

Twitter-enabled Mobile Messaging for Smoking Relapse Prevention (Tweet2Quit)

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Statistical Analysis Plan

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Statistical Analyses

Dropout rates are examined by condition. Every effort is made to limit the amount of missing data from survey attrition by doing persistent follow-up with participants and contacting their preidentified collaterals (family members and friends) to urge survey completion. Before analysis, we will examine baseline predictors of attrition. If it appears that attrition is related to measured aspects of the participants, we will include those measures as covariates in the models. Sensitivity analyses will check that the methods of dealing with missing data do not have a major impact on the results. We will repeat the attrition analyses under 2 different models, one in which the missing data are assumed to be positive for smoking and one using only the respondents who did not have missing data. We expect to find that although estimates may change some, the conclusions generated by the modeling should not change.

For primary hypothesis testing of sustained abstinence at 6 months, we will use the 6-month post quit date survey (based on the quit date selected by the participant at the beginning of the study) and biochemical salivary cotinine verification. To test the *primary aim 1 hypothesis*, analyses will compare sustained abstinence for participants randomized to coed Tweet2Quit treatment versus control. Sustained abstinence will be modeled as a function of study arm (coed Tweet2Quit or control), gender, cohort, and individual using a logistic model and generalized estimating equations (Proc Genmod in SAS) to account for the clustering of individuals within cohort. Our statistical methods will use all the data in parameter estimation. We will test the coefficient of the study arm or treatment condition parameter, doing so by gender if there is a treatment condition by gender interaction.

The same type of generalized logistic model, but focusing on women, will be used to test the *primary aim 2 hypothesis*, on whether women will achieve greater 6-month sustained, bioconfirmed abstinence if randomized to a women-only versus coed Tweet2Quit treatment group. Secondary hypotheses concerning sustained abstinence at 3 months (ie, at treatment end) and point prevalence (prior 7 day) abstinence at 1, 3, and 6 months will be tested using the same modeling approaches.