DEPARTMENT OF VETERANS AFFAIRS

Effects of Rural Residence on VA Care of Persons Living with HIV

Rural Residence and Adoption of a Novel HIV Therapy in a National, Equal-access Healthcare System

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Rural Residence is Associated with Delayed Care Entry and Increased Mortality Among Veterans with Human Immunodeficiency Virus Infection

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Introduction

Much research has focused on the socio-economic differences affecting access to rural health in the United States.[1] However, differences in rural-urban populations may also play a role in differing treatments and outcomes for persons with chronic illnesses, including infection with human immunodeficiency virus (HIV). Using an HIV patient population defined within the VA system, these two studies focused on 1) whether the adoption of a new HIV drug therapy, raltegravir, is delayed among rural veteran HIV patients, and 2) whether HIV patients enter VA treatment later than do urban patients and if this factor leads to increased mortality among rural patients.

Barriers to treatment for rural HIV patients

Research has shown that rural HIV patients face treatment barriers that include significant travel burdens to care sites, inadequate access to transportation, and risk of social isolation among peers.[2–5] Social stigma regarding HIV may also discourage rural persons

Key Findings

These two studies revealed disparities between treatment of urban and rural Veterans with HIV.

- The adoption of a new HIV drug therapy, raltegravir, was found to be delayed among rural Veterans relative to urban Veterans.
- HIV-positive Veterans from rural areas are more likely to delay entry into HIV treatment than are their urban counterparts, rural Veterans entering care at relatively advanced states of the disease which could result in increased mortality.

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living with HIV from seeking healthcare.[4] Limited availability of providers and clinics with experience treating HIV patients, as well as minimal local access to substance abuse treatment and mental health care, may also be a barrier to HIV treatment.

Usefulness of the Veterans Affairs (VA) health system for study of urban-rural disparity in HIV treatment

Veterans Affairs is the largest provider of HIV care in the United States, with over 20,000 Veterans in care for HIV. The VA system has a national, integrated electronic health record database and maintains rich data on patient clinical status, demographics, and medication use, and is an equal access healthcare system requiring minimal co-pays for visits or medications. With exception of the latter factor, that provides an advantage to VA users, rural Veterans face similar obstacles to healthcare as do their non-veteran counterparts.

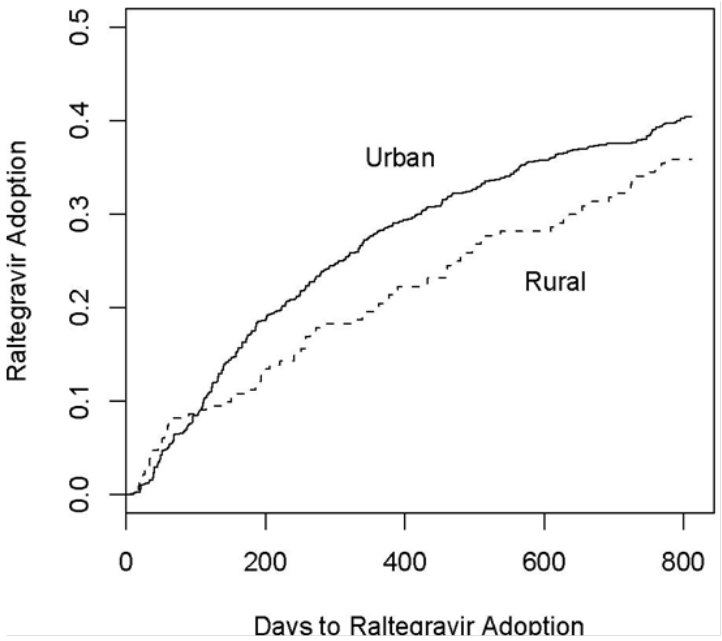
Methods

In the study regarding the adoption of raltegravir, data was obtained from the VA's Clinical Case Registry (CCR) from 1996 through 2009. The patient group included those who were classified as rural and eligible for raltegravir therapy (persons detected with HIV viremia due to drug-resistant HIV) and had at least one raltegravir prescription fill. Of the 1,222 Veterans eligible for raltegravir therapy at the time of its approval for use in October 2007, 233 (19.1%) resided in rural areas.

Variables for the raltegravir study included adoption of raltegravir therapy within 180, 360, or 720 days of the drug's approval for use. Kaplan-Meier curves were used to determine raltegravir adoption among urban and rural persons, with censoring at the end of data availability or at time of death for those not initiating raltegravir treatment. Association between urban residence and raltegravir adoption at the specified time points was determined using multivariable logistic regression models, adjusting for patient covariates which included age, gender, race/ethnicity, and viral load. Also included among covariates were three factors present prior to the drug's approval, these being diagnosis of an AIDS-defining illness, alcohol or illicit substance abuse, and antiretroviral experience.

In the study of rural residence and HIV outcome, the study sample was defined as those receiving a positive HIV diagnosis upon entry to the system from 1998-2006, with follow-up through 2008. The cohort was refined in terms of degree of viral load at entry and by excluding those who had previously received combination antiretroviral therapy (cART). The final sample was n= 8,489, with 705 (8.3%) being classified as rural. Variables included HIV severity at entry and comorbid conditions. The mortality observation window was 2 years.

Raltegravir Adoption Curve



Two-year Survival Curve Among 8,489 Persons Entering VA Care for HIV/AIDS During FY 1998-2006

Variable	Urban (n=7,784)	Rural (n=705)
Deaths, n (%)	914 (11.7)	108 (15.3)
Deaths per 100 person-years	6.3	8.5
Hazard Ratio		
Univariate	1.0	1.34 (1.05-1.69)
Multivariate*	1.0	1.17 (0.92-1.50)

*Adjusted for CD4, AIDS Defining Illness, Age, Alcohol or Drug Problem, and Hepatitis B or C at baseline, and cART initiation as time dependent covariate.

Findings

Raltegravir adoption curves showed that urban rather than rural patients were more likely to initiate raltegravir therapy within 180 days and 360 days of its initial availability. This relative difference between urban and rural patients decreased and was no longer statistically significant at 720 days. Early raltegravir adoption within 180 days of approval was generally more common with increasing age, relatively low CD4 count (an indicator of HIV progression), increasing viral load, absence of substance abuse, and greater than ten years antiretroviral experience in the VA.

In the delayed care and entry study, of the 8489 persons entering HIV care in VA during the window period the rural patients (n=705) had more advanced disease at entry and were more likely to be diagnosed with an AIDS-defining illness within 180 days of treatment initiation. There were 8.5 deaths/100 person years in the rural group in contrast to 6.3 deaths/100 person years in the urban group. The association between rural residence and increased mortality did not change meaningfully with longer observation periods.

Conclusions

Advances in antiretroviral therapy continue to improve outcome for persons with HIV, but all persons are not equally likely to adopt these advances. In order to quicken the delivery of new treatments to rural patients, characteristics affecting timely adoption of new therapies should be investigated.

Difference in degree of HIV severity at care entry expresses a significant delay in care for rural persons. As in the present study, future studies should explore factors affecting this later care entry, focusing on the individual, care system, and community-level determinants affecting treatment of persons with HIV.

ORH
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Impact

Disparities between urban and rural persons in access to and the delivery of HIV care from the VA need to be addressed with the aim of diminishing these differences.

- Studies should be conducted focusing on factors that play a role in not only the delivery of new HIV treatments but barriers that rural Veterans with HIV face in pursuing initial entry to care.
- These aspects should include patient, provider, and care site characteristics, as well as social/contextual factors

Investigation of these issues will enhance timely HIV diagnosis in rural Veterans as well as speed the adoption of new anti-retroviral drugs.

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