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BRIEF REPORT

Antiretroviral Prescription Pick-up and Physician Follow-up After Hospital Discharge Among Medically Complex People With HIV

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In this study, only 22 of 206 (10.7%) socially marginalized individuals living with HIV and multiple comorbid conditions filled a prescription for antiretroviral therapy within 7 days of discharge from an HIV specialty hospital, despite comprehensive discharge planning. Additional interventions facilitating postdischarge continuity of care are required for this population.

Keywords. continuity of patient care; HIV; patient care planning; patient discharge.

Attainment of the UNAIDS 90:90:90 targets is predicated on successful linkage to and retention in care [1]. The transition from hospital to community can potentially disrupt retention in care, particularly in complex patients [2, 3]. It has been noted that considerable support is required to manage connection with timely outpatient care and ongoing treatment with medication [3]. However, for medically complex individuals with HIV, mental health illness, and multiple comorbid conditions, postdischarge linkage to care is even more challenging [4–6]. Further, people with HIV are disproportionately disadvantaged by socioeconomic and structural factors that are associated with poor outcomes during the posthospital transition period [5, 6]. Interventions facilitating post-hospital discharge continuity of care are therefore required to optimize the health of the most complex and marginalized individuals with HIV.

Casey House is a 14-bed community-based hospital providing inpatient and outpatient services to medically complex and socially vulnerable persons with HIV, including those with histories of mental health illness, unstable housing, and substance use disorder [7]. Casey House clients live with multiple comorbid conditions, including psychiatric diagnoses (90%), cognitive impairment (50%), and unstable housing (20%) [7]. There are approximately 100 admissions per year for reasons ranging from subacute care for opportunistic infections to respite care, symptom control, and palliative care. Care is delivered by a multidisciplinary team, including physicians, nurses, and social workers, and emphasizes attention to social determinants of health. Discharge planning includes the provision of prescriptions for antiretroviral therapy and a follow-up appointment with a family physician or HIV specialist within 7 days of discharge. However, whether these measures effectively support continuity of care for medically and socially complex individuals with HIV is unknown. Accordingly, we examined the effectiveness of coordinated discharge planning from an HIV specialty hospital in terms of antiretroviral use and physician follow-up in the critical postdischarge period.

METHODS

We used Ontario's administrative health databases to conduct a retrospective study of individuals admitted to Casey House between April 1, 2009, and March 31, 2015. The use of data in this project was authorized under section 45 of Ontario's Personal Health Information Protection Act, which does not require review by a Research Ethics Board.

Study Population and Data Sources

We identified individuals admitted to Casey House using the Canadian Institute for Health Information Discharge Abstract Database, which contains detailed clinical records on all hospital admissions in Ontario. From within this cohort, we used the Ontario Drug Benefit (ODB) database to identify prescription medications dispensed to eligible recipients (ie, those aged 65 years and over and/or receiving social assistance). Consequently, individuals included in our primary analysis had universal access to physician services, hospital care, and prescription drug coverage. To compare persons admitted to Casey House with the general population of persons with HIV, we identified the latter using the Ontario HIV Database, an administrative data registry of Ontario residents with diagnosed HIV infection that was generated using a validated case-finding algorithm [8]. We identified claims for physician services using the Ontario Health Insurance Plan (OHIP) database and obtained basic demographic and date of death data from the Registered Persons Database, a registry of all Ontario residents eligible for health insurance. All data sets were linked

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using unique encoded identifiers and were analyzed at the ICES (https://www.ices.on.ca).

Outcomes

The primary outcome was the proportion of individuals discharged from Casey House and eligible for ODB coverage who filled a prescription for antiretroviral therapy (ART) within 7 days of discharge. We chose a 7-day follow-up period because individuals are provided with a 2-day supply of medication and prescriptions for ART as a component of discharge planning. Consequently, individuals not filling prescriptions within a 7-day period risk treatment interruption. To determine whether individuals prioritized medical engagement for other comorbid conditions during this period, we also examined the proportion of individuals filling prescriptions for antidepressants or antipsychotics within 7 days of discharge, given the high prevalence of comorbid mental health illness in our population. Further, we explored whether individuals filled a prescription for any medication in the period after discharge as an indicator of continuity of care for other conditions. In a secondary analysis, we used the OHIP database to ascertain the proportion of individuals who successfully followed up with a family physician or HIV specialist in the 30 days after discharge. For the secondary analysis, we excluded individuals who died or were admitted to a hospital within 30 days of discharge from Casey House. We also examined psychiatry follow-up within 30 days of discharge given the burden of mental health illness in Casey House clients.

Statistical Analysis

We summarized patient characteristics using descriptive statistics and examined the association between filling a prescription for ART within 7 days and sociodemographic variables using negative binomial regression. Specific variables we examined were patient age, sex, and comorbidity burden, summarized using the Johns Hopkins Adjusted Clinical Groups Case-Mix System [9]. Specifically, we used Aggregated Diagnosis Groups (ADGs), which are clusters of diagnostic codes that are similar in terms of severity and expected persistence. The number of ADGs ranges from 0 to a maximum of 32, with a higher number reflecting a higher level of comorbidity. All analyses were conducted using SAS, version 9.4 (SAS Institute, Cary, NC, USA)

RESULTS

We identified 268 patients admitted to Casey House during our study period, of whom 206 (77%) were eligible for provincial drug coverage and survived their hospital admission. Compared with the general population of people with HIV, Casey House clients had a higher comorbidity burden and were more likely to be eligible for provincial drug coverage (Table 1). Overall, 75 (28.0%) Casey House clients died during their admission or in the year after discharge.

In our main analysis, 22 (10.7%) patients filled a prescription for ART within 7 days of discharge. Respective figures for filling a prescription for an antidepressant or antipsychotic were 53 (25.7%) and 31 (15.0%). Overall, 143 (69.4%) patients filled any prescription in the 7 days after discharge, with most prescriptions reflecting continuity of anti-infective therapy, symptom management, pain control, and treatment of comorbid mental health illness. Following multivariable regression, no associations were observed between filling a prescription for ART and patient age, sex, or comorbidity burden. In our secondary analysis, we excluded 43 patients who died or were admitted to the hospital in the 30 days after discharge. Of the remaining 164 patients, 124 (75.6%) followed up with a family physician or HIV specialist within 30 days of discharge, whereas 20 (12.2%) saw a psychiatrist during this period. Following multivariable

Table 1. Baseline Characteristics of Casey House Clients and Ontario Residents With HIV, April 1 2009, to March 31, 2015

Covariate	Casey House (n = 268)	Ontario Residents With HIV (n = 19 765)	Standardized Difference
Mean age ± SD, y	48.7 ± 10.1	46.0 ± 11.6	0.25
Sex, No. (%)			
Female	46 (17.2)	3971 (20.1)	0.08
Male	222 (82.8)	15 794 (79.9)	0.08
Eligibility for provincial drug coverage, No. (%)			
No	32 (11.9)	10 064 (50.9)	0.93
Yes	219 (81.7)	8510 (43.1)	0.87
>65 years of age	17 (6.3)	1191 (6.0)	0.01
Aggregated diagnostic groups			
Mean ± SD	12.5 ± 4.1	5.6 ± 4.3	1.65
0, No. (%)	1–5	3096 (15.7)	0.59
1 to 4, No. (%)	3–7	5677 (28.7)	0.77
5 to 9, No. (%)	47 (17.5)	7314 (37.0)	0.45
10 to 14, No. (%)	129 (48.1)	3012 (15.2)	0.76
≥15, No. (%)	84 (31.3)	666 (3.4)	0.79

regression, no associations were observed between 30-day follow-up with a family physician or HIV specialist and age, sex, or comorbidity burden (Supplementary Table 1).

DISCUSSION

In our study, we found that despite comprehensive discharge planning and provincial drug coverage, only 1 in 10 medically and socially complex individuals living with HIV successfully filled a prescription for ART within 7 days of discharge from an HIV specialty hospital. Although the majority of individuals who remained in the community filled a prescription for non-ART medication and eventually reconnected with an HIV provider within the first month of discharge, linkage to care was suboptimal in the context of 90:90:90 targets. Further, our findings suggest that the majority of individuals could be experiencing treatment interruptions. This is important because previous studies have shown that even small treatment interruptions are associated with poor outcomes [10].

Our study builds on previous literature in several ways. First, although several studies have been conducted examining linkage to care after diagnosis of HIV in hospital, few have explored the transition to care following a hospital admission for people diagnosed with HIV [4–6]. This is important because studies in other populations have demonstrated that timely linkage to care following discharge is an important determinant of health outcomes, including death [2, 3]. Second, our study was conducted among patients discharged from an HIV specialty hospital embedded within a larger network of HIV care providers and social services. Patients are provided with multidisciplinary HIV specialty care during their entire admission that emphasizes addressing social determinants of linkage to care, such as housing instability and substance use. We expect that this would enhance clients' transition after care. However, our study focused specifically on a highly marginalized group of individuals living with HIV for whom postdischarge linkage to care is likely to be especially challenging. Specifically, Casey House clients had a higher comorbidity burden and were more likely to receive social assistance than the general population of persons with HIV in Ontario, illustrating the medical and social complexity of these individuals. The finding that 28% of these individuals died during their admission or within the first year after discharge from Casey House further demonstrates the vulnerability of these individuals to poor outcomes. Our study suggests that for these individuals, additional interventions may be required to optimize postdischarge outcomes, such as peer navigators, ensuring that basic needs such as food security are addressed at the time of discharge and supervised medication support in the community.

Several limitations of our study merit emphasis. First, our findings are derived from a single center, thereby potentially limiting the generalizability of our study. However, we were specifically interested in studying postdischarge outcomes among medically complex and socially unstable persons with HIV, a group that is relatively understudied in this regard. Second, we used administrative health data and did not have access to laboratory data, including viral load and CD4+ cell count. Similarly, we did not have information on specific determinants of health, such as food and housing instability. However, the finding that >80% of Casey House clients qualified for provincial drug coverage demonstrates that these individuals represent an especially socioeconomically disadvantaged segment of persons with HIV. Finally, we could not ascertain whether the low rate of ART prescription pick-up reflects the possibility that some individuals may have had existing supplies of medication at home that predated their admission. However, this is unlikely to entirely account for the close to 90% of individuals who did not fill an antiretroviral prescription during follow-up. We speculate that individuals prioritized filling prescriptions for comorbid mental health illness and symptom management during this period.

In conclusion, we found that approximately 90% of medically complex persons with HIV did not fill prescriptions for antiretroviral therapy after discharge from an HIV specialty hospital providing comprehensive discharge planning. Further, linkage to outpatient care was suboptimal. Additional research is required to elucidate barriers to accessing ART following discharge and support continuity of care in the community in order to attain the 90:90:90 targets for this especially vulnerable population of persons with HIV.

Supplementary Data

Supplementary materials are available at *Open Forum Infectious Diseases* online. Consisting of data provided by the authors to benefit the reader, the posted materials are not copyedited and are the sole responsibility of the authors, so questions or comments should be addressed to the corresponding author.

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