Integrating Community Pharmacists and Clinical Sites for Patient-Centered HIV Care

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Supporting Statement B

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TABLE OF CONTENTS

B. Collections of Information employing statistical methods

1. Respondent Universe and Sampling Methods

Our sample will be a non-probability based convenience sample. The respondent universe is HIV-infected persons, from targeted minority populations, receiving HIV medical care at one of the 10 project sites. Targeted minority populations include Black, Latino and American Indian/Alaska Native populations. A project site will contain one or more Walgreens pharmacy and one or more medical clinic. Each project site will enroll 100 patients for a total of 1000 patients.

The sample size is based on the maximum number of patients to which Walgreens Company is willing to provide in-kind services. Because project clinics must be chosen in concert with Walgreens project pharmacies (who will ultimately decide which pharmacies will participate), no sampling methods will be employed to choose project sites. Both the project sites and project participants will represent convenience samples.

Participant eligibility includes HIV patients 18 years of age and older who receive medical care at one of the project clinics. CDC will work with Walgreens and the University of North Texas Health Science Center to define additional eligibility criteria. Participants will be enrolled into the project on a rolling basis until each project site has enrolled the targeted number of participants.

2. Procedures for the Collection of Information

Data collection methods

Project clinics and pharmacies are the sites for the data collection. Most data will be abstracted from the clinics' and pharmacies' archived patient medical and pharmacy records by project clinic and pharmacy staff (**Attachment 10a**). Data collected from participants' medical and pharmacy records are routinely collected and stored information used by participants' providers for routine medical care. Medical record data will be abstracted at the baseline of the study and quarterly thereafter. Pharmacy record data will be abstracted quarterly. In addition, baseline descriptive data on the characteristics of the project sites will be collected at the beginning of the project by project staff and annually thereafter (**Attachment 3, Attachment 4**).

Overview of the data collection system

The patient-centered HIV care model project information collection has six primary components: 1) description of project clinics and pharmacies 2) description of non-participant patients 3) medical record abstraction 4) pharmacy record abstraction 5) key informant (project staff) interviews and staff questionnaire 6) time and cost documentation. All information collected is for the purpose of program performance monitoring, adjustment of the project model, as needed, and for determination of program outcomes within the project cohort cost and program costs. Project clinic and pharmacy staff will complete the descriptions of each respective project clinic and pharmacy. Medical and pharmacy record abstraction will be conducted by project clinic and pharmacy staff for all participants of the pilot program. Most data collected from the medical and pharmacy record abstraction are routinely collected information used by medical clinics and pharmacies for normal patient care. Key project staff will participate in key informant interviews and project staff will complete a staff communication questionnaire and collect the time spent on and the cost of program activities.

Project clinic and pharmacy characteristics: Project site clinic **(Attachments 3)** and pharmacy **(Attachments 4)** characteristics will be collected retrospectively for two years prior to project site enrollment and annually throughout the project period. Project clinic and pharmacy staff at each respective project site will

collect the information. Project sites will send the data to the project grantee who will investigate and resolve data discrepancies. Data will then be sent to CDC through the CDC Secure Data Network.

Description of non-participant patients: Patients who choose not to participate in the project will be given an opportunity to allow their basic demographic information to be collected (**Attachment 5**). This will allow the project team to understand if the people in the project are similar or different to the people who are not in the project.

Medical record abstraction: Medical record abstraction will be conducted by project clinic staff at each respective project clinic. De-identified client-level data will be collected. Project clinics will send the data to the project grantee who will investigate and resolve data discrepancies. Data will then be sent to CDC through the CDC Secure Data Network. All identifiers will be removed before data are reported to CDC; each program participant will be assigned a unique program ID. The grantee and CDC will store and access data by the assigned participant ID. A one-time retrospective medical record abstraction will occur at the beginning of the project in order to document participants' baseline characteristics and history **(Attachment 6a and 6b).** After program implementation, project staff will collect data on a quarterly basis **(Attachment 7a and 7b).** The grantee will report data to CDC on a quarterly basis.

Pharmacy record abstraction: Pharmacy record abstraction will be conducted by project pharmacy staff at each respective project pharmacy **(Attachment 8).** De-identified client-level data will be collected. Project pharmacies will send the data to the project grantee who will investigate and resolve data discrepancies. Data will then be sent to CDC through the CDC Secure Data Network. All identifiers will be removed before data are reported to CDC; each program participant will be assigned a unique program ID. The grantee and CDC will store and access data by an assigned participant ID. Project staff will collect data on a quarterly basis. The grantee will report data to CDC on a quarterly basis.

Key informant interviews: Each project site will choose six project staff, who have in-depth knowledge of the project processes, to participate in key informant interviews. It is anticipated that the key informants will be made up of three pharmacists, two physicians and one nurse although the make-up of the key informants may be different per site depending on staff knowledge of the project. Interviews will be conducted twice

during the project period: the first interviews will take place approximately 3-6 months after the sites have begun enrollment and the second interviews will take place approximately 9-12 months after enrollment. Each interview is estimated to last approximately 30 minutes and will focus on changes to clinic and pharmacy work systems, processes and outcomes in relation to the model project (**Attachment 10a and 10b**).

Staff communication questionnaire: Project staff from each project site will complete a project staff questionnaire. It is anticipated that three pharmacists, two physicians and two nurses, at each project site, will complete the questionnaires, although the make-up of the respondents may be different per site depending on current project site staffing. The questionnaire will be administered twice during the project period: at approximately 3-6 months after the sites have begun enrollment and then again approximately 9-12 months after enrollment. The questionnaire is estimated to take 15 minutes to complete and focuses on communication between project pharmacists and medical providers (**Attachment 11**).

Time and costs associated with project activities: Each project clinic (**Attachment 12**) and pharmacy (**Attachment 13**) will document the time spent on project activities and detail associated costs. Each site will collect time and cost information for a one month period near the beginning of the project and for a one month period toward the end of the project period.

Items of Information to be Collected

Data collection	Attachment number
Project Clinic Characteristics. An annual collection of project clinics' characteristics including city and state, type of clinic, total number of patients, demographics of patients, clinic patient volume, number and type of medical providers employed at clinic.	3
Project Pharmacy Characteristics. An annual collection of project pharmacies' characteristics including city and state, type of pharmacy, length of time as an HIV Center of Excellence, number of HIV clients filling prescriptions, number and average number of clients filling prescriptions, prescription filling volume, insurance status of clients, preventive services offered, number and type of	4

providers employed at pharmacy	
Patient demographic information form. A one-time collection of basic demographics of project clinic patients who choose not to participate in the project but who agree to have their basic demographic characteristics recorded. Variables include month and year of birth, sex, race/ethnicity, education level, household income, housing, employment and insurance status	5
Initial Patient Information form. A one-time retrospective medical record abstraction will be conducted at the beginning of the project. Variables include patient demographics, date and stage at diagnosis, laboratory test results, antiretroviral and other prescribed medications, opportunistic illnesses, other clinical diagnoses, immunizations, history of tobacco, drug and alcohol use and adherence to clinic appointments.	6a
Quarterly Patient Information form. Medical record abstraction of variables routinely collected by clinics, as part of routine patient care, will be conducted quarterly after implementation of the pilot project. Variables include laboratory test results, changes in medication therapy and medical conditions, immunizations, drug and alcohol use and adherence to clinic appointments.	7a
Interim Pharmacy form. Pharmacy record abstraction will be conducted quarterly after implementation of the pilot project. The pharmacy record abstraction will collect data from pharmacy records on pharmacy services received, the nature of pharmacy services received, pharmacists' recommendations and interventions, pharmacists' consultation with partnered clinics and prescription refills.	8
Interviewer data collection worksheet. The Key informant interviews will be conducted twice with project staff during the project. The interviews will focus on project sites' work systems, processes and outcomes in relation to the model program.	10a
Staff communication questionnaire. A questionnaire will be administered to project site staff twice during the project. The interviews will focus on communication between the project sites' pharmacists and clinic staff.	11
Clinic cost form. Project clinics will document the time spent on project activities and associated costs for two one month periods during the project.	12

Pharmacy cost form. Project pharmacies will document the time spent on project activities and associated costs for two one month periods during the project.	13

Data Transmittal

The project clinics and pharmacies will send data to the grantee who will clean the data, resolve data discrepancies and then transmit the data to CDC. Data will be electronically transmitted to CDC through the CDC Secure Data Network (SDN). All data transmissions are automatically encrypted by the software that generates the transfer files. Security certificates are used to control access to the SDN.

Sample Size Justification

This project has a fixed maximum sample size of m = 10 sites and 100 participants per site, giving a total of n_{max} = 1000 participants. We account for the group structure of this non-randomized trial by assuming a standard intraclass correlation of ρ_{ICC} = 5%. We also account for the potential loss of retention by assuming that λ = 20% of participants will be lost to follow-up over the course of the project. We thus obtain an effective sample size of n_{ess} = 441. See Table 1 for the effective sample sizes (ESSs) for various intraclass correlations (ρ_{ICC}¿ and proportions of loss-to-follow-up (λ).

The primary outcomes are the binomial proportions of participants with a HIV diagnosis who (a) are retained in care (b) are virally suppressed (c) are adherent to HIV medication therapy. Retention in care will be defined as the percentage of patients who had at least one medical visit in each 6-month period of the measurement period with a minimum of 60 days between medical visits. A medical visit is any visit at the project clinic with a physician, nurse practitioner and/or a physician assistant. HIV viral load suppression will be defined as the proportion of participants with HIV viral loads < 200 copies/ml at the end of the project period. The *Proportion of Days Covered* (PDC) will be used to calculate adherence to HIV medication therapy. The PDC is defined as the total number of days a patient was in

possession of a medication divided by the number of days between the patient's last fill date and last fill date plus the days' supply of the last fill. These outcomes will be measured for all participants both at baseline (BL) and 24 months follow-up (FU). Thus, the data will be paired on each participant. Improvements (changes) in these outcomes will be tested using McNemar's test with a two-sided significance level of α = 5%.

We assume that the BL proportions for each of these three outcomes are (a) π = 45%, [1] (b) π = 75% [2] and (c) π = 69% [3] respectively. For the above effective sample size of n_{ess} = 441, we have 80% power to reject the null hypothesis of no change when the absolute increases in these proportions at FU for each of these three outcomes are at least (a) δ = 10%, (b) δ = 8%, and (c) δ = 9%, respectively. For the above effective sample size of n_{ess} = 441, we have 90% power to reject the null hypothesis of no change when the absolute increases in these proportions at FU for each of these three outcomes are at least (a) δ = 11%, (b) δ = 9%, and (c) δ = 10%, respectively. Tables 2 and 3

Table 1: Effective sample sizes for various intraclass correlations **(ρ_{ICC})** and proportions of loss to follow-up (LTFU, λ)

	intraclass correlation (ρ_{ICC})										
LTFU (λ)	**0.00**	**0.01**	**0.02**	**0.03**	**0.04**	**0.05**	**0.06**	**0.07**	**0.08**	**0.09**	**0.10**
0.00	1000	917	847	787	735	689	649	613	581	552	526
0.05	902	827	764	710	663	622	586	553	524	498	475
0.10	810	743	686	637	595	558	525	496	470	447	426
0.15	722	662	612	568	531	498	469	443	420	399	380
0.20	640	587	542	503	470	441	415	392	372	353	336
0.25	562	516	476	442	413	387	365	345	327	310	296
0.30	490	449	415	385	360	337	318	300	284	270	257
0.35	422	387	358	332	310	291	274	259	245	233	222
0.40	360	330	305	283	264	248	233	220	209	198	189

Table 2: Sample sizes required to have 80% power to reject the null hypothesis of no change from baseline to follow-up using McNemar's test with two-sided significance level of α = 0.05.*

	absolute increase from BL to FU (δ)								
BL % (π)	**0.05**	**0.06**	**0.07**	**0.08**	**0.09**	**0.10**	**0.11**	**0.15**	**0.20**
0.35	1474	1029	761	586	465	379	315	173	99

0.40	1537	1071	789	606	481	391	324	176	100
0.45	1568	1090	802	615	487	395	326	176	99
0.50	1568	1088	799	611	483	391	322	173	96
0.55	1537	1064	780	595	469	379	312	166	91
0.60	1474	1018	745	567	446	359	295	155	84
0.65	1380	951	693	527	413	332	272	141	76
0.70	1254	862	626	474	370	296	242	124	65
0.75	1097	750	543	409	318	253	206	103	52
0.80	909	617	443	332	256	202	163	78	--
0.85	689	463	328	242	184	143	114	--	--

*Assuming a minimal within-participant correlation of ϕ = 0.

Table 3: Sample sizes required to have 90% power to reject the null hypothesis of no change from baseline to follow-up using McNemar's test with two-sided significance level of α = 0.05.*

	absolute increase from BL to FU (δ)								
BL % (π)	**0.05**	**0.06**	**0.07**	**0.08**	**0.09**	**0.10**	**0.11**	**0.15**	**0.20**
0.35	1972	1377	1017	783	622	506	420	230	132
0.40	2056	1432	1056	811	642	522	432	234	133
0.45	2098	1459	1073	822	650	527	436	234	132
0.50	2098	1456	1069	817	645	522	431	230	128
0.55	2056	1424	1043	796	627	506	417	220	121
0.60	1972	1362	996	758	596	480	394	206	112
0.65	1846	1272	927	704	552	443	363	188	100
0.70	1678	1152	837	633	494	396	323	164	86
0.75	1467	1003	725	546	424	338	274	136	68
0.80	1215	825	592	443	341	270	217	104	--
0.85	921	618	438	323	245	191	151	--	--

*Assuming a minimal within-participant correlation of ϕ = 0.

3. Methods to Maximize Response Rate and Deal with Nonresponse

Most of the data collected for this project is routinely collected and archived by the project clinics and pharmacies and does not involve participant response to any surveys. A data manager at each clinic will collect the data and send the data to the grantee. The clinics will be funded to participate in the project and will be required to submit data as a condition of funding. Submission of data by the clinics is, therefore, expected to be high. The grantee will work with the project sites to address any problems with data collection and to resolve

data discrepancies. The grantee will electronically transmit the data to CDC.

4. Tests of Procedures or Methods to be Undertaken

Data collection for this project does not involve participant response to any surveys. Most data will be abstracted from the clinics' and pharmacies' archived patient medical and pharmacy records by project clinic and pharmacy staff. The data collection forms have been reviewed by project team members from CDC, Walgreens and the University of North Texas Health Science Center. In addition, input was received from clinicians at one large HIV-care clinic and from staff from the Health Resources and Services Administration and the National Minority AIDS Council.

5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

The following individuals were consulted on the statistical aspects of the project:

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Data will be collected form the project sites by the University of North Texas Health Science Center through a co-operative agreement.

References

1. Gardner, L, Giordano T, Marks G, Wilson T, Craw J, Drainoni M, Keruly J, Rodriguez A, Malitz F, Moore R, Bradley-Springer L, Holman S, Rose, Girde S, Sullivan M, Moore R, Metsch L, Saag M, Mugavero M. Enhanced personal contact with HIV patients across time improves retention in primary care: a randomized trial in six U.S. HIV clinics (unpublished data, under review in 2014)

2. CDC. Vital Signs: HIV Prevention Through Care and Treatment – United States. MMWR 2011; vol 60 (47): 1618-1623.

3. Murphy P, Cocohoba J, Tang A, Pietrandoni G, Hou J, Guglielmo BJ. Impact of HIV-specialized pharmacies on adherence and persistence with antiretroviral therapy. AIDS Patient Care STDS. 2012; 26(9): 526-31