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Evaluation on Use of Digital Refill Reminders on Patient Adherence to Antiretroviral Medications

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Patients with HIV who use digital refill reminders for their antiretroviral medications had reduced delay in medication refills and higher medication adherence rates.

OBJECTIVE

- To determine if patients receiving antiretroviral (ARV) prescription medications to treat HIV who used digital refill reminders (DRR) exhibited differences in medication adherence and refill delay compared to patients not receiving DRR.

BACKGROUND

- Digital communication services, including digital refill reminders, provide an efficient channel for pharmacy providers to connect with patients about their medications. Due to stigma and the need for privacy, digital communication services may be the preferred and most effective option for some HIV patients to interact with their pharmacy team. Previous studies found digital services were associated with higher adherence to certain chronic medications, but little evidence exists on digital services and antiretroviral adherence.

METHOD

- **Study design:** A retrospective propensity matched cohort study using prescription fill data from 2016 – 2017.

- **Study population:** Patients ages 18 or older who received two or more antiretroviral medications for HIV treatment with and without DRRs.

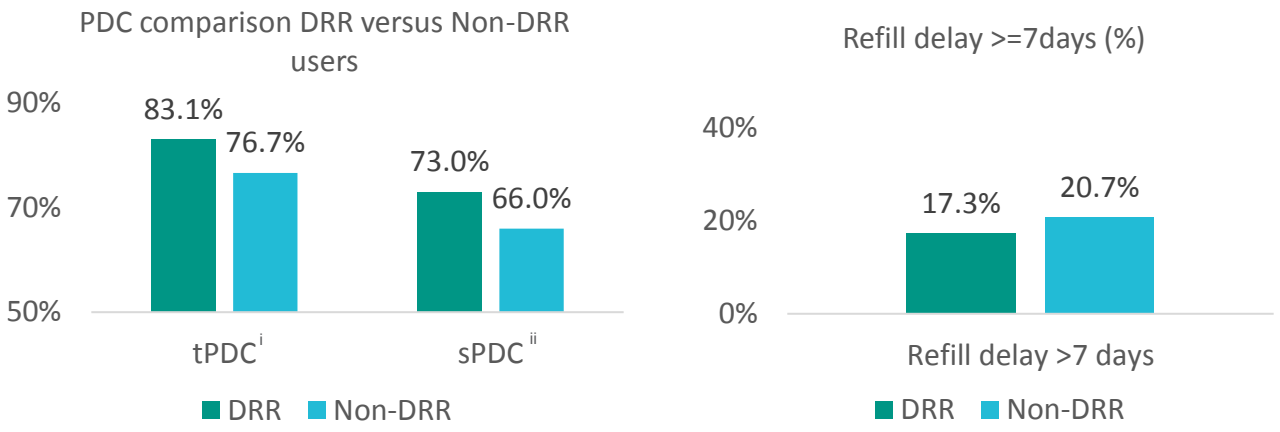
- **Outcome measures:** Medication adherence, measured as proportion of days covered (PDC), and refill delay, measured as refill delay of ≥ 7 days. Patients with a PDC of less than 90% were considered non-adherent. The PDC was calculated using traditional and standard methodology. The traditional PDC uses the days between index ARV fill date and last date of ARV available as the denominator. The standard PDC was calculated according to the Pharmacy Quality Alliance (PQA)[1] which uses 1 year as the denominator. This was included as a sensitivity analysis.

- **Statistical method:** Propensity scores were created using logistic regression. Covariates included age, gender, insurance type, store type, and number of therapeutic classes that patients filled in the baseline period. One-to-one matching resulted in 5,000 matched pairs. A generalized mixed model was used to assess statistical differences between the matched groups.

RESULTS

- There were no significant differences in key covariates between DRR users and non-DRR users after propensity matching (**Table 1**).
- Mean PDC (traditional) was 6% higher, or an 8.3% relative increase, for the DRR cohort versus the non-DRR cohort (83% vs. 77%, p<.001) (**Figure 1 and Table 2**).
- DRR patients had high medication adherence (PDC≥90%) compared to non-DRR patients (61% vs 53%, respectively; p<.001) (**Figure 2**).
- Patients who received DRR had fewer refill delays (17%) versus those without DRR (21%). The overall reduction in refill delay was 16.4% (**Table 2**).
- A sensitivity analysis using PDC PQA specifications produced similar effect size and significance level of DRR.

Figure 1: Matched group adherence comparison



[i]: tPDC – Traditional PDC; [ii]: sPDC – PQA standard PDC

Table 1: Comparison of selected baseline characteristics

Covariates	DRR Users	Non-DRR Users	Difference		Stand. Diff.†
	n=5,000	n=5,000	|Δ|	P-value	
Age (mean/SD)	44.30 (13.76)	44.15 (12.61)	-0.15	0.5653	0.02
Gender (male/female)	0.83 (0.38)	0.82 (0.38)	-0.01	0.4940	0.03
Measurement period length (days)	267.69 (62.77)	266.55 (62.17)	-1.13	0.3639	-0.02
Number of non-ARV therapy	0.40 (1.78)	0.41 (1.74)	0.02	0.6492	0.01

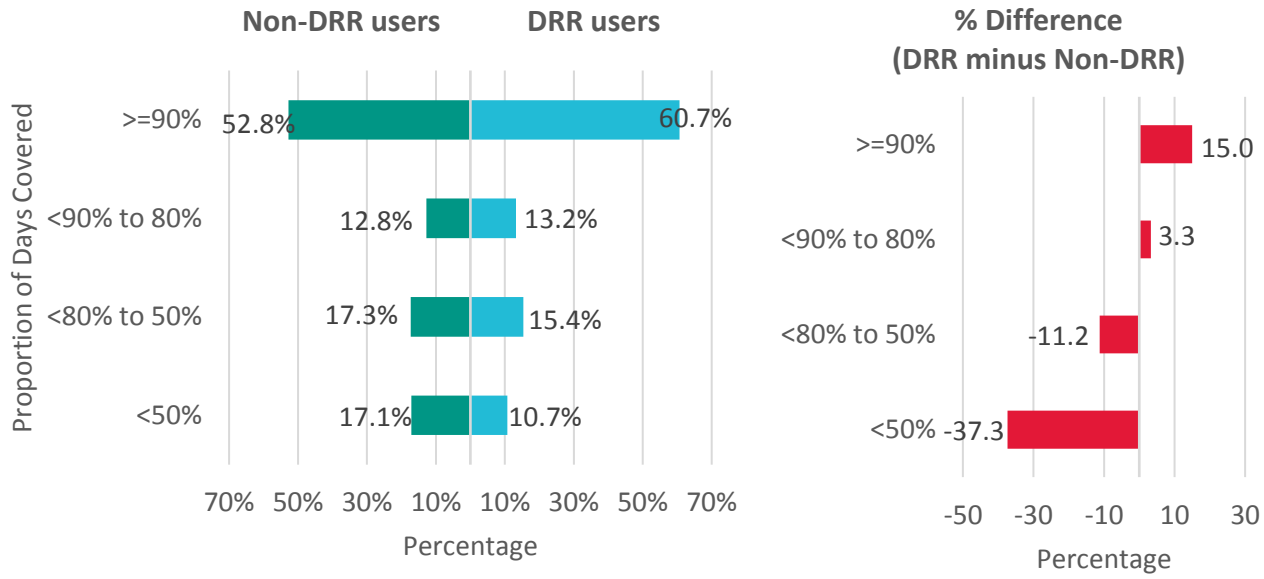
† standardized difference

Table 2: Comparison of PDC and rate of refill delay

Covariates	DRR Users	Non-DRR Users	Difference		P-value
	n=5,000	n=5,000	|Δ|	Δ in %	
tPDC[i]	0.83 (0.25)	0.77 (0.31)	0.06	8.3%	<0.001
sPDC[ii]	0.73 (0.34)	0.66 (0.37)	0.07	10.4%	<0.001
Refill delay ≥7 days	0.17 (0.48)	0.21 (0.49)	-0.03	-16.4%	<0.001

[i]: tPDC – Traditional PDC; [ii]: sPDC – PQA standard PDC

Figure 2: Comparison of PDC group distribution



CONCLUSIONS

- These results show that patients with HIV who use DRR for their antiretroviral medications had reduced delay in medication refills and higher medication adherence rates, which have been associated with better clinical outcomes including effective and persistent viral load suppression.

References:

1. Pharmacy Quality Alliance. PQA performance measures. Available at: http://pqaalliance.org/measures/default.asp

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