Core Research Study

Results

This study focused on answering the question, "What are the varieties, goals, and contextual factors of the core prevention research being conducted by the PRCs?" Results from this study provide some data to answer the following overarching evaluation question: What does the PRC Program contribute to public health practice and policy by conducting prevention research to develop and disseminate effective and translatable public health interventions? PRC Program indicator data will supplement the data reported here for this question.

The PRC Program's main focus is the core prevention research that each PRC conducts during its five-year funding cycle. This study assessed the 2004-2009 core research portfolio through looking at all PRCs' core research projects as follows: project selection, research type and methods, relationship to *The Guide to Community Preventive Services*[1] (The Community Guide) and ecological model, implementation, and integration and sustainability. Findings result from information garnered in a document review. Appendix D lists data sources used to answer each question for this study.

As described in the methods, the 33 PRCs conduct 55 core research projects. One primary core research project from each PRC was selected for this study. For most data tables in this study, the unit of observation is a core project, but for some, it is a component or phase of a core project, and the total number of units may be more than 33. Definitions for research terms used in this study are provided in Appendix I.

Project Selection

Selecting the core project

The evaluator identified groups of people involved in determining each PRC's core research project (Table R-22). At all 33 PRCs, faculty, staff, and community partners (including each PRC's community committee) helped define the core research projects. Additional partners were involved at all but one PRC. Most PRCs (24) included two or more additional partners in the process of determining their core project.

Table R-22. Groups of People Involved in Determining the Core Research Project, by Number of PRCs (N = 33)

Group	Number
PRC faculty or staff	33
Community partners (including PRCs' community committees)	33
Additional partners	32
• Neighborhood	14
• City	14
• County	12
• Regional	23
• State	13
• National	3
• University	14

Source: Fiscal year 2007 PRC IS and fiscal year 2004 PRC applications.

The evaluator also identified data sources considered in making the decision to focus on a particular research project. All PRCs reviewed community assessments and national and state health goals. Twenty-nine (88%) PRCs used specific data sources, such The Community Guide or local compilations, to guide their decision. Eight (24%) PRCs explicitly stated that their research is intended to fill a gap in the scientific literature.

Thirty-two (97%) PRCs explained the links between their PRC's health priorities, its research agenda, and the choice of core research projects. One PRC without an explanation changed its core research project two years into the funding cycle.

Relationship of core research to previous research

All PRCs built on existing research to develop their core research projects, and most (88%) did so by adding components to the research (Table R-23). Twenty-two PRCs based their current core research project on research previously conducted by their own PRC, while seven PRCs based theirs on other research. Core research projects at four PRCs are based on both their own and other research.

Some core research projects may have added several new components; for example, study populations in a different county, an additional method of data collection or analysis, or an added setting such as a worksite. Overall, 18 PRCs added one new component, six PRCs added two, four PRCs added three, and one PRC added nine. Four PRCs did not add any (data not shown).

Table R-23. Number of PRCs Whose Core Research Project Built on Previous Research by Component Type Added (N = 33)

Component type	Own PRC's research (22 PRCs)	Other research (7 PRCs)	Both (4 PRCs)	Total (33 PRCs)
Geographic location	5	3	3	11
Method	5	2	1	8
Racial or ethnic group	4	2	1	7
Intervention component	3	1	2	6
Goal or outcome variable	3	1	2	6
Setting	3	2	3	8
Age group	1	1	1	3
Other	7	3	1	11

Source: Fiscal year 2004 PRC applications.

Research Type and Methods

The core research projects assessed a wide variety of outcomes (Table R-24). Nearly all (31) projects assessed health behaviors, 20 assessed attitudes, and 20 assessed skills. More than one-third of core research projects measured environmental outcomes. While 88% of core projects assessed more than one outcome, nearly half (48%) addressed four or more outcomes.

Table R-24. Number of PRC Core Research Projects by Primary Outcomes (N = 33)

Primary outcomes	Number of core projects
Health behaviors	31
Attitudes	20
Skills	20
Knowledge	15
Environmental change	12
Morbidity	12
Policy change	4
Mortality	1

Source: Fiscal year 2004 PRC applications, fiscal year 2008 PRC work plans, fiscal year 2006 PRC progress reports, and PRC site visit reports.

Research type

Regarding the type of core research, 21 (64%) PRCs conducted intervention research only and 4 (12%) conducted determinant research only (Table R-25). Eight PRCs identified more than one type of research for their core research projects and included a combination of determinant, intervention, dissemination, or evaluation research. None of the PRCs' core research was dissemination only.

Table R-25. Number of PRCs by Type of Core Research Project (N = 33)

Type of research	Number of PRCs
Determinant	4
Intervention	21
Determinant + Intervention	1
Intervention + Dissemination	2
Intervention + Evaluation	1
Determinant + Intervention + Dissemination	4

Source: Fiscal year 2007 PRC IS and fiscal year 2004 PRC applications.

Research design

The research design for core research projects varied across PRCs; 25 PRCs used a single design, and eight (24%) PRCs used multiple designs, depending on the phase or component of the project. Of the eight PRCs that used multiple designs, seven used two designs, and one used four designs, resulting in 43 designs across PRCs (Table R-26). Of the 43 designs, 21 were quasi-experimental. Four of eight randomized trials were group randomized trials.

Table R-26. Number of PRC Core Research Project Phases or Components, by Research Design (N = 43)

Research design	Number of phases or components
Case control	1
Case studies or case series	1
Cohort or longitudinal	4
Cross-sectional	2
Quasi-experimental with control or comparison group	14
Quasi-experimental without control or comparison group	7
Randomized trial	8
Surveillance-based secondary studies	1
Other	5

Source: Fiscal year 2004 PRC applications, fiscal year 2008 PRC work plans, fiscal year 2006 PRC progress reports, and PRC site visit reports.

Sampling strategies

Nearly half (48%) of the 33 PRCs used more than one type of sampling strategy, which reflected different phases or components of the core projects. The 33 core research projects used 52 sampling strategies.

Table R-27. Number of PRC Core Research Project Phases or Components by Sampling Strategy (N = 52)

Research design	Number
Convenience	19
Purposive	15
Random*	13
Clustered randomization	2
Complete census	1

*Includes random-digit-dial telephone surveys.
Source: Fiscal year 2004 PRC applications, fiscal year 2008 PRC work plans, fiscal year 2006 PRC progress reports, and PRC site visit reports.

Most (82%) PRCs provided documentation of sample size power calculations. Of the six PRCs that did not, three explained that the sample size is too small, and three did not provide an explanation.

Participant recruitment

PRCs used many strategies to recruit participants for core research projects, often using multiple strategies for the same project (Table R-28). The most common recruitment strategy was to collaborate with the PRC's community committee, which alerted community networks, organizations, or individuals about participating in core research projects. Strategies such as word of mouth and community event presentations were used at 18 (55%) and 16 (48%) PRCs, respectively. Recruitment at training events was less often used by the PRCs.

Table R-28. Number of PRCs by Recruitment Strategies for Core Research Projects (N = 33)

Strategy	Number
Help from PRC community committee	21
Posters, flyers, or newsletters	18
Word of mouth	18
Community event presentations	16
Local newspaper articles	12
Recruited by community health workers	12
Contacted the school system to recruit students	8
Radio or cable television public service announcements	8
Web sites	8
Partners' (other than the PRC Community Committee) mailing and contact lists	8
Contacted health care providers or clinics to recruit patients	7
Roster of all individuals in the community	6
Training events	4

Source: Fiscal year 2004 PRC applications, fiscal year 2008 PRC work plans, fiscal year 2006 PRC progress reports, and PRC site visit reports.

Data collection methods

Nearly all PRCs (97%) used mixed data collection methods for their core research projects (Table R-29), and one PRC collected quantitative data only. Nearly all (94%) PRCs used three or more data collection methods in their core projects, and 17 PRCs used five or more data collection methods (data not shown).

Table R-29. Number of PRCs by Data Collection Method Used in Core Research Projects (N = 33)

Method	Number
Survey instruments	32
Participant and key informant interviews	25
Focus groups	19
Participant, community, organization, or school observations	16
Anthropometric measures (e.g., height and weight)	15
Document review	8
Medical assessments	8
Participants' self-tracking	7
Captured and reported electronically	6
Computer-assisted interviews	5
Geographic information system (GIS)	5
Cognitive interviews	3
Content analysis	2
Other	10

Source: Fiscal year 2004 PRC applications, fiscal year 2008 PRC work plans, fiscal year 2006 PRC progress reports, and PRC site visit reports.

Development of survey instrument questions

PRCs used a wide variety of survey instruments in their core research projects, including standard surveys such as those from the Behavioral Risk Factor Surveillance System (BRFSS) and validated scales developed by other researchers. However, PRCs may have worked with populations or on health issues for which standard surveys had not been designed. In those situations, PRCs modified or adapted existing surveys (or individual questions) or created a new survey entirely. In addition, PRCs that collected data through surveys may have used more than one survey instrument for their core project.

For the 32 PRCs that collected data through surveys, the evaluator assessed whether survey questions were newly developed, standard, or modified, or used a combination of all types (Table R-30).

Table R-30. Number of PRCs by Type of Questions Used in Core Research Survey Instruments (N = 32)

Type of question	Number
Newly developed by PRC	2
Standard	2
Modified by PRC	1
Newly developed + Standard	6
Newly developed + Modified	3
Standard + Modified	10
Newly developed + Standard + Modified	8

Source: Fiscal year 2004 PRC applications, fiscal year 2008 PRC work plans, fiscal year 2006 PRC progress reports, and PRC site visit reports.

Field-testing, pilot-testing, and reliability and validity testing of survey instruments

Of the 32 PRCs that collected data through survey instruments, 28 field- or pilot-tested their instruments. Of the four PRCs that did not pilot test their survey instruments, two reported that such testing was not applicable (one used a standard survey, and one used a survey previously developed by an external partner for the community). The other two PRCs did not provide any information about testing of their survey instruments.

Of the 32 PRCs that collected data through survey instruments, 19 reported reliability data and 19 reported validity data. Although these are not the same 19 PRCs, some overlap occurs between the two groups. One PRC reported not testing the instrument for reliability. Two PRCs reported that reliability and validity testing were not applicable for their instruments. Ten PRCs did not provide any information related to reliability testing, and 11 PRCs did not provide any information related to validity testing.

Relationship to *The Guide to Community Preventive Services* and the Ecological Model

Relationship to The Community Guide

The Community Guide summarizes what is known about the effectiveness, economic efficiency, and feasibility of certain interventions designed to promote community health and prevent disease.[1] Intervention strategies within particular health topics are designated as "Recommended," "Insufficient Evidence," or "Recommend Against." Systematic reviews have been completed for 16 health topics (e.g., cancer, diabetes, nutrition, physical activity, mental health, worksite) and others are planned for the future.

Of the 33 core research projects, 29 were interventions, and most of the projects had multiple components, resulting in a total of 39 intervention research components. Each component was assessed to determine its correspondence to The Community Guide topics and recommendations (Table R-31). Nine intervention components (reflecting eight PRCs) addressed issues designated by The Community Guide as "Research questions for further study" (data not shown). No PRCs conducted intervention research listed as "Recommend Against."

Table R-31. Number of PRC Intervention Research Components Applied to The Community Guide Designations (N = 39)

Designation	Number
Recommended	9
Insufficient evidence	4
Recommend against	0
Topic area addressed but intervention strategy not reviewed	13
Review in progress	4
Review planned	4
Topic area not addressed	5

Source: Fiscal year 2004 PRC applications, fiscal year 2006 PRC progress reports, and www.thecommunityguide.org.

Relationship to the ecological model

The ecological model is a theoretical framework that allows for analysis of social environments across multiple levels and contexts. Urie Bronfenbrenner's *Ecological Systems Theory* (based on the individual, the environment, and the interactions between them) has four factors or levels of influence: intercultural, community, organizational, and individual.[2] McLeroy and colleagues adapted Bronfenbrenner's ecological model for health promotion programs.[3]

The evaluator condensed McLeroy's five-level ecological model into three levels for analysis; intrapersonal and interpersonal factors were collapsed into the first level (Individual), and institutional and community factors were collapsed into the second level (Group); public policy is the third level (Policy and Environmental). Fourteen PRCs addressed both Individual and Group levels in their core research projects, and 13 PRCs addressed all three levels in their core projects.

Table R-32. Number of Core Research Projects by Level of an Ecological Model Addressed (N = 33)

Level	Number
Individual	3
Group	2
Policy and Environmental	0
Individual + Group	14
Individual + Policy and Environmental	1
Group + Policy and Environmental	0
Individual + Group + Policy and Environmental	13

Source: Fiscal year 2004 PRC applications, fiscal year 2008 PRC work plans, fiscal year 2006 PRC progress reports, and PRC site visit reports.

Implementation of Core Research Projects

Core research projects were assessed to determine if each PRC's project was similar in scope to the project originally proposed in its application. At the time of data abstraction, the PRCs were three years into their five-year funding cycle. Most PRCs were conducting either the project proposed (48%) or a very similar one (42%). Three PRCs were not conducting the proposed project. One PRC changed its core project due to changing priorities in the community; one changed because it was not approved by its community's institutional review board (IRB); and the other PRC changed after a natural disaster affected the original research community.

A review of the 2004 applications demonstrated that 30 PRCs had included a proposed timeline and three PRCs did not. At three years, the most recent annual and interim reports and project

officers' information about activities accomplished provided an updated status for each project. A comparison between the proposed timeline and activities accomplished by mid-fiscal year 2007 demonstrated that 18 projects were on schedule and 12 were not. One-third of the projects not on schedule were delayed to extend the recruitment process to ensure the research projects had enough participants. Other reasons for a project's delay included but were not limited to staff transition, natural disasters (e.g., flooding and hurricanes), and expansion of the scope of the core project.

The status of each core project was also assessed to determine completion of project activities (Table R-33). All PRCs had identified their core project's focus; drafted the research design; assessed health needs and issues of the study population; specified the issues, priorities, study population, and study design; and obtained community partner support for the design. Thirty-two PRCs had developed the intervention or project, study instruments, and other study materials. The interventions had been tested and implemented for 26 of 29 intervention projects. Data collection was in progress for 30 projects as was data analysis for 19 of these projects. One-third of the PRCs had reported and shared information and data about their core research.

Table R-33. Number of PRCs that Completed Specific Core Research Project Activities (N = 33)

Project activity	Number
Identification of focus	33
Draft research design	33
Assessment of health needs or issues	33
Specify issues, priorities, study population, and study design	33
Obtain additional community partner support for the study design, after initial approval	33
Develop the intervention or project, instruments, and other materials	32
Test intervention and monitor intervention delivery (for the 29 intervention research projects)	26
Data collection	30
Data analysis	19
Reporting about research	11

Source: Fiscal year 2004 PRC applications, fiscal year 2008 PRC work plans, fiscal year 2006 PRC progress reports, PRC site visit reports, and PRC project officers.

Integration and Sustainability

For the 29 PRCs conducting an intervention, the evaluator assessed plans for sustaining and integrating the intervention into the community. Some evidence of sustainability and integration activities came from document review; however, most PRCs provided this information during the data validation process. The evaluator looked for descriptions of activities such as "training to increase community support," "working toward sustaining environmental and policy changes over time," and "supporting our community committee in finding resources to sustain research activities in the future." Sixteen PRCs use a community health worker (CHW) model (also called community health advisor or *promotora* model) for their intervention research projects. The CHW model is particularly effective when working with low-income, vulnerable, traditionally underserved populations, and may increase a community's ability to sustain an intervention.[4] Thirteen PRCs provided training on grant writing for community committee members or intervention participants, 12 provided evaluation training, and nine provided training on program planning. All training was specific to the core project.

Table R-34. Number of PRCs Showing Evidence of Integration and Sustainability of the Intervention, by Type of Activity (N = 29)

Activity	Number
Use a CHW model	16
Provide training on grant writing	13
Provide training on evaluation	12
Provide training on program planning	9
Provide training on leadership and capacity	6
Create a toolkit or manual for intervention implementation	5
Provide training on media advocacy	5
Build community networks and coalitions	3
Improve policy or environment	3

Source: Fiscal year 2004 PRC applications, fiscal year 2008 PRC work plans, fiscal year 2006 PRC progress reports, PRC site visit reports, and PRC project officers.

Document review showed that 24 of 33 PRCs either had acquired or had plans to acquire additional funding to expand core research in the future. Of the 24 PRCs, 4 had plans to acquire additional funding, 15 had already done so, and 5 had both acquired funding and had plans to acquire more. No information about additional funds for core research was available for nine PRCs.

Core Research Study

Discussion

Highlights

This section summarizes key findings related to selection of the core research project, research project design and methods, project relationship to The Community Guide and the ecological model, and implementation of the research project.

Project Selection

- At all 33 PRCs, community partners (including each PRC's community committee) helped determine the core research topics. The PRCs used data from community assessments and other local data sources to inform the core research focus.

Design and Methods

- The community-based participatory approach to research has been described by some scientists as not as scientifically rigorous as other research approaches.[5] However, 20 of the 29 PRCs that conducted intervention research used either randomized trials—a design that can provide the most compelling evidence of a cause-effect relationship—or quasi-experimental studies using control groups—the next most rigorous design in terms of ability to deal with bias.[6]

- Twenty-one PRCS used quasi-experimental designs and conducted intervention research either alone or in combination with another research type. To fully assess efficacy, intervention research necessitates a rigorous design. Of these 21 PRCs, 14 used control or comparison groups and 7 did not. Intervention research without the use of control or comparison groups may not be as rigorous as those with controls; however, the lack of controls may be appropriate in some research projects. For example, nearly half of the seven projects without control or comparison groups were pilot studies and could include control or comparison groups in a full-scale intervention project.

- Nearly all (97%) PRCs' core research projects used both quantitative and qualitative methods. Use of data from both types of methods produces strong, defensible results.[7] Qualitative data can help support, explain, and frame quantitative data.

- Of the 32 PRCs that used survey instruments to collect data, 22 modified survey questions or entire survey instruments, usually to make the surveys applicable to a partner community. Such modification, particularly when influenced by a CBPR orientation, may enhance research quality because the measures are most appropriate for a particular population, setting, or community.[5]

- Almost all PRCs field- or pilot-tested survey instruments; over half (19) reported reliability or validity testing. When working with diverse communities, tailored instruments (with respect to nuances of language, meaning, and experiences) are essential to ensure that the data are a valid representation of a particular community.[8] Also, when standard instruments are tailored or modified, the original reliability and validity may not remain for the modified instruments, and it is important to re-establish both reliability and validity.[7]

- The most common method of recruiting participants for PRC core research projects was collaboration with the PRC community committee, whose members tapped community groups and organizations. Similarly, other PRC partners helped recruit participants by providing access to mailing lists, contact lists, and community links.

- At 16 PRCs, community members were involved in research as community health workers (CHWs). These CHWs participated in delivering interventions and share responsibility for recruiting participants and collecting data. The CHW model is particularly effective when working with low-income, vulnerable, traditionally underserved populations. This model also may increase a community's ability to sustain an intervention.[4]

Relationship to The Guide to Community Preventive Services and the Ecological Model

- Of the nine PRCs whose intervention components were recommended by The Community Guide, all core projects built on research from that PRC. Eight of the nine added at least one new component. The new components (e.g., applying the intervention strategy to a new racial or ethnic group, or adding a new setting, goal, or outcome variable to the intervention) helped test the recommended strategy in new situations and added to the evidence base. However, one PRC that conducted research recommended by The Community Guide did not add any new components and may have been repeating strategies already known to be effective.
- Thirteen PRCs were testing intervention strategies that were not part of a systematic review for a topic of The Community Guide. This finding suggests that some PRCs were expanding the knowledge and evidence base for public health interventions by testing new approaches.
- Four additional PRCs were testing strategies designated as having insufficient evidence, which suggests that some PRCs were actively working to fill known gaps in the research literature on effective strategies.
- All the above points, along with the fact that no PRC was testing a strategy recommended against, suggest the PRCs were testing interventions in new settings or new ways.
- Almost half (14) of PRCs included policy and environmental factors in their core research projects. These PRCs recognized the importance of these factors' influence on health and behavior.

Implementation

- Most PRCs' core projects were the same or very similar to the projects originally proposed and difficulty in participant recruitment was one of the main reasons for a core project delay. The five-year funding cycle helped PRCs have adequate time to engage the community in the research process and be flexible in implementing the research.
- All 29 PRCs that conduct interventions engaged in activities to promote sustainability and integration of research, most often through training for community members. The additional four PRCs that conducted determinant research engaged in sustainability and integration activities as well.

Recommendations

Macro draws the following recommendations from the core research study results:

- PRCs should be encouraged to use instruments that have demonstrated reliability and validity or to assess the reliability and validity of the instruments for their study population.
- Future evaluation might examine the level of community involvement in all core research projects, including the determination of research project topics, the role of CHWs, and research participant recruitment.
- Future evaluation could review the relationship of PRC research to new systematic reviews conducted for The Community Guide.
- Because this study evaluated the status of core research projects at three years into the 5-year funding cycle, the study did not assess research results. Future evaluation should explore results—for example, the extent to which the results are enriched by being culturally relevant to the research community, and the strength of the results in relationship to research designs.

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