Clinical Decision Support System Alerts for HIV Retention in Care – A Pilot Implementation Research Study

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Background

- Over 8,000 people living with HIV (PLWH) in 2015 in Charlotte, NC[1]
  - 76% and 66% retained in care with at least one or two care visits in prior year, respectively
  - Viral suppression rates matched rate of retention
- Clinical decision support systems may help retain PLWH who are at-risk of falling out of care by identifying them and providing mechanism for outreach from clinic[2]
- CHORUS™ is a clinical reporting portal translating electronic health record (EHR) data into meaningful information for clinicians

Objective

Evaluate the feasibility of clinical decision support system alerts in the CHORUS™ clinical reporting portal for retaining HIV-positive patients in care at three HIV clinic sites in a southeastern U.S. city

Methods

Study Population & Design

- Three clinic sites in Charlotte, NC that utilize the CHORUS™ portal
- Periods without intervention (*before*) or with alerts (*after*) were followed by 3 months of follow up (Figure 1)
- Included: PLWH with ≥1 EHR entry in the 2 years before/during the *before* and *after* periods (Figure 1)

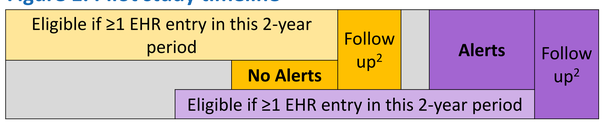
Intervention

- Alerts warning of suboptimal patient attendance generated daily (Figure 2)
- Providers or other clinic staff encouraged to reach out to patients identified as at-risk of falling out of care

Statistical Analyses

- Alerts, clinic responses to the alerts, and visits (i.e., meeting with provider or HIV lab measurement) were characterized
- Proportion of PLWH with ≥1 visit in the *before* and *after* periods were compared at each site by Pearson's Chi-square

Figure 1. Pilot study timeline[1]



[1] The *before* period, without the alert intervention, appears in gold and the *after* period, with the alert intervention appears in purple
[2] 3 months in duration

Methods (*continued*)

Figure 2. Alert criteria and clinic response options

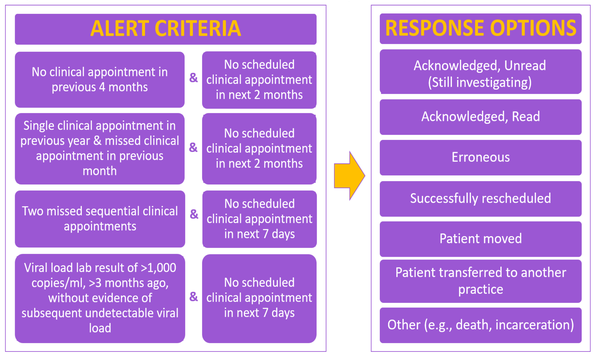
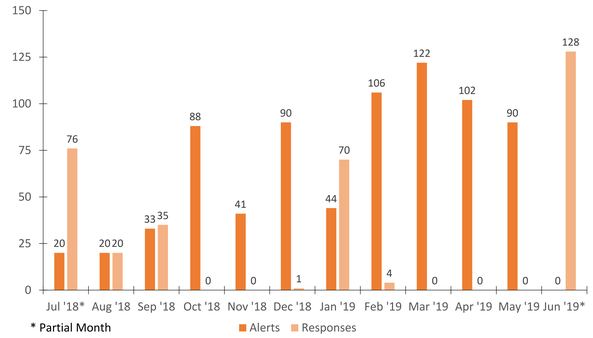


Figure 3b. Alerts and responses over 352 days at Site B



Results

Figure 3a. Alerts and responses over 309 days at Site A

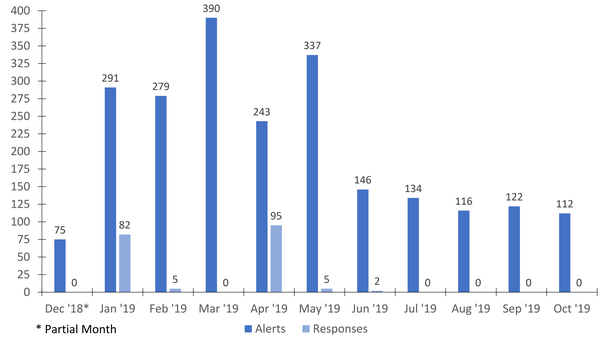


Figure 3c. Alerts and responses over 246 days at Site C

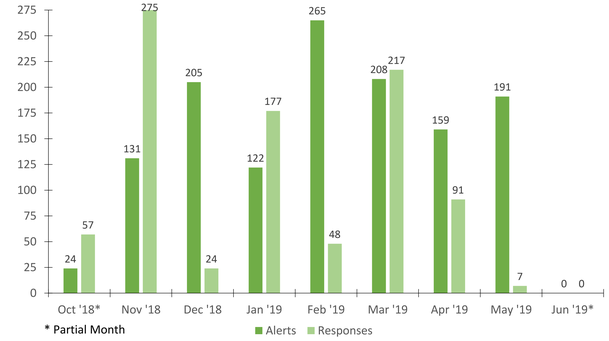


Table 1. Summary of results

(N or % of PLWH)	Site A		Site B		Site C	
	Before	After	Before	After	Before	After
Participants[1]	10,220	9,926	538	723	1,202	1,113
Alerts / Responses	---	2,245 / 189	---	756 /334	---	1,202 / 896
Ratio of Alerts to Responses	---	11.9	---	2.2	---	1.5
≥1 Visit with Healthcare Provider	46%	46%	91%	80%*	72%	81%*
≥2 Visits with Healthcare Provider	41%	41%	85%	74%*	64%	72%*

* Statistically significantly different from the *before* period
[1] A total of 12,230 PLWH were eligible (sites A: 11,271; B: 733; C: 1,344), with >75% in both the *before* and *after* periods

Discussion

- Despite clinics being motivated to increase retention, institutional factors likely impacted utilization of the CHORUS™ alerts, outreach capabilities, and ability to retain at-risk patients after they were identified
  - Site A: Minimal interactions with alerts, large staff turnover during the *after* period
  - Site B: Sporadic interactions with alerts, patient population increased by >30% from the *before* to the *after* period
  - Site C: Dedicated staff member consistently interacting with alerts
- Pilot implementation study with ecological design
  - Measures of retention in care compared over two calendar periods
  - No adjustment for changes over time in: study populations, clinic characteristics, and policies in place
  - Not designed to assess effectiveness of the intervention
- Lessons learned about clinic dynamics, study design, and data collection to be carried forward in a future study

Key Findings

- Clinical decision support system alerts successfully implemented in CHORUS™ clinical reporting portal, despite suboptimal engagement at some sites
- Clinic with dedicated site staff and consistent utilization of alerts experienced improvement in retention of PLWH at-risk of falling out of care

References

1. Smith D. 2015 Ryan White Part A Charlotte Transitional Grant Area (TGA) HIV/AIDS Surveillance Data Update Viral Suppression. 2016. www.mecknc.gov
2. Robbins GK, Lester W, Johnson KL, Chang Y, Estey G, Surrao D, et al. Efficacy of a clinical decision-support system in an HIV practice: a randomized trial. Ann Intern Med. 2012;157(11):757-66

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