaps.

Moving forward, Michigan plans to extend its collaborative D2C approach to additional opportunities within and beyond the HIV care continuum (eg, to HCV treatment). Doing so will require addressing ongoing barriers posed by siloed data systems and limited staffing, as well as competing technological and programmatic priorities, such as chronic health conditions or the opioid epidemic. For example, MHP performance improvement projects will only be successful if Medicaid, public health, and MHP staff all prioritize development, collection, and use of HIV care quality and outcomes measures.

CONCLUSION

Collaboration across the health system continues to be necessary to address unmet needs in underserved populations, develop innovative care coordination models to reach those at risk, and to share data to reduce costs and improve personal and population health in Michigan. Through an innovative analytical partnership between 2 programs within the MDHHS, we were able to establish data sharing agreements, match and analyze disparate data sources, and are beginning to execute collaborative strategies to address gaps in care and health disparities among PWH enrolled in Medicaid. Stronger partnerships with health system partners offer an attractive mechanism for scaling up the D2C model and addressing some of the challenges Michigan experienced during its early application. These partnerships take time and effort to cultivate, but the results offer considerable benefit to both parties—and the individual and communities they serve.

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TABLE 1.

Characteristics for All PWH, Total Medicaid Population, and PWH Enrolled in Medicaid, Michigan, 2015

Characteristic	All PWH, N = 15,845, n (%)	Total Medicaid Population, N = 2,300,877, n (%)	PWH Enrolled in Medicaid, N = 4,822, n (%)
Sex			
Male	12,441 (79)	1,078,466 (47)	3460 (72)
Female	3404 (21)	1,222,411 (53)	1362 (28)
Race			
Black, non-Hispanic	8977 (57)	623,230 (27)	3521 (73)
White, non-Hispanic	5391 (34)	1,254,830 (55)	972 (20)
Hispanic/Latino	859 (5)	140,754 (6)	170 (4)
Others	618 (4)	282,063 (12)	159 (3)
Age group			
0–12	74 (<1)	608,553 (27)	19 (<1)
13–19	78 (<1)	334,116 (15)	24 (<1)
20–29	1795 (11)	414,588 (18)	888 (18)
30–39	2759(17)	348,288 (15)	1166 (24)
40–49	3393 (21)	243,646 (11)	1043 (22)
50–59	4750 (30)	218,301 (10)	1225 (26)
60+	2993 (19)	133,385 (6)	454 (9)
Unknown	3 (<l)	N/A	3 (<1)
MHP group			
Small	*	334,843 (42)	1516 (31)
Medium	*	270,395 (12)	317 (7)
Large	*	954,140 (15)	2143 (44)
Fee-for-service/unknown[†]	*	741,496 (32)	846 (18)
Transmission risk group			
MSM	8877 (56)	*	2353 (49)
PWID	1135 (7)	*	417 (9)
HET	2950 (19)	*	1151 (24)
Others	2883 (18)	*	901 (19)

“*” indicates data not available.

[†] A proportion of those with an unknown health plan for the Total Medicaid Population were fee-for-service, but those data were not available for that data set. Fifteen percent of PWH enrolled in Medicaid were in an unknown MHP group.

HET, heterosexual contact with a person known to have or be at risk for HIV; MHP, managed health plan; MSM, men who have sex with men; PWID, persons who inject drugs; N/A, not applicable.

TABLE 2.

Demographic Characteristics of All PWH Not in Care and Those Enrolled in Medicaid, Michigan, 2015

	NIC PWH	
Characteristic	**n**	**Enrolled in Medicaid, n (%)**
Sex		
Male	2324	430 (19)
Female	652	167 (26)
Race		
Black, non-Hispanic	1868	462 (25)
White, non-Hispanic	768	102 (13)
Hispanic/Latino	222	18 (8)
Others	118	15 (13)
Risk		
MSM	1417	248 (18)
PWID	334	58 (17)
HEX	509	130 (26)
Others	716	161 (22)
Age group		
0–12	10	0 (0)
13–19	12	0 (0)
20–29	278	92 (33)
30–39	574	179 (31)
40–49	718	135 (19)
50–59	848	133 (16)
60+	533	58 (11)
Unknown	3	N/A
Total	2976	597 (20)

HET, heterosexual contact with a person known to have or be at risk for HIV; MSM, men who have sex with men; NIC, PWH not in care; PWID, persons who inject drugs.

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