PAGER MESSAGING

Good Evidence – Medication Adherence

INTERVENTION DESCRIPTION

Target Population
- HIV-positive clinic patients who are antiretroviral treatment-experienced or -naïve

Goals of Intervention
- Improve adherence to antiretroviral therapy
- Improve clinical outcomes (HIV viral load and CD4 cell count)

Brief Description

The *Pager Messaging* intervention (i.e., pager messaging only or pager messaging with peer support) is an individual-level intervention. Each patient receives a 2-way pager and a message schedule customized to the patient's daily medication regimen. In addition to dose reminders (which include medication names familiar to the patient and number of pills to be taken), 3 other types of text messages are sent: (1) educational (referring to side effects and their management, medication benefits, understanding laboratory values, the importance of adherence, drug interactions, proper medication storage, resistance, and self-advocacy); (2) entertainment (jokes or thoughts for the day); and (3) adherence assessments. A confirmation return page is requested for every message sent. There are a minimum of 3 daily pager messages for the first 2 months, with frequency gradually tapering in the last month to avoid a rebound in non-adherence. The patients are asked to wear the pager at all waking moments from the first contact till the end of the intervention.

Theoretical Basis
- None specified

Intervention Duration
- Daily customized pager messages over 3 months

Intervention Setting
- Anywhere the patient has access to their pager

Deliverer
- 2-way pager

Delivery Methods
- Pager reminder
- Text messages

INTERVENTION PACKAGE INFORMATION

An intervention package is not available at this time. Please contact **Jane Simoni**, University of Washington, Department of Psychology, Box 351525, Seattle WA 98195-1525.

Email: jsimoni@uw.edu for details on intervention materials.

EVALUATION STUDY AND RESULTS

The original evaluation was conducted in Seattle, Washington between 2003 and 2007.

Key Intervention Effect
- Reduced viral load

Study Sample
The baseline study sample of 226 men and women is characterized by the following:
- *47% white, 30% black or African American, 12% other or mixed race, 11% Hispanic/Latino*
- *76% male, 24% female*
- *Mean age of 40 years, range: 19-60 years*
- *71% completed high school or GED*
- *62% treatment-naïve, 38% switching or restarting treatment*
- *Mean viral load = 25,000, range: 1,250-500,000*

Recruitment Settings
Public HIV primary care outpatient clinics

Eligibility Criteria
Men and women were eligible if they were HIV-positive, at least 18 years of age, proficient in English, living within the service area of the pager, and initiating or changing at least 2 medications of a HAART regimen.

Assignment Method
Participants (N = 226) were randomly assigned to 1 of 4 groups: peer support only (n = 57), pager messaging only (n = 56), peer support & pager messaging (n = 56), or usual care (n = 57). The intervention group consisted of participants from the pager messaging only and pager messaging with peer support arms (n = 112). The comparison group consisted of participants from the peer support only and usual care arms (n = 114).

Comparison Group
Comparison participants received usual care, which included education regarding HAART and adherence, meetings with their medical provider, referrals to social and mental health services as appropriate, and 3 separate appointments with a pharmacist, nutritionist, and case manager. Participants from the peer support comparison arm also received medication-related social support through twice monthly group meetings and weekly individual telephone calls from HIV-positive peers for a period of 3 months. None of the comparison participants received pager messaging.

Relevant Outcomes Measured and Follow-up Time
- Medication adherence behaviors were measured by 2 methods and assessed at 3, 6, and 9 months post-initiation of intervention:
  - Self-reported 100% medication adherence in the past 7 days defined as missing 0 doses of prescribed medicine.
  - Percentage of prescribed doses taken in the past 7 days recorded by electronic drug monitors (EDM).
- Viral load was measured at 3, 6 and 9 months post-initiation of intervention and was assessed as log10 copies/mL and as undetectable (< 1000 copies/mL).

Participant Retention
- Pager Messaging Intervention
  - 94% retained at 3 months post-initiation of intervention
  - 88% retained at 6 months post-initiation of intervention
  - 92% retained at 9 months post-initiation of intervention

- No Pager Comparison
  - 88% retained at 3 months post-initiation of intervention
  - 84% retained at 6 months post-initiation of intervention
  - 87% retained at 9 months post-initiation of intervention

Significant Findings
- Across all three assessment time points, participants in the pager messaging intervention arms (i.e., pager messaging only and pager messaging with peer support) were significantly more likely than participants in the comparison without pager messaging to achieve an undetectable viral load (< 1000 copies/mL; OR = 1.78, 95% CI = 1.03 to 3.09, p = 0.04; missing data imputed).

Considerations
- This study did not meet the best-evidence criteria due to no significant positive intervention effect on medication adherence behaviors.
- Pager messaging was associated with a marginally significant decrease in 100% adherence at 6 months (OR = 0.50; 95% CI = 0.24 to 1.03; p = 0.06; missing data imputed).
- There were no significant intervention effects at any assessment for either mean viral load level or CD4 cell count.
- However, with respect to the dichotomous CD4 measure, pager messaging participants were significantly more likely to report higher CD4 cell counts (> 350 cells/mm3) than no pager participants (OR = 2.20; 95% CI = 1.10 to 4.42; p = 0.03; missing data imputed) across all 3 assessment time points.
- Among intervention participants only, dose response analyses indicated:
  - Increased percentage of confirmation return pages was associated with significant reductions in log10 viral load at 3 months (p = .01) and 9 months (p = .01) post-initiation of intervention.
  - Greater pager response was associated with higher CD4 cell counts (> 350 cells/mm3) at 3 months (p < .001), 6 months (p = .03), and 9 months (p < .001) post-initiation of intervention.
- Each study participant received an electronic drug monitor (EDM) to use with the most frequently dosed antiretroviral.

REFERENCES AND CONTACT INFORMATION

Simoni, J. M., Huh, D., Frick, P. A., Pearson, C. R., Andrasik, M. P., Dunbar, P. J., & Hooton, T. M. (2009). Peer support and pager messaging to promote antiretroviral modifying therapy in Seattle: A randomized controlled trial. *JAIDS Journal of Acquired Immune Deficiency Syndromes, 52*, 465-473.

Researcher: Jane Simoni, PhD
University of Washington, Department of Psychology
Box 351525
Seattle, WA 98195-1525
Email: jsimoni@uw.edu