Feasibility Study for an Evaluation of the Centers for AIDS Research

Final Report

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I. Introduction

Purpose of the Feasibility Study

The purpose of the Feasibility Study was to explore whether an Outcome Evaluation of the Centers for AIDS Research (CFAR) is both warranted and feasible, and, if warranted and feasible, to make recommendations regarding the design of the Outcome Evaluation.

About the CFAR Program

In 1989, the National Institute for Allergy and Infectious Disease (NIAID) funded 13 P30 grants under of the initial Centers for AIDS Research (CFAR) program. These grants were awarded to institutions with a substantial base of NIH funding for AIDS-related research. Their purpose was to provide for administrative support, shared research infrastructure, and coordination of AIDS research projects funded by other NIH grants and contracts. CFARs accomplished this through core facilities that provided expertise, resources, and services not otherwise readily obtained through traditional funding mechanisms.

The CFAR program was redesigned in1998 as a trans-NIH effort that included unique fiscal and scientific flexibility for the CFAR grantee institutions. Additionally, the focus was expanded to include all the basic, translational, and clinical AIDS research at the grantee institution. To help institutions implement this larger vision, a series of novel requirements that were peer reviewed and incorporated as “terms of award” for individual grants were instituted. These requirements included: a) development of a strategic plan; b) development of explicit policies and standard operating procedures; and c) formation of a mandatory CFAR Advisory Committee by each awarded institution.

CFAR is currently administered by the Pathogenesis and Basic Research Branch within the Basic Sciences Program in the Division of AIDS at NIAID. The management and coordination of the

program is achieved by the trans-NIH CFAR steering committee, which includes representation from the 8 participating ICs[1] and the Office of AIDS Research.

The current mission statement of the CFAR program was developed by the CFAR Principal Investigators and is revised on a regular basis. The program seeks to foster collaboration and scientific interaction among all types of AIDS research at an institution—the basic, clinical, epidemiological, behavioral, and translational research on the prevention, detection, and treatment of HIV infection and AIDS. The CFARs carry out this mission by:

- Providing scientific leadership and institutional infrastructure dedicated to AIDS research
- Stimulating scientific collaboration in interdisciplinary and translational research
- Promoting development of sustainable multidisciplinary HIV/AIDS research programs at each CFAR institution
- Strengthening capacity for HIV/AIDS research in developing countries
- Fostering scientific communication
- Sponsoring training and education
- Promoting knowledge of CFAR research findings and the importance of AIDS research through community outreach
- Promoting and supporting innovative NIH HIV/AIDS research initiatives
- Establishing collaborative research between CFARs, and supporting HIV/AIDS research networks
- Facilitating technology transfer and development through promotion of scientific interactions between CFARs and industry.

Additional information concerning the program mission can be found online at the following URL: www.niaid.nih.gov/research/cfar/mission2.htm.

[1] Participating ICs in addition to NIAID include: Fogarty International Center (FIC), National Cancer Institute (NCI), National Center for Complementary and Alternative Medicine (NCCAM), National Heart, Lung, and Blood Institute (NHLBI), National Institute of Child Health and Human Development (NICHD), National Institute on Drug Abuse (NIDA), and National Institute of Mental Health (NIMH).

II. Activities and Methods

In order to determine whether an Outcome Evaluation was warranted and feasible, the Science and Technology Policy Institute (STPI) engaged in the following activities:

- **Consulting with CFAR stakeholders,** including NIAID program staff members, CFAR steering committee members, and CFAR Principal Investigators. In particular, 2 focus for CFAR pricipal investigators were convened on March 2nd in Palm Springs, CA. Five Principal Investigators/co-PIs, as well as one Core Director participated, including representatives from large and small CFARs – UCSF, University of Washington, UCLA, University of Massachusetts, Baylor, and Emory University.
- **Developing a provisional logic model** that describes the inputs, activities, outputs, outcomes, impacts, and external influences of the CFAR program as currently understood. It is fully expected that the logic model will be further developed and refined as part of a CFAR Outcome Evaluation, should one occur.
- **Reviewing and analyzing existing data on the CFARs and potential comparison groups,** including all of the following:
    - Previous program reviews of CFAR
    - RFAs, meeting minutes, and other historical documentation
    - Funded Research Base (FRB) maintained by the NIH Office of AIDS Research (STPI methodology for FRB compilation and analysis attached as Appendix A)
    - Publications listed on MEDLINE for CFAR-affiliated personnel (STPI methodology for publication analysis attached as Appendix B)
    - Annual Progress Reports submitted by CFAR Principal Investigators (STPI methodology for analysis of progress reports attached as Appendix C)

Insights gained from the activities and analyses described above were used to develop recommendations for an Outcome Evaluation study design, including the following components:

- Framework and overall approach
- Study questions
- Recommended metrics
- Recommended data sources
- Appropriate analytic methods

III. Findings

Is a CFAR Outcome Evaluation warranted?

STPI found that a CFAR Outcome Evaluation is warranted for the following reasons:

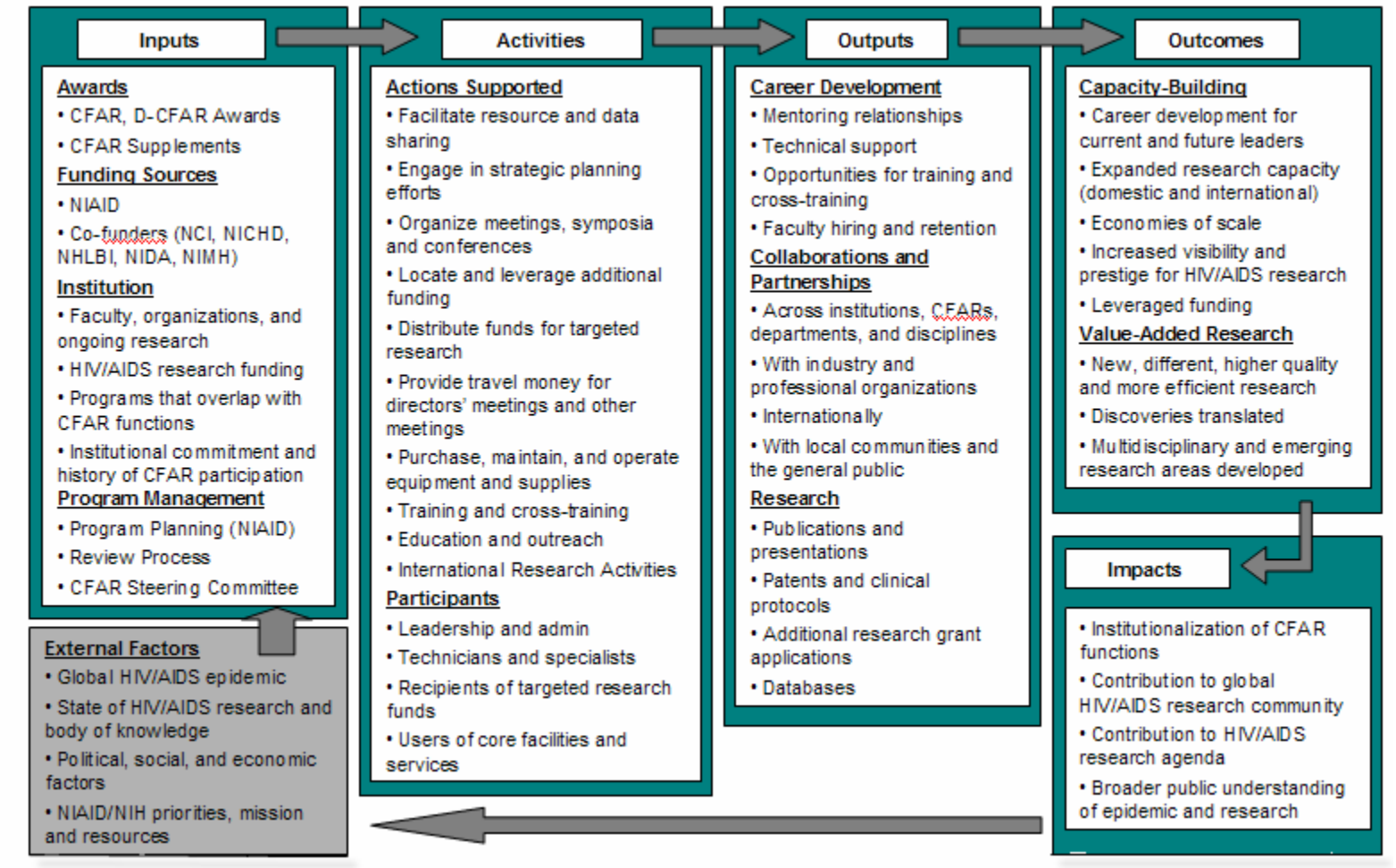
- **The CFAR program is sufficiently large and sufficiently important that evaluation is critical.** The current CFAR budget is approximately $28 M per year and there are currently 1.75 FTEs responsible for the day-to-day management and oversight of the CFAR program within NIAID. As one of serveral large-scale initiatives, the program therefore represents a significant portion of the NIAID HIV/AIDS research portfolio.

- **In the 17 year history of the CFAR program, there has never been a full-scale evaluation.** Periodic evaluation is critical to informing program management and strategic priority-setting. The last program review of the CFARs, which occurred in 1998/9, focused primarily on the program's transition from an NIAID-sponsored initiative to a program with broader participation across multiple ICs. The majority of the reviewers' recommendations appear to have been implemented, but there has been no formal external evaluation or review of the program in the 7 years that have passed since then.

- **CFAR activities, outcomes and impacts are sufficiently varied and complex that in-depth analysis beyond Feasibility Study is worthwhile.** In constructing a preliminary logic model for the program, our primary goal was to accurately represent the CFAR program with respect to inputs, activities, outputs, outcomes, impacts and external

influences. However, since an unwieldy or overly complex logic model is less useful as a guide for program evaluation, the need for accuracy in a logic model must always be balanced by the need to be concise.

Figure 1: Preliminary Logic Model for CFAR Program



As demonstrated in the preliminary logic model (Figure 1), a number of components of the CFAR program proved irreducably complex. This indicates that there are likely a variety of questions that could productively be answered by an Outcome Evaluation.

Is a CFAR Outcome Evaluation feasible?

STPI concluded that a CFAR Outcome Evaluation is feasible, but there are significant challenges that must be considered in any successful evaluation design. Findings that support feasibility include the following:

- **Stakeholder support for an evaluation is generally high.** The Principal Investigators we spoke with were enthusiastic about the prospect of an evaluation, and many indicated that they would be willing to help. Program staff and the steering committee were similarly enthusiastic.
- **Investigator Progress Reports can be used as a primary data source for several critical metrics.** As part of the Feasibility Study, we explored the feasibility of using internal program documents, with particular emphasis on the investigator progress reports. In general, we concluded that the progress reports can be used as a systematic source of data on for participants, core facilities, usage of core facilities, and translational research support. The reports also contain a wealth of descriptive and anecdotal data in a variety of other areas that may prove useful for context in providing context for the evaluation. The results of our analysis of the progress reports are discussed at length in Appendix C.
- **Additional NIH databases can be used as complementary data sources.** Extensive use can also be made of NIH databases, particularly for program inputs and outputs. The two we explored in depth as part of the Feasibility Study were the Funded Research Base (FRB) of HIV/AIDS-related funding at NIH maintained by the Office of AIDS Research (see Appendix A) and MEDLINE (see Appendix B).

Major challenges include the following:

- **CFARs are not homogenous.** In fact, there is significant variation among CFAR institutions with respect to the role and function of CFAR role as well as the goals,

activities, outputs, and outcomes of CFARs within institutions. The uniqueness of each individual CFAR was an issue raised by several Principal Investigators in the focus groups, many of whom were concerned about being judged by a common set of goals and standards that might not capture the strengths of their programs. This heterogeneity poses a particular challenge for quasi-experimental approaches to evaluation design.

- **Much of the information contained in the progress reports is not suitable as a stand-alone data source for the evaluation.** As described above, the progress reports do contain information that can be used as part of an Outcome Evaluation, but many of the tables and narratives are not currently structured in a manner condusive to systematic reporting. STPI's recommendations on how the progress reporting process might be modified to capture additional information in a manner condusive to use in future evaluations are included as Appendix D.
- **The Feasibility Study detected no differences in research productivity or research character between CFAR institutions and likely comparison groups.** Given the heterogeneity of CFARs discussed above, it was clear to us that the primary unit of analysis for an evaluation of the program would have to be the CFAR institution. We therefore reasoned that the most appropriate comparison group would be the set of institutions that were eligble to apply for CFAR grants because they had sufficient NIH HIV/AIDS research funds but had never been CFAR institutions. We identified 25 such institutions through analysis of the OAR FRB (Appendix A). As a very rough test CFAR effect on research productivity, we then compared volume of HIV/AIDS publications indexed on PubMed for CFAR institutions and other eligible institutions over time (Figure 2). We observed no obvious differences in publication volume between CFAR and non-CFAR institutions, nor was there a clear increase in publication volume for any given CFAR institution in the years following the CFAR grant beyond what would be expected given the overall trend towards increasing publication volumes at virtually all institutions eligible for CFAR. To test for differences in character of research, we also used visualization software to group the abstracts of these publications by CFAR institutions (Figure 3a) and eligible non-CFAR institutions (Figure 3b); again there were no obvious differences.

Figure 2: Number of PubMed-indexed HIV/AIDS publications listing CFAR institutions as affiliation of first author by year, 1991 and 1994 CFAR cohorts. Similar comparisons for the other 2 cohorts yielded similar results.

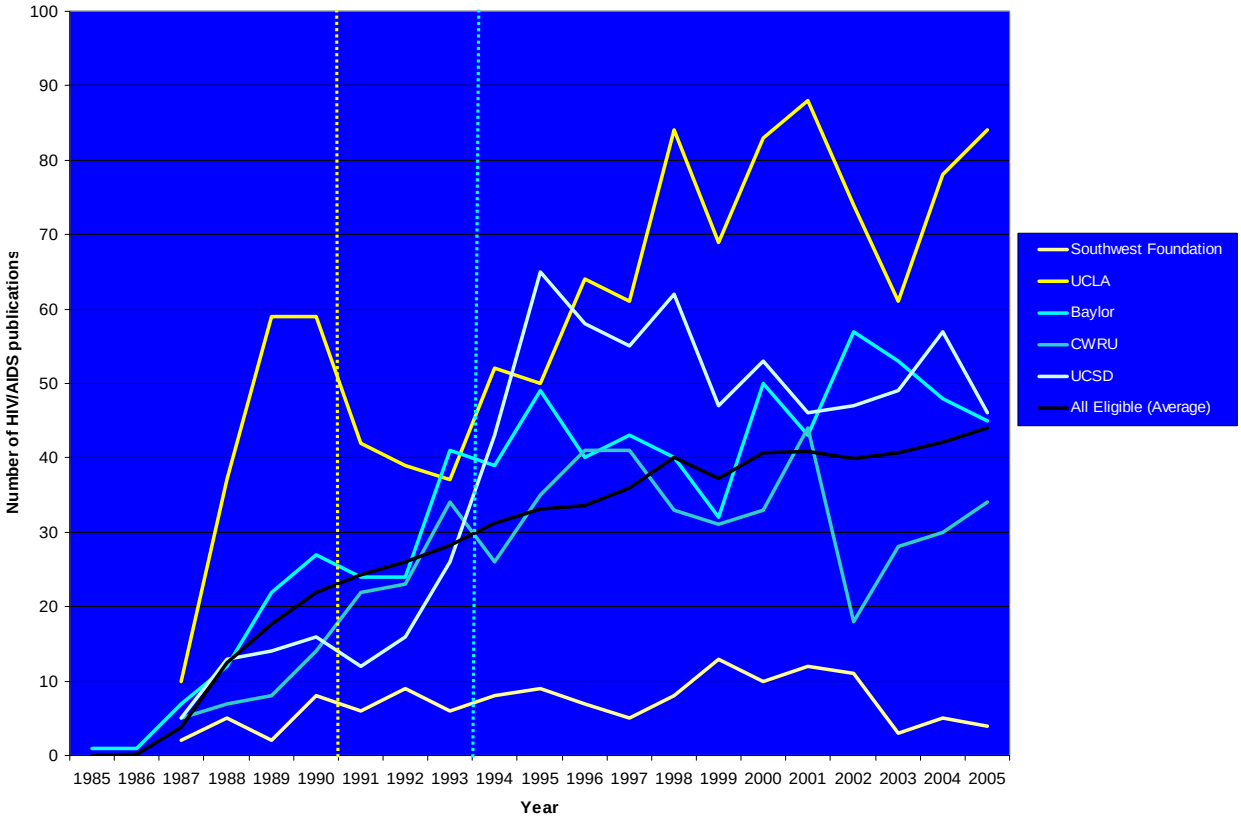


Figure 3a: Abstracts of PubMed indexed HIV/AIDS-related publications listing CFAR institutions as the affiliation for first author, 1985-2006.

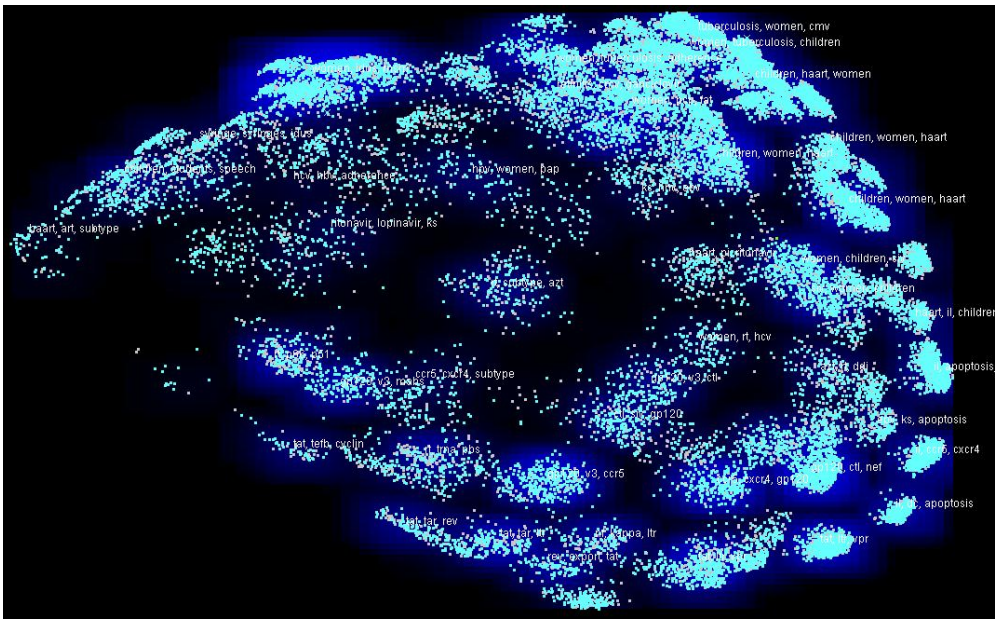
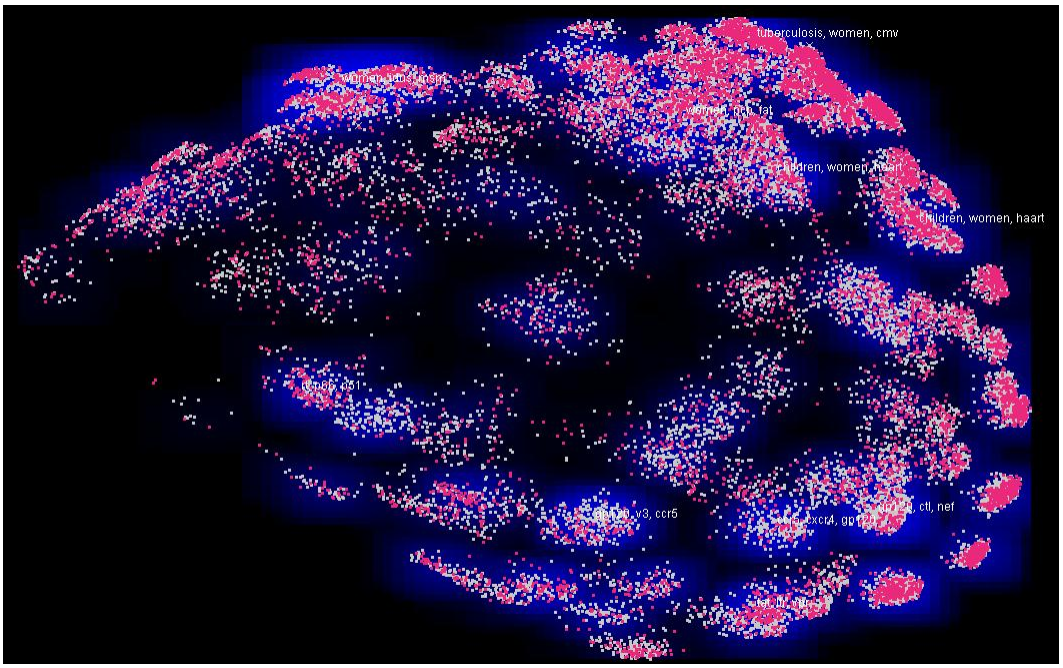


Figure 3b: Abstracts of PubMed indexed HIV/AIDS-related publications listing eligible non-CFAR institutions as the affiliation for first author, 1985-2006.



We wish to emphasize that it would be entirely inappropriate to conclude from this evidence that presence of CFAR does not effect an institution's research productivity or research character for a variety of reasons. First, these are crude output measures; for instance, total volue of publications tells us nothing about the relative importance of these publications. Second, it does not account for a variety of institution-specific inputs and external factors that likely influence CFAR effects. However, what these comparisons do suggest is that, if differences between CFAR institutions and non-CFAR institutions do exist, they are not so overwhelming that even the crudest comparisons can't fail to detect them. As discussed below, this finding has important implications for evaluation design.

IV. Recommendations for Design and Execution of CFAR Outcome Evaluation

Recommended Approach to Evaluation Design

There are three generic families of evaluation design that would ordinarily be considered for evaluation of a program such as CFAR:

- **Longitudinal** designs focus on changes in a program and its outcomes over time;
- **Cross-Sectional** designs aim to produce a current "snapshot" of a program and its outcomes;
- **Quasi-Experimental** approaches use comparison groups to draw conclusions about effects of the program.

In order to determine which option was best-suited for the CFAR Outcome Evaluation, we developed the following four assessment criteria:

1. Potential relevance of results to program and strategic planning;
2. Feasibility of collecting required data;
3. Potential payoff in terms of providing evidence for CFAR effect that will be compelling to stakeholders;
4. Risk of failure to detect differences and/or produce results that can be interpreted with confidence.

The longitudinal category was eliminated from consideration rather easily based on the first criterion; questions about evolution of the program over time would be academically interesting but, because of historical shifts in the epidemic and the state of knowledge/clinical practice, it is not clear that the program's past is relevant in moving forward. The advantages and disadvantages of the remaining two approaches for the CFAR evaluation were then considered more carefully. These are summarized below:

<u>Advantages of Cross-Sectional Approach</u>

- Well-suited to address a broad range of evaluation questions including process and outcome;
- Units of analysis can include the program, institution, and CFAR as relevant;
- Current state of the program is likely most relevant moving forward.

<u>Disadvantages of a Cross-Sectional Approach</u>

- Evidence linking CFAR to outcomes would be more qualitative than quantitative;

- Design not well-adapted for rigorous comparisons.

Advantages of a Quasi-Experimental Approach

- When sample size is adequate and appropriate confounders are included in the analysis, provides strong quantitative evidence.

Disadvantages of a Quasi-Experimental Approach

- Since there are 20-27 CFAR institutions and large number of relevant input variables, statistical power to detect differences will be low—and, as discussed above, the Feasibility Study findings suggests that differences between CFAR and eligible institutions are not overwhelmingly large to begin with;
- Would require extensive new data collection about inputs and outputs at institution level, and much of this information is unknown to the institutions themselves;
- Identification and bounding of CFAR institutions and appropriate comparison groups not necessarily straightforward;
- External comparison institutions have no incentive to cooperate.

Applying the criteria discussed above, we came up with the following matrix:

Criterion	Cross-Sectional	Quasi-Experimental
1. Relevance of results to program planning	High	High
2. Feasibility of collecting required data	High	Low
3. Potential payoff in terms of providing evidence for CFAR effect that will be compelling to stakeholders	Medium	High
4. Risk of failure to detect differences and/or produce results we can interpret with confidence	Low	High

Based on this evidence, STPI recommends a cross-sectional approach to the CFAR Outcome Evaluation Design. Such an approach is likely to provide information that will help NIAID in moving forward with the program. It will also allow evaluators to address a broad range of evaluation questions encompassing the entire logic model and make the best use of existing data and most feasible to collect additional data needed. Most importantly, although the evidence it provides may be less compelling than a quasi-experimental approach, such an approach is most likely to demonstrate actual effects of CFAR with least risk of failure.

Details of Recommended Design for CFAR Outcome Evaluation

The details of the recommended evaluation design are discussed at length in the Proposal for Set-Aside Funds, which is attached as Appendix E. What follows, therefore, is a brief overview of the design parameters. Please consult the full proposal for additional details.

The proposed cross-sectional design would collect and analyze cross-sectional data about the CFAR program, CFAR institutions, and CFARs themselves in the most recent program years. There would be no explicit comparison with external institutions or programs since the results of such comparisons could not be interpreted with confidence unless the data collection was designed around such an effort (as it would be in a quasi-experimental approach). The period of 1999-2005 is recommended since it covers the time since the last program review.

Proposed study questions, variables, metrics, and data sources are summarized in Figure 5. Data Sources would include a review of award documents (e.g. progress reports, applications, renewal applications, and summary statements), NIH databases (e.g. FRB, IMPAC II), program documents (e.g. RFAs, Steering Committee meeting minutes), external documents and databases (e.g. university websites, PubMed, USPTO databases), a survey of CFAR leaders (Principal Investigators and Core Directors), and interviews with NIH stakeholders. The survey data collection would likely require OMB clearance.

In addition to the main cross-sectional data collection, our proposed design would also include a case study component in order to gather qualitative evidence on how CFAR activities lead to outputs, outcomes, and impacts. The main purpose of the case studies will be to explore whether and how CFAR activities resulted in the measured outcomes. We recommend 5-6 case studies

focused on particular CFAR institutions. It would probably be most effective to choose case study institutions by defining "bins" of institution types and asking for volunteers to maximize cooperation. Examples of institution types of interest might include:

- Larger (FRB>$40 million) vs. Smaller ($6-$40M)
- Mature (5+ years) vs. Newer (<5 Years)
- CFAR that has left the program and returned?
- CFARs perceived as "successes" or "failures" ?

A detailed case study methodology would have to be worked out as part of the study design process, but we anticipate that it would include the following elements:

- **Participant Questionnaire.** One questionnaire would likely be distributed to all CFAR participants at each case study institution. The purpose would be to collect additional cross-sectional data and attribute data on participants for social network analysis. The timing of this questionnaire should be concurrent with the main component.

- **Supplemental Interviews or Site Visits.** Interviews would be conducted with CFAR leadership, administrator, junior and senior investigators, community members, others as relevant. These content of these interviews would focus on the *process* by which CFAR funding led to measured outcomes. Since the protocols for these interviews will depend on identification of specific outcomes, this activity should take place after preliminary analysis of the cross-sectional and survey data.

Figure 5: Matrix of Proposed Study Questions, Variables, Metrics, and Data Sources for CFAR Outcome Evaluation.

Evaluation Questions	Variables	Metrics	Award Docs				NIH Databases		Program Docs			External Docs and Databases				Surveys		Interviews	
			Progress Reports	Original Apps	Renewal Apps	Supplement Apps	OAR FRB	IMPACII	Steering Committee Docs	PAs/RFAs	Summary Statements	University Websites	USPTO Database	ClinicalTrials.gov	MEDLINE	Leadership Survey	Participant Survey (case study institutions only)	NIAID Program Staff	Other ICs
Awards and Funding																			
1. What are the basic characteristics of the CFAR awards, D-CFAR awards, and CFAR Supplements? How have these changed over time? Which NIH ICs provide co-funding and at what levels?	CFAR and D-CFAR Awards	Award number; year; total dollar value; PI; recipient institution; NIH co-funders; co-funding amounts					X	X											
	Supplements	Award number; year; total dollar value; PI; recipient institution; NIH co-funders; co-funding amounts; topic/type of research					X	X											
Institutional Context																			
2. What is the range of variation among awardee institutions (pre and post CFAR) with respect to eligible entities and HIV/AIDS Research	Eligible Entities	Name; type of institution; dollar value of research funding base; types of research conducted; geographic location; number of affiliated					X					X							

Funding?		faculty/staff																		
	HIV/AIDS Research Funding	For NIH awards: mechanism, institute, award number, years, total dollar value, title, and abstract; For others: source and total dollar value					X									X				
3. What niche does CFAR occupy within the institution? Do other programs or organizations within the institution overlap with CFAR functions?	CFAR Role	Qualitative assessment of role of CFAR within the institution (e.g. “top level” function or “gluing” function or other?); programs or mechanisms that overlap with CFAR function														X				
Program Management																				
4. Have the applicant pool and success rates changed over time? Does the D-CFAR appear to have the intended effect? In general, does the review process appear to select the best candidates?	Review Process	Application and success rates; priority scores; selection criteria; qualitative analysis of summary statements						X			X							X		

5. Have programmatic changes been generally responsive to the needs of the CFARS? Have they been responsive to changes in external factors such as the nature of the epidemic, the state of knowledge, funding landscape, etc.?	Program Planning-Outcomes	Changes in the RFA; leaders' perceptions regarding responsiveness to CFAR needs; perceptions regarding responsiveness to epidemic								X						X		X	X
6. Who participates in strategic decision-making at the program level? How are program priorities determined? Are the priorities of NIH co-funders taken into account?	Program Planning-Process	CFAR program goals; NIAID priorities; missions of co-funding ICs; evidence of participation in planning by co-funders and other stakeholders; qualitative information on process																X	X
7. What is the role of the CFAR Steering Committee?	Steering Committee	Membership; number of active participants; topics addressed; evidence for inter-CFAR collaboration						X										X	
CFAR Management																			
8. How are strategic decisions made at the level of the CFAR? Who participates?	CFAR Planning	Specific aims; details of planning processes at the program level		X	X											X			
	CFAR Organization	Structural elements (e.g. core types, advisory bodies, etc.); details of management processes at the core		X	X											X			

		level																	
9. How do the CFARs differ with respect to use of award funds? Is the current level of flexibility with respect to use of award funds adequate and appropriate?	CFAR Expenditures	Dollar value of expenditures by core; dollar value of expenditures by type; dollar value of expenditures by domestic/international; PI and core director opinion on spending constraints	X													X			
Participants																			
10. What are the types and basic demographic characteristics of participants who benefit from CFAR directly or indirectly?	Individuals Receiving Direct Salary Support	Name; role; % of FTE; training or specialized skills; years since highest degree; departmental/school/hospital affiliation; gender; race/ethnicity; research foci	X	X	X							X							
	Individuals Receiving Research Support	Name; years since highest degree; departmental/school/hospital affiliation; gender; race/ethnicity; research interests; dollar value of award	X		X							X				X			
	Individuals Receiving Supplements	Name; years since highest degree; departmental/school/hospital affiliation; gender; race/ethnicity; research interests;				X		X				X							

		dollar value of award; topic of research																	
	Users of CFAR Facilities and Services	Name; departmental/school/hospital affiliation; NIH award	X									X				X			
Activities and Outputs																			
11a. What are the main types of research **coordination** activities that the CFARs engage in? Have these changed over time?	Strategic Planning	Type and purpose of activity; number of participants	X	X	X											X			
	Resource and Data Sharing	Type of resource or data shared; source of data or resource; sharing mechanisms; users	X		X											X			
	Meetings, Conferences, and Symposia	Purpose of meeting; number and type of attendees	X		X											X			
	Funding for Targeted Research	Awards granted; dollar value; restrictions on spending; selection process; number of applicants; success rate; purpose of awards	X		X											X			
	Travel Support	Dollar value of travel awards	X		X												X		
11b. What are the main types of research **support**	Equipment and Supplies Purchased	Type of equipment or supplies purchased; primary uses														X			

activities that the CFARs engage in? Have these changed over time?	Training and Cross-Training	Type of activity; purpose of activity; number of participants; area of training; research interests and training of participants	X		X											X			
	Education and Outreach	Type of activity; purpose of activity; geographic range; type and approximate number of community members involved	X		X											X			
	Recruiting and Hiring	CFAR-related hires; recruiting activities	X		X											X			
	Technical Support	Type of support provided (e.g. biostatistics, equipment techniques); number of instances; training, affiliation, research area, and seniority of person supported	X		X											X			
12. What international research activities do the CFARs engage in?	International Research Activities	Number and type of activities; total dollar value; geographic location; identity of international participants; origin of collaboration	X		X											X			
13. Which of the CFAR activities are fully funded by the award? If there is external co-funding, where does it come	Co-Funding (External)	Source, type, and value of co-funding for CFAR activities														X			

from?																				
Research Enabling Outcomes																				
14. How and to what extent have the CFARs created and strengthened research collaborations and partnerships across CFARs, institutions, departments, disciplines, and sectors?	*Informal Collaborations*	*Names of collaborators; character of collaborations (define categories based on qualitative data); timing of collaborations*																X		
	Formal Collaborations	Co-citations															X			
15. What are the quantity, quality, pace, and character of CFAR-enabled research?	CFAR Research	Standard bibliometric data for publications resulting from Supplements and direct core funding	X		X															
	CFAR Research Outputs (Indirect)	Standard bibliometric data for affiliated publications															X			
	Pioneering Research	Qualitative assessment of "ahead-of-the-curveness"															X	X		
	Research Productivity	Research output units per dollar of CFAR funding; outputs per dollar of FRB					X										X			

	Inclusion of Under-Represented Groups	Qualitative assessment of extent and mechanisms														X				
16. How does the distribution of research outputs by topic and field vary among the CFARs? Does it appear to be well-correlated with the distribution of co-funding by IC?	Research Foci	Clustering of research by topic; correlation with co-funding amounts and co-funder priorities; research thrusts													X	X				
17. How and to what extent are CFAR core facilities and resources used to enhance or facilitate research supported by NIAID, other ICs, and funding sources outside NIH?	Synergies	Other funding sources for CFAR participants; percentage of FRB awards reported as users; breakdown by IC; qualitative data on whether/how CFAR contributes to research	X				X	X								X				
18. Does CFAR result in translational products?	Patents	Title and patent number; CFAR personnel involved	X										X							
	Clinical Trials	Phase and purpose of clinical trials; CFAR personnel involved	X											X						
	Clinical Protocols	Type and purpose of clinical trials; CFAR personnel involved	X													X				
	Other Translational Products	Type and purpose; CFAR personnel involved	X	X	X								X	X		X				
Capacity-Building Outcomes																				
19. Have the CFARs played a role in	*Mentoring*	*Availability of mentoring; quality of*															X			

developing the careers of HIV/AIDS investigators?		*mentoring*																	
	Hiring and Retention	*Number of new faculty members hired; years since PhD for new hires; faculty retention rates*										X				X			
	Social Networking	*Collaboration network analysis*															X		
	Career Milestones	Number of first-time HIV/AIDS T-awards, K-awards, and R01s; *tenure rates; average time to tenure*					X										X		
20. Have the CFARs helped to locate and leverage additional funding for HIV/AIDS research?	Leveraged Funding	Growth in total FRB and other HIV/AIDS research funding (number of awards by category and total dollar value); follow up to developmental awards	X				X									X			
21. Is there evidence that the CFAR awards have resulted in economies of scale?	Data and Resource Sharing	Type of data or resources shared; estimated dollar value; mechanisms for sharing (all qualitative)														X	X		
22. Does CFAR help to increase the visibility and prestige of HIV/AIDS research and researchers at an institution? Does this increase the	Visibility/Prestige	Qualitative assessment														X	X		
	Institutional Capital	Square footage assigned to HIV/AIDS research departments/personnel; geographic proximity; qualitative assessment	X		X											X			

HIV/AIDS research community's leverage with the institution's leadership?																				
23. Have the CFARs helped to build international research capacity?	International Research Capacity-Building	Total dollar value of funds supporting non-US research staff; total dollar value of funds invested in research infrastructure abroad; number and type of collaborations with international researchers	X		X											X	X			
Impacts																				
24. At the institutions with the longest history of participation, is there evidence that activities that were originally supported by CFAR have been absorbed into the institutional infrastructure?	Institutionalization of CFAR Functions	Qualitative assessment (focus on the CFARs that lost funding?)														X				
25. Have the CFARs helped to develop or enhance a sense of community among HIV/AIDS researchers at awardee institutions and beyond?	Impact on National and Global HIV/AIDS Research Community	Qualitative assessment														X				

26. Has CFAR led to broader public understanding of HIV/AIDS as a disease, epidemic, and field of research?	Impact on Public Perception/Understanding of HIV/AIDS Research	Qualitative assessment														X				
27. Have the CFARs helped to shape the agenda for HIV/AIDS research?	Impact on Global HIV/AIDS Research Agenda	Qualitative assessment; comparison of timing with contents of major strategy documents														X				

Appendix A: Memo on Analysis of Office of AIDS Research Funded Research Base

MEMORANDUM

TO: Madelon Halula, NIAID

FROM: Brian Zuckerman, Research Staff Member, STPI

SUBJECT: Compiling the Funded Research Base Information

About the Database Prepared by STPI

CFAR program staff provided STPI with OAR FRB spreadsheets for 1999-2004, including separate spreadsheets for each year as well as individual spreadsheets for certain institutions or groups of institutions. STPI compiled the raw data from all of these spreadsheets into a single FRB spreadsheet/database. We also added some coded and/or calculated fields for analytical purposes. Our goals in doing so were twofold:

1. To facilitate integration with other data collection and evaluation design activities (e.g., identification of publications from MEDLINE, identification of comparison groups) ;
2. To facilitate analysis of these data in order to answer questions that may be relevant to the outcome evaluation or of more general interest (e.g., what has been the distribution of HIV/AIDS funding by IC over time; which institutions account for the largest percentage of HIV/AIDS funding; what fraction of HIV/AIDS funding is in the FRB).

The resulting database schema is described below. Fields taken directly from the FRB data are shown as plain text, and source information is included in the description. Fields based on STPI's analysis are shown in italics.

Column	Heading	Description
A	*In FRB?*	*STPI used the NIH Activity Codes eligible for being in the FRB from the 2003 program announcement to code the awards. "TRUE" denotes awards in the FRB; "FALSE" denotes those that are not. N01 awards are coded as "?"*
B	*In CFAR?*	*Institutions that were part of a CFAR at any point between 1989-2004*

		were coded as "TRUE"; institutions that have never been CFAR recipients with > $6 million in FRB [or identified as being as part of a group of institutions with > $6 million in FRB based on the individual OAR spreadsheets] were coded as "Eligible"; all others were coded as "FALSE"
C	*Which?*	*For institutions coded as "Eligible" or "TRUE" in column B, column C shows with which CFAR (or potentially CFAR-eligible institution/group) they are affiliated. Others are coded as "N/A"*
D	*FY*	*The fiscal year of the source FRB data*
E	Name of Institution	Column B of the base FRB spreadsheets
F	*Series*	*Calculated from the activity code (column G)*
G	ACT	Column C of the base FRB spreadsheets – represents the NIH Activity Code
H	*Short Project Number*	*Calculated from the project number (column J) to allow for tracking awards across fiscal years*
I	*Lead Institute*	*Calculated from the project number (column J)*
J	Project Number	Column D of the base FRB spreadsheets
K	*Total*	*Sum of the individual institutes' funding listings (columns L-S)*
L-S	(various)	Individual institute funding listings (columns E-K of the FY 1999-2000 spreadsheets and E-L of the FY 2003-FY 2004 spreadsheets). The FY 1999-2002 spreadsheets don't have a separate NCCAM column, so for those years a search was performed for all awards with "AT" in column I, and funding was moved from the "Other" column [Column S] to the "NCCAM" column [Column L]
T	Principal Investigator	Column L/M of the base FRB spreadsheets
U	Title	Column M/N of the base FRB spreadsheets

We have also included an Excel pivot table with a data range that is pre-defined to access all of the FRB information. When delivered, the pivot table will be set to show total funding by fiscal year for each CFAR and potentially eligible CFAR grouping. The pivot table can be manipulated to cross-tabulate any fields of interest.

A Few Interesting Facts that Flow from the Database

- The FRB may represent more than 70% of total NIH HIV/AIDS (though that may be too high, given the missing N01 and intramural data)
- 22 of the NIH ICs had at least one award in the FRB.
    - NIAID accounts for just under half the total HIV/AIDS funding, and just over half the dollars in the FRB.
- Institutions that have participated in a CFAR account for 53-54% of the total FRB funding between 1999-2004; those potentially eligible account for an additional 21-23%

- While some CFAR institutions have grown their research bases substantially between 1999 and 2004 (e.g., Vanderbilt), the overall rate of growth in the FRB for CFARs is comparable to the growth in overall HIV/AIDS FRB. This suggests that CFARs are probably not "capturing" funds from non-CFARs on a large scale during this period.
- There are approximately 25 institution groups potentially CFAR-eligible that have never participated in the program – but only the Great Lakes consortium would be a "medium-tier" [e.g., $40-80M] CFAR.
- The five largest CFARs (Harvard, Johns Hopkins, Washington, UCLA, UCSF) account for 27% of the FRB total dollar value ($448M in 2004 out of an FRB of $1.66 billion).
- CFARs get 55% of their FRB funds from NIAID, while those potentially eligible get about 45% of their FRB funds from NIAID.

Implications for an Outcome Evaluation

- There may be no feasible comparison group for the largest of the CFARs (the top five) or even for the medium-tier CFARs
- Considering interactions between NIAID-funded and non-NIAID funded HIV/AIDS research and the role played by CFARs as institutional coordination mechanisms for HIV/AIDS research would be warranted.
- It may not be fruitful to consider the role of CFAR as "leverager" of new NIH funds

Appendix B: Memo on Analysis of Publications Databases

MEMORANDUM

TO: Madelon Halula, NIAID

FROM: Brian Zuckerman, Research Staff Member, STPI

SUBJECT: Compiling the MEDLINE publication information: Interim publication list

About the Database Prepared by STPI

On March 10th, 2006, STPI searched for and downloaded bibliographic reference data for all HIV/AIDS-related, MEDLINE-indexed publications that listed CFAR-participating and eligible institutions as the primary affiliation for the corresponding author (for more detail on search parameters, please see Appendix A). Nearly 30,000 HIV/AIDS-related publications were identified for these institutions, ranging from institutions/groups publishing thousands of HIV/AIDS papers (e.g., Johns Hopkins, the combined Harvard institutions) to those publishing dozens (e.g., the University of Hawaii). These data were compiled into a single database of publications spanning the time period from the late 1980s to the beginning of 2006.[2] Our goals in compiling this database were twofold:

3. To test the feasibility of several strategies for identifying and attributing publications to CFAR institutions;
4. To test the feasibility of using abstracts or MeSH Terms to classify the research and research strengths of academic institutions, both to identify potential comparison groups and to test the feasibility of using text analysis and data visualization techniques in outcome evaluation design.

The resulting database schema is described below. Fields in italics were coded, calculated, or standardized by STPI, while those in plain text were downloaded directly from MEDLINE. For those fields where data are incomplete, the percentage of publications with complete information is reported in the description column.

Column	Heading	Description

[2] Time period is approximate because "HIV" and "AIDS" were becoming standard terms in the 1980's; however, reporting of publication data should be consistent in the time period relevant to the evaluation.

A	In CFAR?	Institutions that were part of a CFAR at any point between 1989-2004 were coded as "TRUE"; institutions that have never been CFAR recipients with > $6 million in FRB [or identified as being as part of a group of institutions with > $6 million in FRB based on the individual OAR spreadsheets] were coded as "Eligible
B	Which?	Column B shows with which CFAR (or potentially CFAR-eligible institution/group) they are affiliated.
C	Likely Real?	STPI attempted to identify false positives from the MEDLINE queries (e.g., publications regarding hearing aids or visual aids) "True" indicates that a publication is probably HIV/AIDS related.
D	PMID Institution	PubMed ID number (133 publications or 0.5% report affiliations from multiple institutions)
E	PubModel	Available via print,electronically only, or both
F	ISSN	ISSN number of journal in which article was published
G	Volume	Journal volume number (complete for 99% of publications)
H	Issue Number	Journal issue number (complete for 94% of publications)
I	Year	Year of publication (complete for 94% of publications – but of the 6% missing year information, a few articles from many journals lack the information rather than all articles from a few journals, so manual standardization will be necessary)
J/K	Month/Day of publication	Month and day of publication (85% have month, 25% have day)
L/N	Journal Title (up to 3)	Column N (Medline title) is 100% complete, other two title columns represent variations on journal names
O	Title	Article Title
P	Pages	Page reference (99.6% complete, 100% complete for all years before 2005 – missing generally when publication is electronic)
Q	Abstract	Article abstract (83% complete)
R	Affiliation	Affiliation of corresponding author(s)
S	Publication Type	Is the publication a regular article, a review, a clinical trial, etc.
T	Language of Publication	Almost all English
U	Country of Journal in which published	Mostly U.S.
V	Keywords/ MeSH terms	96% complete
W	Second-level	95% complete

	MeSH terms	
X	Grant Agency and Number	49% complete – cannot be used for evaluation purposes
Y	# of references cited	15% complete – cannot be used for evaluation purposes
Z	Author list complete	99.9% complete – can trust the author lists
AA-end	Authors	Three columns per author (e.g, Author 1 is columns AA-AC) with first column the last name, second column Author first name, and third column author initials. Can therefore concatenate to identify full author names for comparability across publications

A Few Interesting Observations Based on Preliminary Analysis of the Database

- Between 1987 and 2005, we identified 17,521 publications with corresponding authors from "CFAR-affiliated" institutions and 9,265 from "CFAR-eligible" institutions
- The Harvard-affiliated institutions combined for 2,409 publications (9% of the publications in the database), followed by the Johns Hopkins investigators at 1,880 (7%), the combined Great Lakes/Rush investigators at 1,656 (6%), and the combined Aaron Diamond/Columbia/Rockefeller investigators at 1,417 (5%).
- A very preliminary count of the total number of publications suggests that there is no obvious indication that the CFAR institutions generate more publications per $ of FRB-funding than do the CFAR-eligible institutions. The outcome evaluation could use a range of tools (including bibliometric analysis or more sophisticated statistical analysis of the publication data) to identify whether CFAR institutions publish more highly cited/higher impact publications.
- A very preliminary text analysis of publication abstracts suggests that there is no obvious indication that the CFAR institutions are engaged in wholly different areas of research than are the other large, potentially CFAR-eligible institutions. The outcome evaluation could use a range of more sophisticated techniques – including matching of pairs and analysis of areas of research over time – to identify whether CFARs are more likely to pioneer new areas of research than comparison groups.

Implications for an Outcome Evaluation

1. Any changes to the groupings of organizations will result in changes to the publications, so that this is a highly interim list subject to change. We constructed a list of eligible institutions from the FRB as our set of search terms (Appendix A), but one could imagine that we should also cast a slightly broader net – for example, including hospitals/clinics/local government agencies that have affiliations with a CFAR. Taking a more expansive definition may not be feasible.
2. This publications database likely differs substantially from the actual CFAR-attributable publications in at least the ways listed below. However, the only viable alternative data source for publications (the publications listed in the CFAR progress reports) is also

potentially problematic-- major drawbacks include a lack of consistency in terms of inclusion criteria (which we can't correct for), as well as a non-standard reporting format that will require time-consuming manual extraction. We will need to discuss the shortcomings of each data source and make some difficult decisions about how to make best use of both sources on in the outcome evaluation.

   a. This list likely includes publications that are not attributable to CFAR (e.g., there are many articles regarding HIV/AIDS health economics that may not reflect CFAR involvement) but may not include types of publications in which CFARs are involved (e.g., basic immunology/virology research that the authors do not explicitly connect with HIV/AIDS but is still CFAR relevant).
   b. Because publications are identified based on the affiliation of corresponding authors, this database will not include publications where CFAR-affiliated researchers were collaborators unless the corresponding author was also affiliated with a CFAR institution.

3. We had hoped to make use of the "grants cited" field in the MEDLINE data for attribution to CFAR. However, as only a small fraction of publications cite the underlying CFAR award, using the citation of the underlying award (either from this database or using IMPAC II) likely will strongly underestimate the number of CFAR-attributable publications.
4. The abstract, title, and keyword fields from this database can be imported into text analysis software and visualized by CFAR, over time, or across CFARs. This is something we can explore as part of the Feasibility Study if it would be of interest to NIAID.
5. In order to identify collaboration patterns across institutions or departments/fields through network analysis as part of the Outcome Evaluation, it would be necessary first to standardize author names and then to identify the institutional affiliations of the authors. That may be possible for CFAR-affiliated investigators, but it would be considerably more difficult for non-CFAR-affiliated investigators.

Appendix A – MEDLINE Search Parameters

CFAR Queries Included in Database

- (HIV OR AIDS), (UCLA[Affiliation] OR Cedars-Sinai[Affiliation] OR Brentwood Biomedical Research Institute[Affiliation] OR Charles Drew[Affiliation] OR Charles R. Drew[Affiliation] OR University of California Los Angeles[Affiliation] OR University of California, Los Angeles[Affiliation] OR University of California at Los Angeles[Affiliation])
- (HIV OR AIDS), (University of Massachusetts at Worcester[Affiliation] OR University of Massachusetts Medical School[Affiliation]OR University of Massachusetts, Worcester[Affiliation] OR University of Massachusetts Worcester[Affiliation])
- (HIV OR AIDS), (GIVI[Affiliation] OR University of California at San Francisco[Affiliation] OR Northern California Institute[Affiliation] OR UCSF[Affiliation] OR Gladstone Institute[Affiliation] OR University of California San Francisco[Affiliation] OR University of California, San Francisco[Affiliation])
- (HIV OR AIDS), (Aaron Diamond[Affiliation] OR Columbia University[Affiliation] OR Rockefeller University[Affiliation] OR New York State Psychiatric Institute[Affiliation])
- (HIV OR AIDS), (Baylor[Affiliation] OR University of Texas Medical School at Houston[Affiliation] OR MD Anderson[Affiliation] OR University of Texas-Houston[Affiliation] OR M.D. Anderson[Affiliation] OR University of Texas, Houston[Affiliation] OR University of Texas Health Sciences Center, Houston[Affiliation] OR University of Texas Health Sciences Center Houston])
- (HIV OR AIDS), (CWRU[Affiliation] OR Case Western[Affiliation] OR Cleveland Clinic[Affiliation])
- (HIV OR AIDS), (Duke University[Affiliation])
- (HIV OR AIDS), (Emory University[Affiliation] OR Emory School[Affiliation])
- (HIV OR AIDS), (Harvard University[Affiliation] OR Harvard School of Public Health[Affiliation] OR Massachusetts General Hospital[Affiliation] OR Harvard Medical School[Affiliation] OR Brigham and Women's Hospital[Affiliation] OR Brigham and Womens Hospital[Affiliation] OR Beth Israel Deaconess[Affiliation] OR Beth Israel-Deaconess[Affiliation] OR Dana Farber[Affiliation] OR Dana-Farber[Affiliation] OR Center for Blood Research[Affiliation] OR Harvard Institutes of Medicine[Affiliation] OR Children's Hospital, Boston[Affiliation])
- (HIV OR AIDS), (Johns Hopkins[Affiliation])
- (HIV OR AIDS), (Brown Medical School[Affiliation] OR Brown University[Affiliation] OR Miriam Hospital[Affiliation] OR Tufts University[Affiliation] OR Roger Williams Hospital{Affiliation] OR Fenway Community Health[Affiliation] OR Rhode Island Hospital[Affiliation] OR Women's and Children's Hospital Rhode Island[Affiliation] OR Women's and Children's Hospital, Rhode Island[Affiliation])
- (HIV OR AIDS), (University of California at Berkeley[Affiliation] OR University of California at Davis[Affiliation] OR Stanford University[Affiliation] OR Stanford Medical School[Affiliation] OR University of California Davis[Affiliation] OR University of California, Davis[Affiliation] OR University of California Berkeley[Affiliation] OR University of California, Berkeley[Affiliation])
- (HIV OR AIDS), (New York University[Affiliation])
- (HIV OR AIDS), (University of Pennsylvania[Affiliation] OR Wistar[Affiliation] OR Children's Hospital, Philadelphia[Affiliation] OR Children's Hospital of Philadelphia[Affiliation])
- (HIV OR AIDS), Purdue University[Affiliation]

- (HIV OR AIDS), (University of Texas Health Science Center San Antonio[Affiliation] OR University of Texas Health Science Center at San Antonio[Affiliation] OR Southwest Foundation[Affiliation])
- (HIV OR AIDS), (University of Colorado, Denver[Affiliation] OR University of Colorado at Denver[Affiliation] OR University of Colorado Health Sciences[Affiliation] OR Colorado State University[Affiliation] OR (Denver[Affiliation] AND Hospital[Affiliation]) OR National Jewish Research[Affiliation])
- (HIV OR AIDS), (University of Alabama at Birmingham[Affiliation] OR University of Alabama - Birmingham[Affiliation] OR University of Alabama, Birmingham[Affiliation] OR Southern Research Institute[Affiliation])
- (HIV OR AIDS), (University of California San Diego[Affiliation] OR University of California at San Diego[Affiliation] OR Scripps[Affiliation] OR La Jolla Institute[Affiliation] OR Salk Institute[Affiliation] OR (Veterans[Affiliation] AND San Diego[Affiliation]))
- (HIV OR AIDS), (Family Health International[Affiliation] OR University of North Carolina Chapel Hill[Affiliation] OR University of North Carolina, Chapel Hill[Affiliation] OR (University of North Carolina[Affiliation] AND Chapel Hill[Affiliation]) OR Research Triangle Institute[Affiliation] OR University of North Carolina School of Medicine[Affiliation] OR UNC School of Medicine[Affiliation] OR (RTI[Affiliation] AND Research Triangle[Affiliation]) OR (FHI[Affiliation] AND Durham[Affiliation]))
- (HIV OR AIDS), (University of Washington[Affiliation] OR HIV Vaccine Trials Network Core Operations[Affiliation] OR Fred Hutchinson[Affiliation] OR Seattle Biomedical Research Institute[Affiliation] OR (Center for AIDS[Affiliation] AND [Seattle]Affiliation) OR (Children's Hospital[Affiliation] AND Seattle[Affiliation]))
- (HIV OR AIDS), (Vanderbilt[Affiliation] OR Meharry[Affiliation])
- (HIV OR AIDS), (Albert Einstein College[Affiliation] OR Yeshiva University[Affiliation] OR (Montefiore[Affiliation] AND Bronx[Affiliation]))

CFAR-Eligible Queries Included in Database

- (HIV OR AIDS), (Boston University[Affiliation] OR Boston Medical Center[Affiliation])
- (HIV OR AIDS), ((Children's Hospital[Affiliation] AND Cincinnati[Affiliation]) OR University of Cincinnati[Affiliation])
- (HIV OR AIDS), (Cornell University[Affiliation] OR Weill Medical College[Affiliation])
- (HIV OR AIDS), (George Washington University[Affiliation] OR Georgetown University[Affiliation] OR Howard University[Affiliation])
- (HIV OR AIDS), (University of Hawaii at Manoa[Affiliation] OR John A. Burns School of Medicine[Affiliation] OR John A. Burns School of Medicine[Affiliation] OR Hawaii AIDS Clinical Research Program[Affiliation])
- (HIV OR AIDS), (Indiana University School of Medicine[Affiliation] OR (Purdue University[Affiliation] AND Indiana University[Affiliation]))
- (HIV OR AIDS), (University of Kentucky[Affiliation] AND Lexington[Affiliation])
- (HIV OR AIDS), (Medical College of Wisconsin[Affiliation])
- (HIV OR AIDS), (Mount Sinai School of Medicine[Affiliation] OR Mount Sinai Medical Center[Affiliation])
- (HIV OR AIDS), (Ohio State University[Affiliation])
- (HIV OR AIDS), (University of Pittsburgh[Affiliation])
- (HIV OR AIDS), (Universidad Central del Caribe[Affiliation] OR Ponce School of Medicine[Affiliation] OR (University of Puerto Rico[Affiliation] AND San Juan[Affiliation]) OR (Rio Piedras[Affiliation] AND University of Puerto Rico[Affiliation]) OR (University of Puerto Rico[Affiliation] AND Medical Science[Affiliation))
- (HIV OR AIDS), (University of Rochester[Affiliation])
- (HIV OR AIDS), (University of Michigan[Affiliation] OR University of Michigan Medical School[Affiliation])
- (HIV OR AIDS), (University of Minnesota[Affiliation])
- (HIV OR AIDS), (University of Wisconsin[Affiliation] AND Madison[Affiliation])
- (HIV OR AIDS), (Rush University[Affiliation] OR Hektoen Institute[Affiliation] OR Northwestern University[Affiliation] OR (University of Illinois[Affiliation] AND Chicago[Affiliation]) OR (Children's Memorial[Affiliation] AND Chicago[Affiliation]))
- (HIV OR AIDS), (UMDNJ[Affiliation] OR University of Medicine and Dentistry of New Jersey[Affiliation] OR New Jersey Medical School[Affiliation] OR (Robert Wood Johnson[Affiliation] AND Medical School[Affiliation]))
- (HIV OR AIDS), Temple University[Affiliation]
- (HIV OR AIDS), Tulane University[Affiliation]
- (HIV OR AIDS), (Institute for Human Virology[Affiliation] OR (University of Maryland[Affiliation] AND Baltimore[Affiliation]))
- (HIV OR AIDS), University of Southern California[Affiliation]
- (HIV OR AIDS), (University of Texas[Affiliation] AND Dallas[Affiliation])
- (HIV OR AIDS), (University of Texas[Affiliation] AND Galveston[Affiliation])
- (HIV OR AIDS), (Washington University[Affiliation] AND (Missouri[Affiliation] OR St. Louis[Affiliation]))
- (HIV OR AIDS), Yale[Affiliation]
- (HIV OR AIDS), University of Miami[Affiliation]

Appendix C: Memo on Review of CFAR Investigator Progress Reports

MEMORANDUM

TO: Madelon Halula, NIAID

FROM: Brian Zuckerman, Research Staff Member, STPI

SUBJECT: CFAR Annual Progress Reports as a Data Source for the CFAR Outcome Evaluation

Summary

This memo describes the databases and other information compiled by the Science and Technology Policy Institute (STPI) from the initial sample of CFAR annual progress reports. It is organized into two main sections:

I. Types of Data that can be Extracted from CFAR Annual Progress Reports
II. Potential Uses for Progress Report Data in the Outcome Evaluation

Section I contains information on the following data types:

A. Budgets
B. Translational Studies Support
C. Core Facilities
D. Core Usage
E. Participants in CFAR
F. Developmental Awards
G. Value-Added Table
H. CFAR Strategic Goals
I. Research Coordination Activities
J. Training Activities
K. Education/Outreach Activities
L. International Activities
M. New Research Space
N. Publications

Each sub-section begins with a brief summary of the type and structure of the information compiled by STPI from the progress reports. Observations and comments regarding data quality and internal validity follow each description.

Section II summarizes our conclusions with respect to the utility of the data contained in the progress reports and makes recommendations about how to move forward with this portion of the Feasibility Study.

I. Types of Data that can be Extracted from the CFAR Annual Progress Reports

A. Budgets

STPI has compiled a database that includes budget information (dollars budgeted) for each CFAR, subdivided by year, core and budget category (salaries, supplies, travel, consultatants, etc.). Fields include the following:

Field	Description
CFAR	Name of CFAR
Year	Report year (expenditures are for the following year)
Core	Name of core
Salary	Estimated dollar value of expenditures on salary
Fringe	Estimated dollar value of expenditures on fringe benefits
Total Personnel	Sum of salary and fringe
Consultants	Estimated dollar value of expenditures on consultants
Equipment	Estimated dollar value of expenditures on equipment
Supplies	Estimated dollar value of expenditures on supplies
Travel	Estimated dollar value of expenditures on travel
Calculated Direct Costs	Caluculated sum of direct costs
Facilities and Admin	Estimated dollar value of expenditures on facilities and admin
Reported Total Costs	Reported sum of total costs
Calculated Total Costs	Calucluated sum of total costs
Difference	Difference between reported and calculated total costs (if applicable)

Comments Regarding Use in Evaluation

- Data appear consistently available for all fields
- Definitions for budget categories are likely to have been consistent between years and/or investigators
- Dollar values reported indicate expected spending in the next year, rather than actual spending in the previous year. While not ideal, these expected expenditure figures should be sufficient to provide insight into distribution of funds and major categories of expenditure.
- There are differences between personnel reported in the budget tables and in the "Key Personnel Report" tables – the Key Personnel Report tables often list personnel supported

through co-funding rather than through the Center award. For evaluation purposes, however, the budget table reporting of personnel is sufficient.

B. Translational Studies Support

This database summarizes the information provided by the PIs in the "Translational Studies Support" tables. The tables from which the data are derived show reported collaborations with industry. Fields include the following:

Field	Description
CFAR	Name of CFAR
Year	Report year
Core	Name of core
CFAR Investigators	Name(s) of CFAR investigators
Industry Collaborators	Name of collaborating organization
With Industry?	STPI coding for organization type
With State/Local?	STPI coding for organization type
With Feds?	STPI coding for organization type
With NGOs/Other?	STPI coding for organization type
Award Number	Grant number for support of project (if any)
Patent Number	Number of patent resulting from collaboration (if any)
Title of Protocol	Title of protocol or project

Comments Regarding Use in Evaluation

- Data appear consistently available for all fields
- Data reported in these tables do not appear to conform to common definitions and are thus of minimal value for evaluation purposes. There does not appear to have been a common understanding among PIs regarding which collaborations were reportable
- The tables do not shed light on scope or type of collaboration, resulting patents, resulting projects, continued collaborations, or anything else results-oriented. Further information could be mined from the progress reports, but with difficulty.

Attachment 1 shows a suggested redesign of the Translational Studies Support tables that could provide greater commonality of information across CFARs and years and better capture outcomes-oriented information.

C. Core Facilities

This database was compiled from the "Core Facility" tables provided by CFAR staff, lists of core facilities from progress reports, and CRISP data. The database provides information for most years and reports detailing performance sites. Fields include the following:

Field	Description
CFAR	Name of CFAR
Year	Report year
Core	Letter of core
Core Name	Name of core (reported)

Core Director	Name of core director
PI	CFAR pricipal investigator
Administrator	Core administrator
Description	Additional notes about core (from progress reports)

Comments Regarding Use in Evaluation

- Data on core names and PI/Core Director names appear to be consistently available. In the progress reports we have received, it appears to be possible to trace renamed/combined/separated cores
- Additional data (e.g. names of the buildings/organizations, equipment, date of acquisition) are neither complete nor standardized

D. Usage of Core Facilities

This database is based on the "Basic and Clinical Cores – Users" tables in the progress reports. the purpose of these tables is to provide insight into the personnel and projects that use CFAR cores. Database fields include:

Field	Description
CFAR	Name of CFAR
Year	Report year
Core Name	Core name
CFAR Investigator	Name of investigator using core
Title	Title of grant or study
Grant Number	ID number of research grant for project using core
Grant Agency	Agency providing funds
% Use	Reported percent of time using core

Comments Regarding Use in Evaluation

- The underlying information is not complete across CFARs and years
- Data on awards ("Grant Number" column) and funders ("Program Name" column) are not reported in standard format
- While percentage use may be standardized for equipment, it is less likely to be standardized for personnel cores (e.g., a biostatistics core) that contain personnel with varying skills and levels of experience

E. Participants in CFAR

This database uses budget information, lists of participants from CFAR progress reports, and external sources to create a roster of key personnel. For several of the individuals , supplemental information can be collected from other sources (e.g. departmental websites, curriculum vitae). Fields include:

Field	Description
CFAR	Name of CFAR
Year	First year in which participant appears in progress reports

Name	Name of CFAR participant
Degree	Degrees held
Role	Title/position in CFAR (reported)
Annual Percentage Effort in CFAR	Percentage of time involved with CFAR (reported)
Gender	Gender
Professor of	Departmental Affiliation
Other Affiliations	Other titles and affiliated institutions
Research Focus (Listed)	Research focus (self-identified)
Research Focus Other	Additional information of research focus
CV?	Do we have a CV for the participant?
Email	Email address for CFAR participant
Website	Source of supplemental biographical information

Comments Regarding Use in Evaluation

- Names of personnel supported directly by the CFAR award appear to be fully available.
- Total "CFAR-affiliated" personnel are not available for all CFARs and years, nor is there an apparent common definition of "CFAR-affiliated."
- Availability of supplemental biographical data (including contact info) varies widely. We can probably track it down for the majority of participants via the internet, but it will take quite a bit of effort and there will be no way to know whether the information we find is current.
- For evaluation purposes, it would be useful to collect a full list of participants, including role in CFAR, % support through CFAR, core affiliation, and demographic information. The purpose is to show who participates in CFAR, in what way, and degree of involvement.

F. Developmental Awards

This database collates tables from the body of the progress reports to summarize information on developmental awards made by CFAR cores. Fields include:

Field	Description
CFAR	Name of CFAR
PR Year	Year of progress report
Award Year	Year developmental award was made
Investigator	Name of developmental award recipient
Study Title	Title of study for which award was made
Duration	Duration of award
Date Funded	Date award was funded
Total Funding	Total funding for project
CFAR Funding	Total funding for project provided by CFAR cores
Resulting Collaborations	Names of individuals or organizations reported as collaborators in collaborations attributed to the developmental award
Resulting Awards	New awards reported as attributable to the developmental award
Resulting Publications	Publications reported as attributable to the developmental award
Department/School	Department/School of investigator receiving award
Description	Description of project

Comments Regarding Use in Evaluation

- While each progress report year appears to contain information regarding that year's developmental awards, few reports trace outcomes of past awards (resulting awards, publications and collaborations).
- It is also not clear that there is a common understanding of and criteria for the attributability of awards, publications, and collaborations to the developmental award.
- Progress reports appear to vary in their identification of non-CFAR funds used as part of developmental awards.

G. Value-Added

This table in the progress reports attempts to show what projects and PIs have made definable contributions to HIV/AIDS research and how CFAR supported them and made their efforts possible.

Comments Regarding Use in Evaluation

After review of the information in these tables, we concluded that they are not useful for evaluation purposes for several reasons:

- CFARs self-define "value-added", and those definitions appear to vary substantially – with some entries attempting to identify the specific contributions that a CFAR or CFAR core made to enable a study that otherwise may not have been feasible, while other entries list CFAR contribution without a sense of what value has been added. The number of "value-added" examples per CFAR also varies substantially.
- The tables suggest several potential definitions of "value-added", such as:
    - Supporting cohorts
    - Developmental funding
    - Providing specimens
    - Carrying out laboratory studies
    - Developing and validating assays
    - Data analysis or biostatistical support
- Even if guidelines had been provided to help investigators define "value added" in a consistent manner, the extent to which such data would be interpretable in the context of an evaluation is not clear.

H. CFAR Strategic Goals

Information on strategic goals at the level of the CFAR was compiled from either the "strategic goals" or the "specific aims" section of progress reports.

Comments Regarding Use in Evaluation

- Strategic goals information is available for the majority of CFARs and years. Data gaps appear where CFARs cite previous years' strategic goals remaining unchanged; as long as all progress reports are available, therefore, information will be complete.

- The progress reports describe the overall result of strategic planning – a listing of CFAR goals and objectives – but provide less insight into the process of planning itself.

I. Research Coordination Activities

Although they are not reported in tabular format, data on research coordination contained in the body of the progress reports include organizational charts, outlining of cores and performance sites, and administrative coordination.

Comments Regarding Use in Evaluation

- The information provided in progress reports is good but quite patchy. Some institutions and years provide a rich picture of coordination activities, and when these data are reported over several years it becomes possible to track the evolution of CFAR at an institution.
- The extent to which the available data provide a complete picture of coordination activities at any CFAR is unknown.
- Research coordination information from progress reports, therefore, is best used as background for interviews or case studies, rather than as a self-contained source of evaluation data.

J. Training Activities

Under the heading of "training activities" we have extracted information regarding mentorship, organized training activities, and the development of young investigators. This section includes a variety of awards, funding, events and sometimes core-specific activities.

Comments Regarding Use in Evaluation

- CFARs all appear to engage in activities collated under the "training activities" rubric, especially in supporting young investigators, but there do not appear to be standard definitions for these activities or common mechanisms for reporting them.
- The depth of the information provided varies across CFAR progress reports. For example, descriptions of mentoring may not include the intensity of a mentoring relationship.
- Progress reports do not mention on the effectiveness of the mentorship or training programs or the future of the recipient either at the CFAR or in the broader field of research.
- The training activities information, therefore, likely is best used as a starting point for interviews and case studies rather than as a self-contained source of evaluation data.

K. Education/Outreach Activities

Under the heading of "Education/Outreach" we have extracted information related to activities and programs oriented to the world outside of CFAR in an effort to educate the public and other professionals about HIV/AIDS.

Comments Regarding Use in Evaluation

- All CFARs report some description of education and outreach efforts, generally in the section of the progress report related to Developmental Cores, but there is no standard format for describing these activities.
- Many descriptions of outreach efforts may not offer a full picture of the scope and scale of outreach activities.
- Data on attendance typically are not available.
- The outreach sections provide an overview of external and community oriented activities with a level of specificity that may allow comparison between years and CFARs.
- The role and scale of education and outreach at a CFAR appears to be highly dependent on location and context and may vary widely among institutions.
- Given the information provided, it is possible that progress reports do provide a sufficient listing of education and outreach activities for use in an outcome evaluation – although they may need to be supplemented through interviews and case studies.

L. International Activities

Information regarding locations, participants and activities that comprise CFARs' international engagement has been collated under "International activities."

Comments Regarding Use in Evaluation

- The International Activities database maintained by program staff likely would serve as the primary database listing international activities; progress report information likely is best used to supplement that database to provide qualitative insight and context regarding these activities.
- Progress reports do not necessarily discuss background information regarding the evolution of international activities, the role played by CFAR as distinct from other NIH programs and U.S.-based (or Western) institutions in research collaboration, or underlying research capacity at the international site.
- The compiled information would need to be cross-referenced against other NIAID- and NIH-funded HIV/AIDS international collaboration and capacity-building efforts to better place CFAR activities in context.
- The text in these sections suggests CFARs' views of the balance between global needs for AIDS research and development/capacity-building activity versus domestic needs.

M. New Research Space

STPI attempted to extract information from the progress reports regarding the new research space added – including location, quantity of space, cost, personnel supported and use by CFAR.

Comments Regarding Use in Evaluation

- CFARs tend to report the addition of research space – although not every CFAR adds space in any given year, it appears that space expansions are generally reported. If there were instances where space contracted, they have not been reported.
- In some cases, CFARs provide information as to why the space has been added—whether for need of newer or better facilities or simply more space. As this information is not standardized, it may be necessary to prompt CFAR directors during interviews for additional detail.

- CFARs tend not to report changes within facilities in terms of equipment or personnel as they do the addition of physical space.

N. Publication Lists

Publication lists include citation information of key publications listed in the progress reports by core, when available.

Comments Regarding Use in Evaluation

- There does not appear to be a common definition of a "CFAR publication" – individual CFARs (or even core directors) appear to have different standards regarding inclusion or exclusion of publications.
    - There appears to be variability in listing papers in which CFAR participants are co-authors or collaborators with investigators at other institutions.
    - There appears to be substantial variability in the reporting of papers submitted, accepted, and in press; there is also variability in reporting of non-peer reviewed publications (whether trade press, presentations, or books/book chapters).
- There is not a standard format for listed publications – even within a single CFAR or CFAR core.
- Comparing lists of CFAR-provided publications with institutional-level identification of research publications, there appear to be substantial differences. Without some sense of how publication lists are generated and whether these lists are in any sense comparable or complete, it may be difficult to use them for evaluation purposes.

II. Conclusions and Next Steps

Based on our assessment of the initial progress reports and our preliminary list of study questions, we recommend that the balance of our efforts in the Feasibility Study should be concentrated on completing the following databases (in rough order of priority) for as many progress reports as possible:

- Participant roster
- Core facilities
- Translational research support
- Usage of core facilities

Additional data of a descriptive nature, particularly from the sections on CFAR activities, will be useful in providing context for other evaluation activities but will have to be supplemented by additional data collection.

Appendix D: Memo on Suggestions for Progress Reporting

MEMORANDUM

TO: Madelon Halula, NIAID

FROM: Brian Zuckerman, Research Staff Member, STPI

SUBJECT: Suggestions to Facilitate Use of CFAR Progress Reports in Program Evaluation

As part of the CFAR Evaluation Feasibility Study, STPI reviewed the CFAR annual progress reports to assess their suitability for us in an outcome evaluation. The findings of that assessment are reported in a separate memorandum to NIAID. Our purpose in this memo is to summarize some suggested modifications to the format of the annual progress reports that might facilitate more effective use of data from the progress reports and renewal applications in future evaluation efforts. Specifically, we propose modifications in the following five areas:

1. Translational Studies Support
2. CFAR-Affiliated Personnel
3. Developmental Awards
4. Publications
5. Value-Added

Each area and suggested modification is described below.

1. Translational Studies Support

As currently formulated, the translational studies table attempts to collect information on both collaborations and translational outputs. Our primary concern with this table is that, in trying to collect too much information in one table, NIAID may be encouraging multiple interpretations and sacrificing completeness. For example, it is not clear from this format whether NIAID intends for the Centers to report collaborations that do not result in translational products. Similarly, since the categories of translational products of interest have not been defined, the definition of "translational" is left up to the individual centers, resulting in data that are difficult to interpret and are not suitable for stand-alone use in evaluation.

Therefore, our suggestion for this table is to simplify it by splitting it into several smaller component tables, one for collaborations and several for specific types of translational outputs (patents, therapeutics, and clinical protocols). While we understand the need to minimize information requests to the CFARs, we believe that asking them to fill out several simplified tables instead of one large one would require little to no additional effort and result in much higher data quality.

The collaboration table we envision would look something like this:

Name of CFAR Investigator	Name of Collaborator	Sector of Collaborator (e.g. industry, federal government, state/local government,academic, NGO)	Institution of Collaborator	Did this collaboration exist prior to CFAR?

Patents attributable to CFAR would be listed in a separate table:

Name of CFAR Investigator(s)	Organization of Industry Collaborators (if any)	Patent Title	US Patent Number

As would therapeutics and clinical protocols:

Name of CFAR Investigator	Organization of Industry Collaborators (if any)	Brief description of protocol or therapeutic	IND number (if any)	Stage of resulting clinical trials, if any

For other translational outputs, we would suggest simply providing a blank "other" category and asking for descriptions that NIAID and/or external evaluators could then use the descriptions to decide whether any listed outputs should be considered:

Name of CFAR Investigator	Other translational products (please describe)

2. CFAR-Affiliated Personnel

One of the most time-consuming aspects of the proposed CFAR Outcome Evaluation will be compiling a roster of CFAR-affiliated personnel. Although most of the current progress reports do list personnel who receive direct support from the CFAR award, they do not currently include a mechanism for defining and reporting on other Center-affiliated personnel. Adding such a table would be extremely helpful for future evaluation efforts; ideally, the table would be formatted in a way that would facilitate updates to the roster that will be created for the outcome evaluation. However, as this database has not yet been designed, we

cannot yet say with certainty exactly which fields it would be useful and feasible to include. At minimum, the database will likely include the following:

- Name
- Institution
- Department/Affiliation
- Highest Degree
- Gender
- Email Address
- Year Added
- Research Focus
- Role in CFAR (management, admin, investigator, graduate student, support staff)
- Receives Salary Support from CFAR (yes/no)
- Receives Research Funding from CFAR (yes/no)
- Uses CFAR Core Facilities (yes/no)

3. Developmental Awards

It was not entirely clear to us from the progress reports we reviewed whether NIAID had specifically requested certain information on the developmental awards and other direct research funding supported through the CFAR award; however, it does appear that most of the CFARs provided at least some information about direct research support. The problem we observed is that the type of information reported by different CFARs does not seem to be standardized. We suggest that NIAID should create a template that includes the following fields:

- Principal Investigator
- Study Title
- Study Duration
- Date Funded
- Total Funding
- CFAR Funding
- Other Funding (sources and grant numbers)
- Resulting Collaborations (if any)
- Resulting New Awards (if any)
- Resulting Publications (if any)

4. CFAR Publications

Lack of standardization in reporting publications attributable to an award is a problem we have encountered in nearly every R&D evaluation effort we have ever attempted. We realize, as we are sure

NIAID does as well, that there is no easy solution to the dual problems of ensuring a common definition of "attributable" and collecting the information in a format that is easily analyzed.

To address the definition problem, we suggest that NIAID clarify the instructions to the Centers about what to include and what to exclude. Specifically, we suggest altering the instructions to include only published or in press citations in peer-reviewed journals. Furthermore, we think it might help to ask them to indicate how/why a reported publication is attributable to CFAR by choosing among several categories of possible affiliation. A sample table might look something like the following, with respondents instructed to check one or more categories for each publication listed:

Publication	Contribution of CFAR to research				
	Research supported with CFAR funding	Research made use of CFAR core facilities	CFAR-supported personnel contributed to research	Research relied used CFAR data or samples	Other (please describe)

As NIAID is undoubtedly aware, the value of the publications data would be vastly increased if the reporting format for citations were to be standardized and thus easily used in bibliometric analysis. Ideally, the CFARs would report publication information electronically, with each reference field (e.g. Author 1, Author 2, Title, Journal Title, Volume, etc.) in a separate spreadsheet/database column or as plain text separated by a unique delimiter and suitable for importation. Alternatively, from our standpoint as evaluators, it would actually be sufficient to have first author, publication title, journal title, and year only, provided that they were reported in separate fields; assuming we had these four data points we could then use MEDLINE or other databases to retrieve the full citation in standard format.

5. Value Added

Possible uses for the value added table was something we considered very carefully from an evaluation standpoint, because an assessment of "value added" is really the core question driving most evaluation efforts and we were initially hopeful that was that we could use the information in the tables as an important data source. However, after observing the degree of variability in the responses, along with the varied definitions of "value added" that this seemed to imply, we gave up hope of conducting any kind of rigorous analysis of the tables. There are a variety of potential problems with using information collected in this manner as a data source for evaluation purposes:

- We have no idea what the respondents had in mind when they were answering the question and no reason to think that their perspectives on the meaning of "value added" were consistent with each other;
- Since we can't probe for additional categories of responses as we would in an interview, we have no idea whether the responses are complete and whether omissions are intentional or accidental;
- Also unlike an interview response, we don't have the benefit of visual and contextual clues to help us gage the extent to which the respondents are telling us what they think we want to hear.

It isn't clear to us that the definition of "value added" can be standardized in any way that would make the responses of the CFARs particularly useful. Conceptually, "value added" is a complex phenomenon that involves a series of assumptions and judgement calls about what constitutes "value", what can be attributed to CFAR, and would have happened in the absence of CFAR. There are also issues of granularity and context to consider-- for instance, value could potentially be added at the level of the project, the research program, the career or knowledge-base of an individual investigator, the social dynamics of a group of investigators, etc. and value could potentially be added under certain sets of circumstances but not under others.

All of which isn't to say that the responses aren't both interesting and useful, even in their current form. They provide a readily available source of anecdotal information about the program that we did make use of to help guide the study design. We would imagine that the responses are equally useful to the program officers in getting a quick and dirty idea of what's going on with a given award.

In thinking about how the tables might be improved upon, therefore, we are of two minds. On one hand, we wonder whether it might help to create specific categories of "value added" based on either type of value (e.g. social, economic, information, etc) or level at which it is added (e.g. research project, career, etc.). Such schemes would be complicated, however, and it isn't clear to us that they would yield results that are more valid for evaluation purposes than the current design. Alternatively, a simpler and ultimately more useful solution might be to make the existing table even more open-ended, perhaps asking the PD's to describe what they consider to be the 5 most important accomplishments of the CFAR or the 5 most important contributions the CFAR has made to HIV/AIDS research at their institution. Without stopping the flow of anecdotal information, such a change might help to even out the current differences in level of effort devoted to answering the question across CFARs. It might also provide insight into what the Center Directors consider to be most important.

Appendix E: Proposal to NIH Set Aside Committee for CFAR Outcome Evaluation

SECTION 1: PROGRAM TO BE EVALUATED

1.1 Title and Contact Information

Title of the Evaluation:	**Outcome Evaluation of the Centers for AIDS Research (CFAR) Program**
Responsible IC:	**National Institute for Allergy and Infectious Disease (NIAID)**
Submitted by:	**Madelon Halula, Ph.D.** National Institute of Allergy and Infectious Disease 6700 B Rockledge Blvd room 4131 Bethesda, MD 29208-7620 Voice: 301 402-2636 Fax: 301 480-4456 mhalula@niaid.nih.gov
Reviewed by:	

1.2 Program to be Evaluated

In 1989, the National Institute for Allergy and Infectious Disease (NIAID) funded 13 P30 grants under of the initial Centers for AIDS Research (CFAR) program. These grants were awarded to institutions with a substantial base of NIH funding for AIDS-related research. Their purpose was to provide for administrative support, shared research infrastructure, and coordination of AIDS research projects funded by other NIH grants and contracts. CFARs accomplished this through core facilities that provided expertise, resources, and services not otherwise readily obtained through traditional funding mechanisms.

The CFAR program was redesigned in1998 as a trans-NIH effort that included unique fiscal and scientific flexibility for the CFAR grantee institutions. Additionally, the focus

was expanded to include all the basic, translational, and clinical AIDS research at the grantee institution. To help institutions implement this larger vision, a series of novel requirements that were peer reviewed and incorporated as "terms of award" for individual grants were instituted. These requirements included: a) development of a strategic plan; b) development of explicit policies and standard operating procedures; and c) formation of a mandatory CFAR Advisory Committee by each awarded institution.

The CFAR program is currently administered by the Pathogenesis and Basic Research Branch within the Basic Sciences Program in the Division of AIDS at NIAID. The management and coordination of the program is achieved by the trans-NIH CFAR steering committee, which includes representation from the 8 participating ICs[3] and the Office of AIDS Research. The CFAR budget is approximately $28 M per year and there are currently 1.75 FTEs responsible for the day-to-day management and oversight of the CFAR program within NIAID. One full time contractor also supports the program.

1.3 Program Goals

The current mission statement of the CFAR program was developed by the CFAR Principal Investigators and is revised on a regular basis. The program seeks to foster collaboration and scientific interaction among all types of AIDS research at an institution—the basic, clinical, epidemiological, behavioral, and translational research on the prevention, detection, and treatment of HIV infection and AIDS. The CFARs carry out this mission by:

- Providing scientific leadership and institutional infrastructure dedicated to AIDS research
- Stimulating scientific collaboration in interdisciplinary and translational research
- Promoting development of sustainable multidisciplinary HIV/AIDS research programs at each CFAR institution
- Strengthening capacity for HIV/AIDS research in developing countries
- Fostering scientific communication
- Sponsoring training and education
- Promoting knowledge of CFAR research findings and the importance of AIDS research through community outreach
- Promoting and supporting innovative NIH HIV/AIDS research initiatives
- Establishing collaborative research between CFARs, and supporting HIV/AIDS research networks
- Facilitating technology transfer and development through promotion of scientific interactions between CFARs and industry.

Additional information concerning the program mission can be found online at the following URL: www.niaid.nih.gov/research/cfar/mission2.htm.

[3] Participating ICs in addition to NIAID include: Fogarty International Center (FIC), National Cancer Institute (NCI), National Center for Complementary and Alternative Medicine (NCCAM), National Heart, Lung, and Blood Institute (NHLBI), National Institute of Child Health and Human Development (NICHD), National Institute on Drug Abuse (NIDA), and National Institute of Mental Health (NIMH).

SECTION 2: PURPOSE OF THE EVALUATION

2.1 Type of Evaluation

We propose to conduct an Outcome Evaluation for the CFAR program.

2.2 Purpose of the Evaluation

The objective of the proposed Outcome Evaluation will be to assess the effects of the CFAR program and the progress it has made towards meeting its stated goals. In particular, the proposed evaluation will focus on the link between program activities, outputs, and outcomes. Units of analysis will include the CFARs themselves, the institutions which have received CFAR grants, and the CFAR Program as a whole.

A recently completed Feasibility Study for the CFAR Program concluded that an Outcome Evaluation for the CFAR Program is both warranted and feasible. The proposed Outcome Evaluation would be Phase 2 of an ongoing evaluation effort.

Program management questions to be informed by the outcome evaluation include:

- Are patterns of outcome common to classes of CFARs (based on level of institutional HIV/AIDS research funding or number of CFAR renewals), and if so, should the program prioritize certain classes of CFARs and institutions?
- Do CFAR-supported functions become fully institutionalized by home institutions? If so, which functions become institutionalized over what time scale, and should CFARs therefore be "sunset" fully or partially after a certain number of renewals?
- Which CFAR-supported activities require the center mechanism for their effective provision ?
- Are CFARs achieving economies of scale in provision of core services? Are the users of core services NIH-funded HIV/AIDS investigators, or are core services utilized more broadly?
- How have recent management changes (e.g., D-CFARs, focus on international activities), changed the activities of individual CFAR grantees and of program-wide activities and outcomes? Have these changes improved the program?

2.3 Timeliness of the Evaluation

Assessment of the progress made by established HIV/AIDS programs towards meeting their goals is critical to inform priority setting activities at NIAID and effective use of limited funding. In the next 1-2 years, NIAID anticipates careful examination of all large-scale initiatives in this area.

The last program review of the CFARs, which occurred in 1998/9, focused primarily on the program's transition from an NIAID-sponsored initiative to a program with broader participation across multiple ICs. The majority of the reviewers' recommendations were implemented, but there has been no formal external evaluation or review of the program in the 7 years that have passed since then. Additionally, despite the fact that the CFAR program is currently in its 17th year of operations, a full scale Outcome Evaluation has never been conducted.

2.4 Review of Literature

The 2004 Institute of Medicine study entitled *NIH Extramural Center Programs: Criteria for Initiation and Evaluation* emphasized the need for evaluating Centers programs at NIH.[4] The report detailed a number of methodological challenges associated with their evaluation, including those associates with: the Centers' typically long-term research agendas; tracking participants and graduates of the programs; measuring the "value added", especially desired intangible outcomes such as "synergy" or "innovation"; and measuring progress on Centers' typically multidimensional goals including integrating research with education, technology and knowledge transfer, outreach, and career development. The IOM report also reviewed reports from eleven NIH Centers evaluations and program reviews conducted since 1989, including the Cancer Centers and SPORES at NCI, the Population Research Centers at NICHD, the SCOR programs at NHLBI, and CFAR. However, it appears that the vast majority of the evaluation efforts reviewed were relatively circumscribed in their goals and methods; while the list of evaluations reviewed was not necessarily comprehensive, it seems likely that full-scale outcome evaluation of Centers programs at NIH has been infrequent.

As part of the Phase I Feasibility Study, the reports from previous reviews of the CFAR program were reviewed in detail.[5][6] Although not helpful from a methodological standpoint (both were panel reviews), these reports help to define the context for the CFAR program and were important in generating ideas and insights about the program for inclusion in the evaluation design.

Although not all of the methods and findings are directly relevant, it was also useful to review the large-scale evaluation efforts for Centers Programs that have been conducted at the National Science Foundation. These include evaluations of the Science and

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[4] Institute of Medicine, 2004. *NIH Extramural Center Programs: Criteria for Initiation and Evaluation.* National Academies Press: Washington, D.C.

[5] OAR (Office of AIDS Research), 1996. *Report of the NIH AIDS Research Program Evaluation Working Group of the Office of AIDS Research Advisory Committee* ("Levine Report").

[6] OAR (Office of AIDS Research), 1999. *Report too the Director, Office of AIDS Research, of the Focus Group to Review the Centers for AIDS Research (CFAR) Program.*

Technology Centers (STCs)[7] and the Engineering Research Centers[8] at NSF as well as broader studies of university research centers as an organizational entity.[9]

SECTION 3: EVALUATION DESIGN

3.0 Overall Approach to Evaluation Design

The overall approach to the design of the proposed CFAR Outcome Evaluation will be cross-sectional, aiming to produce a broad "snapshot" of the program and its outcomes in the most recent program years (1999-2005). Such an approach is best suited to meet the objectives of the evaluation for the following reasons:

- Information about the most recent years is most likely to provide information that will help NIAID in moving forward with the program;
- A cross-sectional design provides flexibility to address a broad range of evaluation questions;
- Such an approach would make the best use of existing data and most feasible to collect additional data needed;
- The cross-sectional design is most likely to demonstrate actual effects of CFAR with least risk of failure to detect outcomes and impacts.

The cross-sectional design for this study will emphasize documenting the broadest possible range of program activities and outcomes and will attempt to link activities to outcomes through qualitative data collection.

Alternatives to a cross-sectional approach include longitudinal approaches focused on change over time, quasi-experimental approaches which rely on comparison groups, and randomized designs. Longitudinal approaches were rejected on the grounds that, while interesting from an academic standpoint, information about change over time has limited value to program planning while randomized approaches were simply not consistent with the NIH peer-review process.

Comparison Groups
Serious consideration was given to various quasi-experimental approaches, including designs based on external comparison groups (e.g. other NIH centers programs, non-CFAR institutions eligible for CFAR awards based on qualified HIV/AIDS research

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[7] Abt Associates Inc., 1996. "An Evaluation of the NSF Science and Technology Centers (STC) Program". Available at www.nsf.gov/od/oia/programs/stc/reports/abt.pdf.

[8] Abt Associates Inc., 1996. "Job Performance of Graduate Engineers Who Participated in the NSF Engineering Research Centers Program." Report to the National Science Foundation, NSF Contract END 94-13151.

9 E.g. Bozeman B. and Boardman P.C., 2003. "Managing the New Multipurpose, Multidiscipline University Research Centers: Institutional Innovation in the Academic Community." Transforming Organizations Series, IBM Center for the Business of Government.

funding) and internal comparison groups (e.g. the CFAR institutions themselves prior to receiving the CFAR award). While such approaches might have provided strong econometric evidence for a correlation between CFAR activities and outcomes if successful, they were ultimately rejected for two related reasons. First, the small number of CFARs and large number of potentially important variables would result in low statistical power, meaning that the risk of failure to detect actual differences would be high unless the differences in outcomes between the CFARs and comparison groups were overwhelming—and preliminary analysis of outputs such as publication number and type did not lead us to expect overwhelming differences. Second, from a practical standpoint it would be extremely difficult and costly to collect information on the large number of potentially important variables at the institutional level that would be included in the regression. The institutions themselves probably do not have good data on factors such as their institutional investment in research capacity, and it is not clear that they would share it with us if they did.

3.1 Study Questions

The evaluation study questions developed using the cross-sectional approach include the following:

Awards and Funding

1. What are the basic characteristics of the CFAR awards, D-CFAR awards, and CFAR Supplements? How have these changed over time? Which NIH ICs provide co-funding and at what levels?

Institutional Context

2. What is the range of variation among awardee institutions (pre and post CFAR) with respect to eligible entities and HIV/AIDS Research Funding?
3. What niche does CFAR occupy within the institution? Do other programs or organizations within the institution overlap with CFAR functions?

Program Management

4. Have the applicant pool and success rates changed over time? Does the D-CFAR appear to have the intended effect? In general, does the review process appear to select the best candidates?
5. Have programmatic changes been generally responsive to the needs of the CFARs? Have they been responsive to changes in external factors such as the nature of the epidemic, the state of knowledge, funding landscape, etc.?
6. Who participates in strategic decision-making at the program level? How are program priorities determined? Are the priorities of NIH co-funders taken into account?
7. What is the role of the CFAR Steering Committee?

CFAR Management

8. How are strategic decisions made at the level of the CFAR? Who participates?
9. How do the CFARs differ with respect to use of award funds? Is the current level of flexibility with respect to use of award funds adequate and appropriate?

Participants

10. What are the types and basic demographic characteristics of participants who benefit from CFAR directly or indirectly?

Activities and Outputs

11a. What are the main types of research **coordination** activities that the CFARs engage in? Have these changed over time?
11b. What are the main types of research **support** activities that the CFARs engage in? Have these changed over time?
12. What international research activities do the CFARs engage in?
13. Which of the CFAR activities are fully funded by the award? If there is external co-funding, where does it come from?

Research Enabling Outcomes

14. How and to what extent have the CFARs created and strengthened research collaborations and partnerships across CFARs, institutions, departments, disciplines, and sectors?
15. What are the quantity, quality, pace, and character of CFAR-enabled research?
16. How does the distribution of research outputs by topic and field vary among the CFARs? Does it appear to be well-correlated with the distribution of co-funding by IC?
17. How and to what extent are CFAR core facilities and resources used to enhance or facilitate research supported by NIAID, other ICs, and funding sources outside NIH?
18. Does CFAR result in translational products?

Capacity-Building Outcomes

19. Have the CFARs played a role in developing the careers of HIV/AIDS investigators?
20. Have the CFARs helped to locate and leverage additional funding for HIV/AIDS research?
21. Is there evidence that the CFAR awards have resulted in economies of scale?
22. Does CFAR help to increase the visibility and prestige of HIV/AIDS research and researchers at an institution? Does this increase the HIV/AIDS research community's leverage with the institution's leadership?
23. Have the CFARs helped to build international research capacity?

Impacts

24. At the institutions with the longest history of participation, is there evidence that activities that were originally supported by CFAR have been absorbed into the institutional infrastructure?
25. Have the CFARs helped to develop or enhance a sense of community among HIV/AIDS researchers at awardee institutions and beyond?
26. Has CFAR led to broader public understanding of HIV/AIDS as a disease, epidemic, and field of research?
27. Have the CFARs helped to shape the agenda for HIV/AIDS research?

3.2 Target Population

The units of analysis for this evaluation include the CFAR program as a whole, the academic institutions that have received CFAR awards, and the CFARs themselves. CFAR awards have been made to 27 institutions or groups of institutions, of which 20 are currently active. As institutions must have at least $6 million in NIH HIV-AIDS research funding to be eligible for the award, all CFAR institutions have sizable HIV-AIDS research programs, ranging in size from $11 million in NIH HIV-AIDS research funding (University of Massachusetts) to $121 million (Harvard University). The five largest CFAR institutions (Harvard, Johns Hopkins, Washington University, UCLA, UCSF) account for 27% of the total dollar value of the funded research database maintained by the Office of AIDS Research ($448M in 2004 out of an FRB of $1.66 billion).

3.3 Key Variables

Key variables for the proposed outcome evaluation are listed below, following the logic model categories. It is expected that the majority of evaluation activities will address the "Outcomes and Performance Measures" category of variables. For a more complete list of variables cross-referenced by study question and data source, please see Appendix A.

<u>Program Resources</u>

CFAR and D-CFAR Awards and Supplements

Participating NIH ICs

<u>Program Activities</u>

Program Planning Process and Outcome
CFAR Planning, Organization, and Expenditures
CFAR Participants
Research Coordination Activities
Research Support Activities
International Activities

<u>Outcomes and Performance Measures</u>

Collaborations

Research Productivity
Research Character
Research Quality
Value Added to Existing NIH Grants and Awards
Career Development
Leveraged Funding
Data and Resource Sharing
Visibility, Prestige, and Leverage for HIV/AIDS Research Community
International Research Capacity-Building
Institutionalization of CFAR Function

External Factors

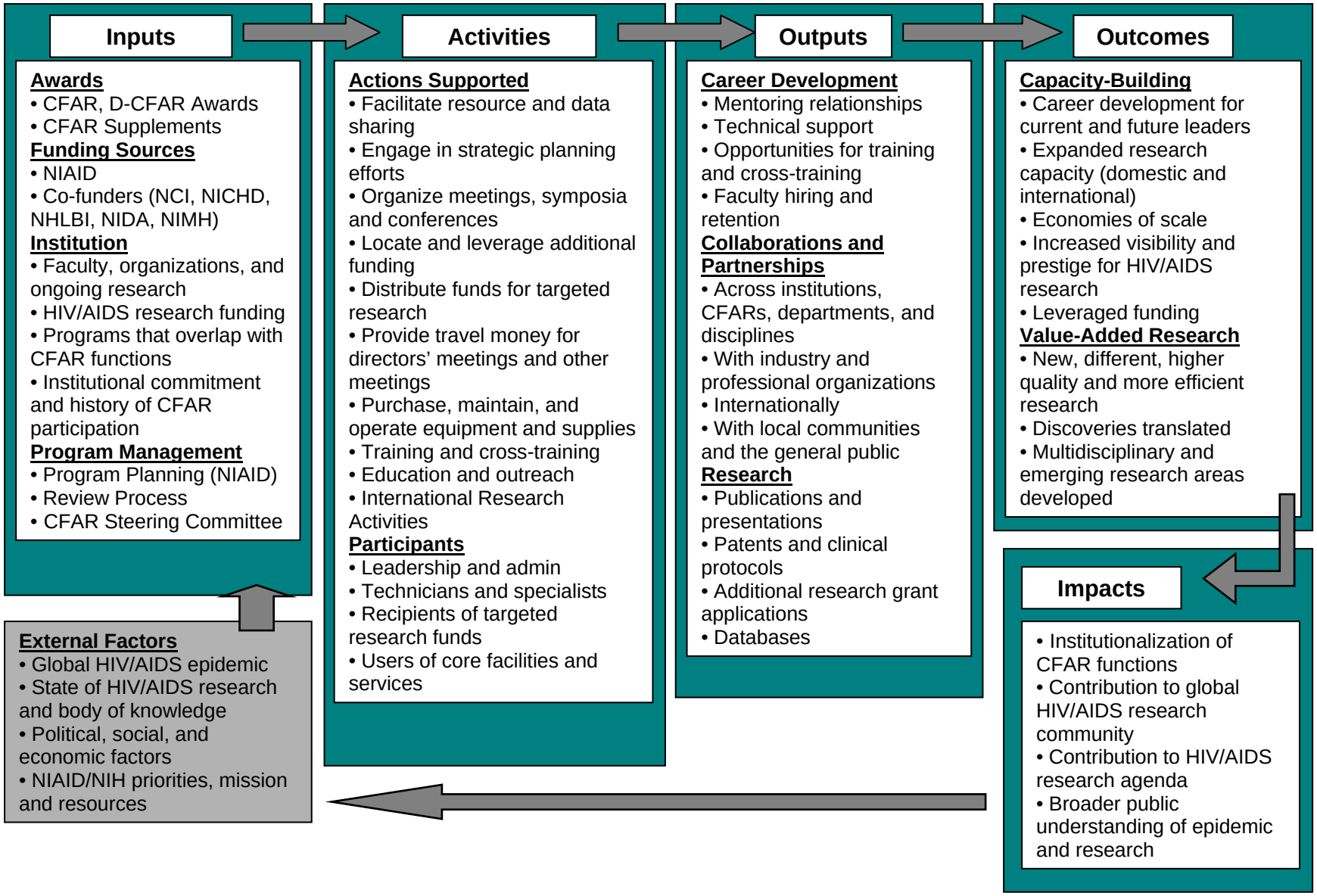
External Co-Funding for CFAR Activities

HIV/AIDS Research Capacity at Institution
Role of CFAR at Institution

3.4 Conceptual Framework

A preliminary logic model for the CFAR program was developed and refined as part of the Phase I Feasibility Study. The logic model highlights program inputs, activities, outputs, outcomes, and impacts, as well as some important external factors that affect program function at all levels.

Figure 1: Preliminary Logic Model for Centers for AIDS Research Program



SECTION 4: DATA COLLECTION AND ANALYSIS

4.1 Data Sources

The proposed CFAR outcome evaluation will rely on a combination of existing (archival) data sources and new data collections. For a detailed description of which data sources will be used to address each study question, please see Appendix A.

Archival data sources will include award documents, program documents, NIH databases, and external documents and databases. The types of information we expect to extract from each type of archival data source are described in the table below:

Type of Archival Data Source	Examples	Information of Interest
Award Documents	Investigator progress reports	• Roster of key personnel • Use of core facilities • Budgets • Activity and output data • Some outcome data
	Applications and renewal applications	• Specific aims • Award abstracts • Additional details
	Study section summary statements	• Priority scores • Additional details
Program Documents	Program Announcements and Requests for Applications	• Review criteria • Program goals • Strategic Changes
	Reports from Previous Program Reviews	• Recommendations • Summary Information
NIH Databases	Office of AIDS Research Funded Research Base	• Eligible institutions • Other NIH HIV/AIDS funding at CFAR institutions • First time awards and leveraged funding for CFAR participants
	IMPAC II	• CFAR Awards and Supplements • NIH funding for CFAR participants, institutions
External Documents and	MEDLINE	• Publications for CFAR

Databases		institutions, participants
	US Patent and Trademark Office	• Patents for CFAR institutions, participants
	ClinicalTrials.gov	• Clinical trials at CFAR institutions
	University and Departmental Websites	• Background and demographic data on CFAR participants • Research entities within institutions

In addition to archival data, the proposed evaluation will also draw on the following sources for new data:
1) CFAR Center and Core Directors;
2) Program Staff at NIAID and Co-funding ICs;
3) CFAR Steering Committee Members;
4) CFAR Participants;
5) Other Stakeholders.

4.2 Data Collection Strategies

For the archival data sources described above, data collection will rely on a combination of document review, database extraction, and web site reviews as appropriate.

New data collection strategies will include the following:
1) Census survey of CFAR Center and Core Directors. A questionnaire will be distributed to all Center and Core Directors via the internet. Questions will include a combination of multiple choice responses (yielding semi-quantitative data) and free response (yielding primarily qualitative information).

2) Personal interviews with stakeholders at NIH. Likely interviewees include Program Officers and staff members from NIAID and co-funding ICs, study section members, and members of the CFAR Steering Committee. A discussion guide will be developed for discussions with each type of stakeholder to ensure that data collection is consistent and complete for all stakeholders.

3) Case Studies. Detailed case studies of 5-6 CFAR institutions will be conducted. Data collection strategies for the case studies will include an additional survey of CFAR participants as well as additional interviews with CFAR participants. The sampling strategy will involve defining types of case study institutions of interest (e.g. FRB>$40M vs. FRB<$40M; mature vs. newer; CFARs perceived as “successes” vs. “failures”) and asking for volunteers to maximize cooperation.

4.3 New Data Collection Instruments

Census Survey of CFAR Center Directors

The primary purpose of this data collection effort will be to collect cross-sectional information about CFAR management, activities, and outcomes from CFAR leaders. The survey will be administered as an online questionnaire, to which each director will be given a unique password. The questionnaire will consist of a mix of multiple choice and free response questions focusing on the following topics: strategic planning, core management and administration, CFAR activities and participants, and CFAR outcomes. For information on which study questions will be addressed with these data, please see Appendix A.

It is estimated that the questionnaire will require no more than 30 minutes to complete. Any information available from other sources will be pre-loaded to minimize the burden imposed upon respondents. The survey instrument will be pilot tested by at least 3 respondents prior to distribution.

Interviews with Stakeholders at NIH

The purpose of this data collection will be to gather qualitative information about program planning, selection of grantees, and strategic planning. Information about which study questions will be addressed can be found in Appendix A. A discussion guide will be developed for each type of stakeholder to ensure that all relevant study questions are addressed adequately. These interviews will likely take place early in the evaluation and follow up questions may be addressed to the initial interviewees towards the end of the study.

Case Studies

The purpose of the case studies is to explore whether and how the CFAR activities resulted in the measured outcomes. Case studies will focus on 5-6 CFAR institutions. An additional questionnaire will be distributed to both leaders and participants at case study institutions. Additional interviews with CFAR participants will also be conducted, either via phone or in person as part of site visits. These interviews will be highly individualized, focusing on one or more CFAR activity and its outcomes.

4.4 Clearance Requirements

The survey data collections described above are subject to the requirements of the Paperwork Reduction Act. OMB clearance for this data collection will be obtained by submitting OMB Form 83-I and accompanying documentation via the NIH Office of Extramural Research (OER). No problems are anticipated in obtaining clearance within 4 to 6 months of submission.

4.5 Data Integrity

Every effort will be made to ensure that the online surveys described above are accessible to all potential respondents. The cover email will offer to send a hard copy if the respondent prefers that format. It will also include a number to report any problems with the survey instruments. The instruments will also be pilot tested to ensure quality.

Interviews and site visits will be conducted in teams of 2, with at least one participant experienced in interview data collection. Discussion guides will be used in all cases to ensure data integrity.

4.6 Ethical Considerations

It is not expected that any of the data to be collected from human subjects will be of a sensitive nature. Nevertheless, informed consent will be obtained from all survey respondents and interviewees, and confidentiality will be maintained. Findings will be reported in summary form only, and every effort will be made to mask the identity of individual respondents.

4.7 Data Preparation

All quantitative and semi-quantitative data will be compiled into Excel spreadsheets. Internal validity will be checked and data will be standardized as necessary for analysis.

4.8 Data Analysis

For the quantitative and semi-quantitative data collected via surveys, document review, and database extraction, descriptive and summary statistics will be calculated. If warranted, data from multiple sources may be cross-tabulated to address the study questions.

Qualitative data will be coded and analyzed using standard methods. Qualitative analysis software packages such as NVivo may be used if warranted.

4.9 Limitations

The major limitation to answering the study questions as completely as we would like is that the CFARs are far from homogenous in terms of activities, goals, and role played at the institution. At some institutions, CFAR is the only mechanism through which HIV/AIDS research support and coordination activities occur, while at other institutions there are many such mechanisms. Similarly, the institutions themselves vary in size, research focus, HIV/AIDS research investment, and along many other potentially relevant dimensions. A cross-sectional rather than quasi-experimental design was chosen for the proposed evaluation specifically because it is better able to accommodate this range of variation.

SECTION 5: EVALUATION RESULTS

5.1 Products of the Evaluation

A comprehensive evaluation report will be the major product of the proposed evaluation. Its purpose will be to report in detail on all evaluation findings as well as to provide sufficient description of the evaluation background and methodology to allow readers to accurately interpret the findings. An executive summary, intended to concisely convey the most important information about evaluation findings to a general audience, will be included as a component of the report.

5.2 Dissemination of Results

Intended audiences for the results of the evaluation include program staff at NIAID and the participating ICs, the Office of AIDS Research, and other interested stakeholders at NIH. Significant findings may be shared with CFAR Directors as appropriate.

5.3 Use of Results

NIAID expects to use the results of the Outcome Evaluation to plan for the renewal of the CFAR program. Results will be shared with the Office of AIDS Research and with other ICs that support HIV/AIDS research and sponsor the CFAR program. The information will be made available to other NIH Offices and ICs interested in evaluation of their own programs.

SECTION 6: PROJECT MANAGEMENT

6.1 Project Implementation

NIAID expects to conduct the proposed Outcome Evaluation via an outside contractor with expertise in the following areas:

- Evaluation of basic and applied research programs (experience evaluating Centers programs and/or HIV/AIDS research initiatives preferred)
- Knowledge of HIV/AIDS research issues and context
- Quantitative and qualitative data collection and analysis
- Familiarity with NIH databases and archival data sources
- Knowledge of NIH mechanisms, processes, and institutional culture

This contractor may be identified via the GSA MOBIS schedule or via consultation with other government R&D evaluation groups. One mechanism for funding this work is to

use an NSF task order contract with the Science and Technology Policy Institute (STPI), an FFRDC with expertise in evaluating NIH and Centers programs. NIAID expects the Outcome Evaluation to be a collaborative project with the contractor.

6.2 Advisory Committee

An evaluation advisory committee of 3-4 members will be established for the proposed evaluation. Several members would likely be drawn from the CFAR Steering Committee. Responsibilities of the advisory committee would include reviewing all evaluation outputs and providing expert guidance as needed. The committee will meet approximately every six months.

6.3 Estimated Timeline for Evaluation

We estimate that the proposed outcome evaluation will require approximately 18 months to complete. An estimated timeline by task is included below.

	Month																	
Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Finalize Study Design																		
Meet with Task Order Officer	X																	
Develop Workplan	X																	
Form Advisory Committee	X	X																
Finalize Study Questions	X	X																
2. Document Review																		
Compile and Review Program Documents	X	X	X	X														
Compile and Review Award Documents	X	X	X	X														
Assemble Roster of Participants		X	X	X	X	X												
Compile and Analyze Output Data				X	X	X												
3. Survey Data Collection																		
Develop and Pilot Questionnaire		X	X															
Obtain OMB Clearance			X	X	X	X	X	X										
Field Survey									X	X	X							
Summarize and Analyze Results												X						
4. Interviews																		
Develop Discussion		X																

Guides																		
Identify and Contact Interviewees		X	X	X														
Collect Interview Data				X	X	X	X											
Analyze Interview Data								X	X									
5. Case Studies																		
Design Questionnaire		X	X															
Obtain OMB Clearance			X	X	X	X	X	X										
Distribute Questionnaire									X	X	X							
Summarize and Analyze Results												X						
Conduct Site Visits													X	X				
Summarize Case Study Data															X			
6. Final Deliverables																		
Draft Final Report																X	X	
Revise Final Report																		X

SECTION 7: BUDGET ESTIMATE

7.1 Estimated Cost

CONTRACTOR COSTS

Direct Labor Costs

Labor Category	Hourly Rate	Hours	Amount
Project Director	$60	1000	$60,000
Senior Research Associate	$45	2000	$90,000
Research Assistant	$30	1000	$30,000
	Subtotal Direct Labor		**$180,000**

Labor Indirect Costs

Fringe Benefits/Burden (90% of Subtotal Direct Labor)	$162,000.00

Other Direct Costs

Miscellaneous Supplies and Services	$10,000
Contractor Travel for Meetings and Site Visits (6 trips at $7000 per trip)	$42,000
Subtotal Labor and ODC	**$394,000.00**
G&A (15% of Subtotal Labor and	$59,100.00

ODC)			
	Subtotal Labor, ODC, G&A		**$453,100.00**
Fee (8% of Subtotal Labor, ODC, G&A)			$36,248.00
	Subtotal Contractor Costs		**$489,348.00**
OTHER COSTS			
Consultants			
3 advisory panel members	$100	90	$9,000
		TOTAL	**$498,348.00**

7.2 Anticipated Funding Sources

The proposed evaluation will be supported by set-aside funds only.

Appendix A: Matrix of Proposed Study Questions, Metrics, and Data Sources for CFAR Outcome Evaluation

Evaluation Questions	Variables	Metrics	Award Docs				NIH Databases		Program Docs			External Docs and Databases				Surveys		Interviews	
			Progress Reports	Original Apps	Renewal Apps	Supplement Apps	OAR FRB	IMPACII	Steering Committee Docs	PAs/RFAs	Summary Statements	University Websites	USPTO Database	ClinicalTrials.gov	MEDLINE	Leadership Survey	Participant Survey (case study institutions only)	NIAID Program Staff	Other ICs
Awards and Funding																			
1. What are the basic characteristics of the CFAR awards, D-CFAR awards, and CFAR Supplements? How have these changed over time? Which NIH ICs provide co-funding and at what levels?	CFAR and D-CFAR Awards	Award number; year; total dollar value; PI; recipient institution; NIH co-funders; co-funding amounts					X	X											
	Supplements	Award number; year; total dollar value; PI; recipient institution; NIH co-funders; co-funding amounts; topic/type of research					X	X											
Institutional Context																			
2. What is the range of variation among awardee institutions (pre and post CFAR) with respect to eligible entities and HIV/AIDS Research	Eligible Entities	Name; type of institution; dollar value of research funding base; types of research conducted; geographic location; number of affiliated					X					X							

Funding?		faculty/staff																		
	HIV/AIDS Research Funding	For NIH awards: mechanism, institute, award number, years, total dollar value, title, and abstract; For others: source and total dollar value					X										X			
3. What niche does CFAR occupy within the institution? Do other programs or organizations within the institution overlap with CFAR functions?	CFAR Role	Qualitative assessment of role of CFAR within the institution (e.g. “top level” function or “gluing” function or other?); programs or mechanisms that overlap with CFAR function															X			
Program Management																				
4. Have the applicant pool and success rates changed over time? Does the D-CFAR appear to have the intended effect? In general, does the review process appear to select the best candidates?	Review Process	Application and success rates; priority scores; selection criteria; qualitative analysis of summary statements						X				X							X	

5. Have programmatic changes been generally responsive to the needs of the CFARS? Have they been responsive to changes in external factors such as the nature of the epidemic, the state of knowledge, funding landscape, etc.?	Program Planning-Outcomes	Changes in the RFA; leaders' perceptions regarding responsiveness to CFAR needs; perceptions regarding responsiveness to epidemic								X						X		X	X
6. Who participates in strategic decision-making at the program level? How are program priorities determined? Are the priorities of NIH co-funders taken into account?	Program Planning-Process	CFAR program goals; NIAID priorities; missions of co-funding ICs; evidence of participation in planning by co-funders and other stakeholders; qualitative information on process																X	X
7. What is the role of the CFAR Steering Committee?	Steering Committee	Membership; number of active participants; topics addressed; evidence for inter-CFAR collaboration						X										X	
CFAR Management																			
8. How are strategic decisions made at the level of the CFAR? Who participates?	CFAR Planning	Specific aims; details of planning processes at the program level		X	X											X			
	CFAR Organization	Structural elements (e.g. core types, advisory bodies, etc.); details of management processes at the core		X	X											X			

		level																		
9. How do the CFARs differ with respect to use of award funds? Is the current level of flexibility with respect to use of award funds adequate and appropriate?	CFAR Expenditures	Dollar value of expenditures by core; dollar value of expenditures by type; dollar value of expenditures by domestic/international; PI and core director opinion on spending constraints	X													X				
Participants																				
10. What are the types and basic demographic characteristics of participants who benefit from CFAR directly or indirectly?	Individuals Receiving Direct Salary Support	Name; role; % of FTE; training or specialized skills; years since highest degree; departmental/school/hospital affiliation; gender; race/ethnicity; research foci	X	X	X							X								
	Individuals Receiving Research Support	Name; years since highest degree; departmental/school/hospital affiliation; gender; race/ethnicity; research interests; dollar value of award	X		X							X				X				
	Individuals Receiving Supplements	Name; years since highest degree; departmental/school/hospital affiliation; gender; race/ethnicity; research interests;				X		X				X								

		dollar value of award; topic of research																	
	Users of CFAR Facilities and Services	Name; departmental/school/hospital affiliation; NIH award	X									X				X			
Activities and Outputs																			
11a. What are the main types of research **coordination** activities that the CFARs engage in? Have these changed over time?	Strategic Planning	Type and purpose of activity; number of participants	X	X	X											X			
	Resource and Data Sharing	Type of resource or data shared; source of data or resource; sharing mechanisms; users	X		X											X			
	Meetings, Conferences, and Symposia	Purpose of meeting; number and type of attendees	X		X											X			
	Funding for Targeted Research	Awards granted; dollar value; restrictions on spending; selection process; number of applicants; success rate; purpose of awards	X		X											X			
	Travel Support	Dollar value of travel awards	X		X												X		
11b. What are the main types of research **support**	Equipment and Supplies Purchased	Type of equipment or supplies purchased; primary uses														X			

activities that the CFARs engage in? Have these changed over time?	Training and Cross-Training	Type of activity; purpose of activity; number of participants; area of training; research interests and training of participants	X		X											X			
	Education and Outreach	Type of activity; purpose of activity; geographic range; type and approximate number of community members involved	X		X											X			
	Recruiting and Hiring	CFAR-related hires; recruiting activities	X		X											X			
	Technical Support	Type of support provided (e.g. biostatistics, equipment techniques); number of instances; training, affiliation, research area, and seniority of person supported	X		X											X			
12. What international research activities do the CFARs engage in?	International Research Activities	Number and type of activities; total dollar value; geographic location; identity of international participants; origin of collaboration	X		X											X			
13. Which of the CFAR activities are fully funded by the award? If there is external co-funding, where does it come	Co-Funding (External)	Source, type, and value of co-funding for CFAR activities														X			

from?																				
Research Enabling Outcomes																				
14. How and to what extent have the CFARs created and strengthened research collaborations and partnerships across CFARs, institutions, departments, disciplines, and sectors?	*Informal Collaborations*	*Names of collaborators; character of collaborations (define categories based on qualitative data); timing of collaborations*																X		
	Formal Collaborations	Co-citations														X				
15. What are the quantity, quality, pace, and character of CFAR-enabled research?	CFAR Research	Standard bibliometric data for publications resulting from Supplements and direct core funding	X		X															
	CFAR Research Outputs (Indirect)	Standard bibliometric data for affiliated publications														X				
	Pioneering Research	Qualitative assessment of "ahead-of-the-curveness"														X	X			
	Research Productivity	Research output units per dollar of CFAR funding; outputs per dollar of FRB					X									X				

	Inclusion of Under-Represented Groups	Qualitative assessment of extent and mechanisms													X				
16. How does the distribution of research outputs by topic and field vary among the CFARs? Does it appear to be well-correlated with the distribution of co-funding by IC?	Research Foci	Clustering of research by topic; correlation with co-funding amounts and co-funder priorities; research thrusts												X	X				
17. How and to what extent are CFAR core facilities and resources used to enhance or facilitate research supported by NIAID, other ICs, and funding sources outside NIH?	Synergies	Other funding sources for CFAR participants; percentage of FRB awards reported as users; breakdown by IC; qualitative data on whether/how CFAR contributes to research	X				X	X								X			
18. Does CFAR result in translational products?	Patents	Title and patent number; CFAR personnel involved	X										X						
	Clinical Trials	Phase and purpose of clinical trials; CFAR personnel involved	X											X					
	Clinical Protocols	Type and purpose of clinical trials; CFAR personnel involved	X													X			
	Other Translational Products	Type and purpose; CFAR personnel involved	X	X	X								X	X		X			
Capacity-Building Outcomes																			
19. Have the CFARs played a role in	*Mentoring*	*Availability of mentoring; quality of*															X		

developing the careers of HIV/AIDS investigators?		*mentoring*																	
	Hiring and Retention	*Number of new faculty members hired; years since PhD for new hires; faculty retention rates*										X				X			
	Social Networking	*Collaboration network analysis*															X		
	Career Milestones	Number of first-time HIV/AIDS T-awards, K-awards, and R01s; *tenure rates; average time to tenure*					X										X		
20. Have the CFARs helped to locate and leverage additional funding for HIV/AIDS research?	Leveraged Funding	Growth in total FRB and other HIV/AIDS research funding (number of awards by category and total dollar value); follow up to developmental awards	X				X									X			
21. Is there evidence that the CFAR awards have resulted in economies of scale?	Data and Resource Sharing	Type of data or resources shared; estimated dollar value; mechanisms for sharing (all qualitative)														X	X		
22. Does CFAR help to increase the visibility and prestige of HIV/AIDS research and researchers at an institution? Does this increase the	Visibility/Prestige	Qualitative assessment														X	X		
	Institutional Capital	Square footage assigned to HIV/AIDS research departments/personnel; geographic proximity; qualitative assessment	X		X											X			

HIV/AIDS research community's leverage with the institution's leadership?																			
23. Have the CFARs helped to build international research capacity?	International Research Capacity-Building	Total dollar value of funds supporting non-US research staff; total dollar value of funds invested in research infrastructure abroad; number and type of collaborations with international researchers	X		X											X	X		
Impacts																			
24. At the institutions with the longest history of participation, is there evidence that activities that were originally supported by CFAR have been absorbed into the institutional infrastructure?	Institutionalization of CFAR Functions	Qualitative assessment (focus on the CFARs that lost funding?)														X			
25. Have the CFARs helped to develop or enhance a sense of community among HIV/AIDS researchers at awardee institutions and beyond?	Impact on National and Global HIV/AIDS Research Community	Qualitative assessment														X			

26. Has CFAR led to broader public understanding of HIV/AIDS as a disease, epidemic, and field of research?	Impact on Public Perception/Understanding of HIV/AIDS Research	Qualitative assessment														X				
27. Have the CFARs helped to shape the agenda for HIV/AIDS research?	Impact on Global HIV/AIDS Research Agenda	Qualitative assessment; comparison of timing with contents of major strategy documents														X				