

## Short reports

**Research Triangle  
Institute, Research  
Triangle Park, North  
Carolina, USA**

W K Poole  
R Perritt  
K B Shah

**Glaxo-Wellcome,  
Research Triangle  
Park**

Y Lou

**University of California,  
San Francisco, San  
Francisco, California,  
USA**

J Turner  
P C Hopewell

**Henry Ford Hospital,  
Detroit, Michigan, USA**

P Kvale

**University of  
Wisconsin, Madison,  
Wisconsin, USA**

J Glassroth

**Beth Israel Medical  
Center, New York, USA**

M Rosen

**University of Medicine  
and Dentistry at New  
Jersey, Newark, New  
Jersey, USA**

L Reichman

**University of  
California, Los  
Angeles, Los Angeles,  
California, USA**

J Wallace

Correspondence to:  
Dr Poole, 3040 Cornwallis  
Road, PO Box 12194,  
Research Triangle Park, NC  
27709-2194, USA  
(poo@rti.org)

Accepted for publication  
14 July 2000

*Table 1 Odds for the drop out categories relative to the non-drop outs (NDOs) for the different combinations of the significant prognostic variables*

Education >HS										
Age	<30			30-39			40+			
Race	W/NH	B/NH	OTH	W/NH	B/NH	OTH	W/NH	B/NH	H/O	
NFU	0.031	0.018	0.021	0.043	0.024	0.029	0.019	0.011	0.013	
FU-NE	0.176	0.140	0.114	0.014	0.069	0.056	0.027	0.021	0.017	
FU-E	0.015	0.125	0.032	0.031	0.264	0.068	0.028	0.235	0.060	
Total	0.222	0.283	0.167	0.088	0.357	0.153	0.074	0.267	0.090	
Education ≤HS										
Age	<30			30-39			40+			
Race	W/NH	B/NH	OTH	W/NH	B/NH	OTH	W/NH	B/NH	OTH	
NFU	0.085	0.048	0.057	0.116	0.065	0.078	0.054	0.029	0.035	
FU-NE	0.214	0.170	0.140	0.105	0.084	0.069	0.033	0.026	0.021	
FU-E	0.014	0.115	0.030	0.029	0.244	0.063	0.026	0.216	0.056	
Total	0.313	0.333	0.227	0.250	0.393	0.210	0.113	0.271	0.112	

# A characterisation of patient drop outs in a cohort of HIV positive homosexual/bisexual men and intravenous drug users

W K Poole, R Perritt, K B Shah, Y Lou, J Turner, P Kvale, P C Hopewell, J Glassroth, M Rosen, L Reichman, J Wallace, and the Pulmonary Complications of Immunodeficiency Virus Infection Study Group

Enrollees in a study who cease participation for one reason or another can create problems for those who analyse and interpret the data. These problems include loss of statistical power, bias in the study results, and lack of generalisability of the study findings. Whether the study is a clinical trial or an observational study these problems may exist. In trials, for example, non-random withdrawals may compromise the comparability between the treatment groups and hence introduce a bias and in observational studies selective withdrawal may limit the generalisability of the study results. Much has been written about the consequences of non-random withdrawals and some authors have offered statistical techniques that can effectively adjust for the resulting bias if certain assumptions are met. Although it is not generally possible to compensate for all of the problems created by attrition, certain considerations like statistical power and adequate representation of important subgroups can be attained in the design if one can identify high attrition groups during planning. Hence, the identification of prognostic factors for attrition is important. That is the aim of this article for a special subgroup of the population.

### Methods and Results

We defined drop out as one who missed one or more follow ups and did not return before

study termination. Deaths were not considered drop outs. We studied three groups of drop outs: enrollees who never returned (NFU); enrollees who returned for one or more follow ups and then left without explanation (FU-NE); and enrollees who returned for one or more follow ups and left with an explanation (NFU-E). Non-drop outs were denoted NDO. Eleven hundred and fifteen people were enrolled through six major medical centres in six US metropolitan areas. The Institutional Review Boards at each of the centres reviewed and approved the study protocol. The cohort consisted of homosexual/bisexual (H/B) men and intravenous drug users (IDUs) who were classified into two disease severity groups. This cohort is part of a slightly larger cohort that has been described elsewhere.<sup>1</sup>

We were interested in whether there were differential drop out patterns according to baseline characteristics including:

- Transmission category/gender—H/B men, IDU men, IDU women
- Age—18-29, 30-39, 40+ years
- Alcohol use—< three drinks per day, three drinks or more per day
- CD4 count—0-199, 200-495, 500+ cells/μl
- Enrolling centre—six centres
- Depression—none, mild or severe
- Education—high school or less (< HS), more than high school (>HS)
- Smoking—current smoker, non-smoker or past smoker
- Disease severity—groups A (HIV positive without symptoms) and B (HIV positive with symptoms)
- Income—less than \$30 000, \$30 000 or more
- Karnofsky score—less than or equal to 90, over 90
- Race/ethnicity—white/not Hispanic (W/NH), black/not Hispanic (B/NH), other (OTH)
- Frequency of follow up—randomly assigned to three months or six months

Fourteen per cent of the cohort were drop outs. Using a  $\chi^2$  screening with an  $\alpha$  level of 10% we found the drop out distribution had univariate relations only with transmission category/gender, age, centre, education, income, and race/ethnicity. With the drop out

categories as dependent variables we ran a multiple logistic regression with and without centre.

Whether centre was included or not, age and education were significant predictors of the drop out distribution at the 5% significance level. Without centre, race/ethnicity became significant and as we wanted a prediction model for future studies, the final model included race rather than centre. The relative risks for the final model are given in table 1. The total drop out rate varies from 7.4% for white people who are 40 years old or older and have more than a high school education to 39.3% for 30–39 year old black people with a high school education or less.

Lower overall drop out rates were associated with the oldest age group (that is, 40+), those who were educated beyond high school, and the white race. These results are generally consistent with a reported study<sup>2</sup> that used the

same statistical methodology and investigated persons at high risk for HIV infection recruited through STD clinics and community-based health service organisations.

These results should be useful in planning future follow up studies of HIV infected H/B men and IDUs.

Funding: supported by contract numbers N01-HR7-8029, 6030, 6031, 6032, 6033, 6034, and 6035 from the National Heart, Lung, and Blood Institute and the National Institute of Allergy and Infectious Diseases and by grant award numbers UO1-HL48534-01, UO1-HL48511-01, UO1-HL48500-01, UO1-HL48518-01, UO1-HL48779-01, UO1-HL48501-01, and UO1-HL48516-01.

Conflicts of interest: none.

- 1 The Pulmonary Complications of Immunodeficiency Virus Infection Study Group. The pulmonary complications of human immunodeficiency virus infection: design of a prospective study of the pulmonary complications of human immunodeficiency virus infection. *J Clin Epidemiol* 1993;46:497–507.
- 2 Fishbein M, Coutinho R, Editors, NIMH multisite HIV prevention trial. *AIDS* 1997;11:S13–19.