An Evaluation of Loss to Follow-up Among 187 Homeless Adults on Directly Observed Rifampin Therapy for Latent Tuberculosis Infection in Fulton County, Georgia (2016 – 2017)

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ABSTRACT

Introduction

Among homeless persons undergoing treatment for latent tuberculosis (LTB) at public health clinics, loss to follow up (LTFU) is often the biggest contributing factor to poor completion rates. Using data mined from a targeted screening program among homeless persons in Fulton County, we examined patterns to LTFU among a cohort of clients treated for LTB and explored baseline characteristics associated with early LTFU (loss occurring in first month of treatment) in this population.

Methods

Retrospective query of clinic records was performed to identify homeless shelters users who accepted and started rifampin therapy (directly observed) for LTB between January 2016 and September 2017. Baseline demographic, social and clinical characteristics were appropriately described. The primary outcome of interest was LTFU. Chi-square tests, Kaplan Meier plots and log-Rank tests were used to evaluate the impact of baseline characteristics on early LTFU.

Results

A total of 187 homeless adults meeting the inclusion criteria were evaluated. Majorities were US born (93%), black (91%), men (89%), younger than 50 years (55%) and 45% had been homeless in Atlanta for longer than six months. Alcohol use (36%), illicit drug use (19%) and prior history of psychiatric co-morbidities (17%) were self-reported by smaller proportions of the cohort. Median treatment follow-up time was 74 days (IQR: 46-84). Seventy-four (40%) patients were LTFU during treatment. Most LTFU (73%) occurred within the first month of treatment, 20% in the second month and 7% within the last two months of treatment. The mean time to LTFU was 14 days (SE: 1.83, Range: 1 – 62). Women were LTFU earlier than the men (Log-Rank test p=0.01).

Conclusion

Identifying baseline characteristics that contribute to non-completion of LTB treatment among populations at high-risk for active TB disease may help in designing targeted strategies to improve treatment completion among those who start treatment.

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INTRODUCTION

❑ With the incidence of Tuberculosis (TB) in the United States continuing to trend downwards, latent TB detection and treatment among high-risk groups like homeless persons is poised to become the major focus of TB elimination efforts in the United States.

❑ The highly mobile lifestyle of a person experiencing homelessness makes latent TB treatment particularly difficult in this population.

❑ Among homeless persons who accept and start latent TB treatment, loss to follow-up is often the biggest competing outcome to treatment completion.

❑ While several studies have explored the relationship between client characteristics and treatment completion/incompletion, most have ignored time and presence of other reasons for incomplete treatments (censoring) in their analyses.

STUDY AIM

❑ To describe the characteristics of homeless clients on latent TB treatment who were lost to follow up during the course of treatment

❑ Explore the relationship between various client characteristics and failure time (time to dropping off from treatment) due to loss to follow-up.

METHODS AND MATERIALS

❑ We performed a retrospective analysis of data abstracted from routine clinical care records of homeless persons receiving care for latent TB at the respiratory health clinic at Fulton County Board of Health (FCBOH)

❑ Eligible subjects were clients who were resident at a homeless facility during the duration of latent TB treatment and initiated four month rifampin regimen for latent TB treatment between January 1, 2016 and September 30, 2017.

❑ All clients included in the study received directly observed treatments (DOT).

❑ The study cohort was stratified into two groups based on the outcome of interest (lost to follow-up vs those not lost to follow-up). Statistical differences in the baseline characteristics of the two main study groups were examined using Fisher's exact test or chi square test as appropriate.

❑ Clients who dropped out of treatment because they refused further treatment or were discontinued due to adverse reactions or relocated were censored.

❑ Kaplan-Meier failure plots were used to compare the probabilities of loss to follow-up for the various co-variate groups/strata in the study cohort ,and statistical differences in the failure functions of these strata were tested using Log-Rank tests.

❑ All statistical analyses were performed in SAS 9.4 (SAS Institute, Cary, NC).

RESULTS

❑ A total of 187 adults experiencing homelessness started the four month rifampin regimen for latent TB treatment within the study duration.

❑ 73 (39%) of them were lost to follow up (LTFU) during treatment while 114 (61%) were not. There was no statistical difference in baseline characteristics of the clients who were lost to follow up and those who were not (p>0.05).

❑ Among those LFTU, 53 (73%) were lost within the first month of treatment and received an average of 6 doses of rifampin only (se 0.72), while 27% dropped off between the second and fourth month of treatment, receiving an average of 36 doses of rifampin only (SE 2.75).

Table 1. Characteristics of homeless adults who received directly observed rifampin therapy for latent TB infection at Fulton County Board of Health (2016 – 2017)

	LTFU n = 73 (39%)	Not LTFU n = 114 (61%)	Fisher's exact test p-value
Gender at birth			
Male	63 (38%)	103 (62%)	0.47
Female	10 (48%)	11 (52%)	
Age (years)			
Under 50	43 (42%)	59 (58%)	0.39
50 and above	30 (35%)	55 (65%)	
Race			
Black	66 (39%)	104 (61%)	1.00
Non-Black	7 (41%)	10 (59%)	
Country of Birth			
US born	67 (39%)	106 (61%)	0.78
Foreign born	6 (43%)	8 (57%)	
Any Alcohol use			
No	42 (35%)	78 (65%)	0.16
Yes	31 (46%)	36 (54%)	
Any Drug use			
No	57 (38%)	95 (62%)	0.44
Yes	16 (46%)	19 (54%)	
Any Mental health co-morbidity			
No	61 (39%)	94 (61%)	1.00
Yes	12 (38%)	20 (62%)	
Duration of homelessness in Atlanta			
< 6 months	35 (35%)	66 (65%)	0.28
> 6 months	35 (43%)	46 (57%)	
Treatment site			
Clinic	38 (39%)	59 (61%)	0.57
Shelter	34 (40%)	50(60%)	
Both	1 (17%)	5 (83%)	
Year of treatment			
2016	37 (34%)	72 (66%)	0.09
2017	36 (46%)	42 (54%)	

RESULTS CONT'D

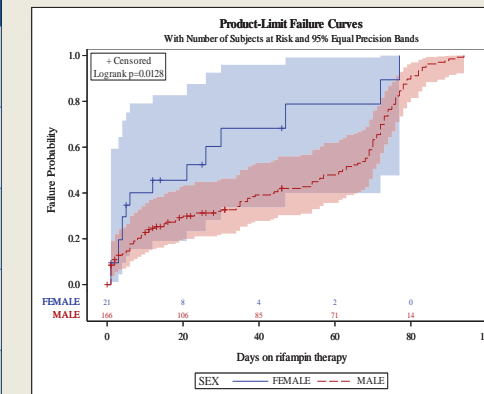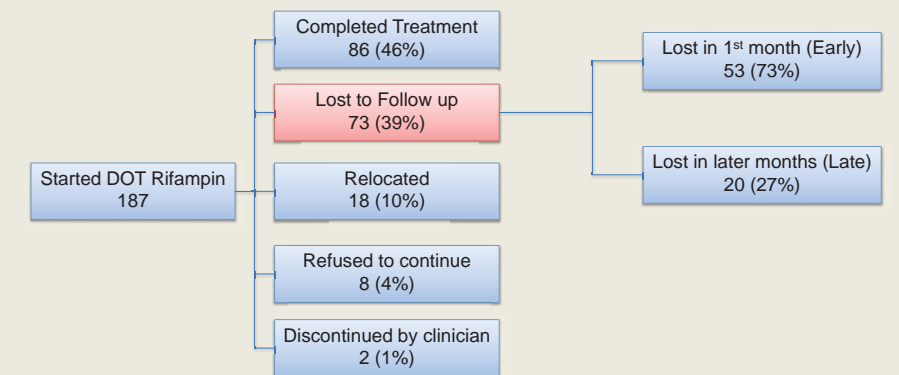**Figure 1.** Flow chart showing outcomes for 187 homeless adults who started DOT Rifampin at FCBOH (2016 – 2017)

Figure 2. Kaplan Meier Failure Curves – Gender

Table 2. Cumulative failure (LTFU) rates at study time points

	Homeless Men	Homeless Women
1 month	30% (23%, 37%)	46% (27%, 70%)
2 months	39% (32%, 47%)	68% (45%, 89%)
3 months	48% (40%, 56%)	79% (54%, 95%)
Median days on DOT for LTBI	62 (45, 69)	21 (4, 47)

There was a 46% probability of a homeless woman being LTFU by the end of the first month of treatment on DOT rifampin for LTBI and only 30% probability in the same duration for the homeless men. (Log-Rank p = 0.01)

DISCUSSION/CONCLUSIONS

❑ In our study, LTFU was the strongest competing outcome to treatment completion among homeless persons who started directly observed rifampin therapy for latent TB infection (LTBI).

❑ Most LTFU occurred within the first month of treatment, suggesting a need to focus support in the early days of treatment initiation in order to reduce the risk of disengagement from LTBI treatment and improve treatment completion.

❑ Although we found no statistically significant difference in the overall proportions of men and women who were LTFU (p = 0.47), we found that at all time points, homeless women on DOT rifampin had statistically significant higher treatment discontinuation rates than the homeless men (p = 0.01). There may, therefore, be need to consider using modified DOT methods for LTBI treatment administration for homeless women and increasing support to women on treatment to encourage retention during LTBI treatment with rifampin.