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Prevention Research Centers: Perspective for the Future

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INTRODUCTION

The Prevention Research Centers (PRC) Program began in 1984, when Congress authorized the DHHS to create a network of academic health centers to conduct applied public health prevention research.¹ In 1986, the Centers for Disease Control and Prevention (CDC) was selected to provide leadership, technical assistance, and oversight for this network of PRCs.

The PRCs are university-based research centers that undertake research-to-practice projects in health promotion and disease prevention. Their work demonstrates the use of new and innovative research in public health approaches that improve the health of the population, particularly those experiencing health disparities. PRCs partner with local, state, and national organizations on a variety of topics, including obesity, diabetes, heart attack and stroke, cancer, physical activity, nutrition, injury prevention, adolescent health, disability prevention among older Americans, and HIV/AIDS. PRCs tap into the expertise of diverse disciplines across their universities and beyond to address health issues and employ diverse methods appropriate to their research questions. A timeline of significant PRC milestones is depicted in the Appendix (available online) and PRC funding appropriations are depicted in Figure 1.

PREVENTION RESEARCH CENTER RESEARCH TO PRACTICE

Each PRC conducts at least one core research project, using a community engagement approach, with an underserved population experiencing high rates of disease and disability. In the current cycle, the core research project is a public health prevention research to practice project in one of three areas: dissemination and implementation research, public health practice—based research, and intervention research. To carry out such community-

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SUPPLEMENTAL MATERIAL

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based prevention research, each PRC is required to support and build capacity for the establishment of a research center. Key elements for a successful center include appropriate infrastructure and administration; community engagement, partnerships, and technical assistance; communication and dissemination; training; evaluation; and research. The main purpose of the center is to address gaps in evidence by partnering with communities and public health partners to assess the community and then design, implement, evaluate, and disseminate cost-effective methods and strategies for health promotion and disease prevention at the tribal, territorial, state, or local level that fill evidence gaps in public health practice or policy that can be scaled up and sustained over time.

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In addition, PRCs compete for supplemental research projects funded by CDC and other agencies within DHHS called Special Interest Projects (SIPs). SIPs provide a financial and administrative means to conduct applied prevention research with multidisciplinary scientists at PRC universities.² SIPs focus on a topic of interest that addresses a gap in scientific evidence. Like the core research project, SIPs support the development of effective state and local public health practices and policies. The funding sponsor outlines broad goals for each SIP, ensuring that it aligns with the mission and public priorities of the PRC Program. Only researchers associated with currently funded PRCs are eligible to apply for one or more of the SIPs within a Funding Opportunity Announcement. SIP awardees are selected through a competitive, peer-review process and are funded for at least 1 year. Many are multiyear projects implemented over the course of a 5-year project period.

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Through the SIP mechanism, funding sponsors can form a Thematic Network, which allows several PRCs to work together on a specific health issue. Each Thematic Network has one funded PRC identified as the coordinating center to manage the multisite project. Like individual SIPs, CDC or other DHHS agencies sponsor the Thematic Network and assign a technical advisor from the agency to work with Thematic Network members. Current Thematic Networks address research gaps in cancer prevention and control, cognitive health and healthy brain, global health, physical activity policy, epilepsy management, nutrition and obesity policy, and workplace health. Past Thematic Networks included tobacco prevention and control, Behavioral Risk Factor Surveillance System, school health, women's cardiovascular health, and oral health.

Since the beginning of the SIP funding mechanism in 1993, \$327 million in total SIP funding has supported more than 1,200 SIP projects (Figure 2). In the previous PRC cycle (2009–2014), \$28 million went to the Thematic Networks to support their work.

EVOLUTION OF THE PREVENTION RESEARCH CENTERS PROGRAM

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In 1995, the Institute of Medicine Committee reviewed the PRC Program and recommended the following future directions for the program: continue to focus on risk conditions and social determinants of health, maintain a focus on community-based research and interdisciplinary approach, disseminate findings, enhance ways of establishing research priorities to involve communities as equal partners in all phases of research, and comprehensively assess health issues and promote interdisciplinary perspectives.³ The Institute of Medicine report became the foundation of many PRC Program improvements,

including an internal evaluation initiative called Project DEFINE (Developing an Evaluation Framework: Insuring National Excellence). This initiative ensured that the PRC Program carried out its legislative mandate and was accountable to its stakeholders, as well as identifying areas for program improvement and ways to implement improvement strategies.

In 2008, CDC asked the Association of Schools of Public Health to gather leading external experts to review the PRC Program; this Blue Ribbon Panel assessed the PRC Program and developed a series of recommendations for growth and a stronger contribution to the field of public health. The Blue Ribbon Panel recommended that the PRC Program maximize the impact of Project DEFINE; enhance the PRC Network; increase program funding; achieve better balance among research, community work, and evaluation activities; enhance collaboration; and improve dissemination and communication efforts.⁴

Building on lessons learned from Project DEFINE and the Blue Ribbon Panel, in 2009, the Program aligned its public health priorities with specific CDC priorities:

1. *Healthy People 2010* Objectives; and
2. National Center for Chronic Disease Prevention and Health Promotion strategic directions: well-being; health equity; research translation; development, evaluation, and dissemination of environmental and systems-wide solutions and strategies to address public health problems; and workforce development to support applied prevention research to develop sustainable and transferable community-based interventions.⁵

In the current Funding Opportunity Announcement Cycle (2014–2019), the PRC Program updated its public health priorities to align with current CDC priorities:

1. *Healthy People 2020* Objectives;
2. The National Prevention Strategy;
3. CDC's winnable battles that cover health topics of nutrition, physical activity and obesity, HIV, motor vehicle injuries, teen pregnancy, and tobacco⁶; and
4. National Center for Chronic Disease Prevention and Health Promotion's four domains of: epidemiology and surveillance, environmental approaches that promote health and support and reinforce healthful behaviors, health system interventions to improve the effective delivery and use of clinical and other preventive services, and strategies to improve community-clinical linkages.⁷

PREVENTION RESEARCH CENTER PUBLIC HEALTH PRACTICE AND SUCCESSES

The combined support for both a research center with an applied public health research agenda and a core research project has allowed PRCs to leverage funding beyond CDC's support. By having an established research center, PRCs in the previous funding cycle (2009–2014), were, on average, able to successfully leverage \$8 in research funding for every \$1 of CDC funding.

The PRC partnerships helped translate promising research findings into practical, cost-effective prevention programs that are relevant to the needs of their targeted communities and populations. In addition, the research activities were successful in using environmental or systems-wide approaches and behavioral interventions, with an emphasis on underserved and minority populations. The systems-level successes and multisector collaborations broadened the PRCs' ability to build evidence on the creation and maintenance of healthier and more-equitable communities.

Examples of selected previous PRC research that have had great impact are included in Figure 3. PRC research has informed evidence-based practices, such as EnhanceFitness, where an exercise program effective in promoting and improving balance, flexibility, strength, and heart health in older adults since 2001 has been scaled up to cover more than 60,000 participants in 750 sites and in 39 states and is now a covered benefit at many YMCA locations across the U.S.⁸ EnhanceFitness was one of nine programs analyzed in a 2013 report to Congress by the Centers for Medicare and Medicaid Services.⁹

Research by PRCs has also informed evidence-based policy interventions. For example, the Internet Cigarette Vendor (ICV) study examined ICV sales and marketing practices and the impact on public health and policy, where more than 2,800 ICV websites were identified, catalogued, archived, and analyzed.¹⁰ The research findings brought the regulation of Internet cigarette sales to the attention of many state and federal legislators, and 33 states passed laws regulating Internet and mail-order cigarette sales. In 2010, the U.S. Senate cited the ICV study in its unanimous decision to pass the Prevent All Cigarette Trafficking Act. The Act aims to curtail the sale of untaxed cigarettes and other tobacco products via the Internet and bans tobacco products delivery through U.S. mail. In helping to shape the future, continued efforts to limit youth cigarette access have the potential to decrease youth smoking rates over time.

CURRENT STATUS AND FUTURE DIRECTIONS

At its peak funding, the PRC Program supported 37 academic research centers in 28 states from 2009 to 2014. Currently (2014–2019), the PRC Program supports 26 PRCs in accredited schools of public health or schools of medicine with a preventive medicine residency across 24 states in the U.S. The aims of the current funding cycle are that PRCs:

1. establish, maintain, and operate multidisciplinary academic-based centers that conduct high-quality applied health promotion and disease prevention research;
2. improve public health practice through applied prevention research;
3. apply the knowledge and expertise of academic health centers to address practical public health problems;
4. design, implement, evaluate, and disseminate cost-effective methods and strategies for health promotion and disease prevention at the tribal, territorial, state, or local level;

5. shorten the time lag between the development of new and proven effective disease prevention and health promotion strategies and interventions and their widespread application; and
6. involve health departments and other community partners in the development, implementation, evaluation, and dissemination of one applied public health prevention research project.

The PRC Program's logic model links inputs, activities, outputs, and outcomes with indicators for both the center activities and the primary core research project (Figure 4). The current PRC evaluation purposes are:

1. accountability: to demonstrate PRC Program public health impact and accountability to Congress, CDC leadership, partner organizations, and communities;
2. visibility: to increase the visibility of the PRC Program among internal CDC stakeholders, key national organizations, states, communities, and local leaders;
3. transferability: to generate knowledge and share information both within and outside the PRCs; and
4. program improvement: to inform internal decision making aimed at improving the PRC Program.

To assess how well the PRC Program fulfills these purposes, a systematized evaluation reporting system has been developed to capture data intended to answer the following evaluation questions derived from the outcomes of the logic model:

1. To what extent do the PRCs stimulate and facilitate policy, environmental, and systems changes that promote public health?
2. To what extent does the evidence developed and disseminated by the PRCs support and impact the efforts of health departments and other public health and community partners?
3. To what extent do the PRCs contribute to public health workforce development?
4. To what extent do investments in PRCs support the scalability, sustainability, and effectiveness of the outcomes resulting from community-based efforts to improve public health?

The PRCs are building academic centers of excellence and conducting projects that take public health research to practice. They work together with communities to conduct this research with health benefits for communities and populations. Moving forward, the PRC Program mission is to focus on:

1. Providing comprehensive PRCs. By having established research centers, PRCs are able to successfully leverage PRC funding for additional funded research projects and activities that benefit states and communities.
2. Increasing collaborations with health departments, communities, and partner organizations through training and technical assistance. PRCs provide subject

matter and evaluation expertise, and technical assistance to all levels of health departments, making these partnerships an important aspect of the PRC Program.

3. Translating and disseminating their findings to others experiencing health disparities—to larger populations or in other geographic areas, keeping in mind scalability and sustainability principles.
4. Working with communities to develop, evaluate, and implement major community changes that can prevent and control chronic diseases.
5. Addressing research gaps, specifically those with insufficient evidence, as identified by the Guide to Community Preventive Services (The Community Guide).
6. Contributing to making linkages between community programs and clinical services.
7. Improving PRC Program evaluation through a new SharePoint data collection system, called PRC Program Evaluation Reporting System. This new system will collect PRC quantitative, qualitative, and research cost evaluation data to demonstrate PRC Program public health impact and accountability, as well as allow calculation of the actual financial costs of PRCs in developing scalable solutions that can be adopted outside the original research population.

The PRC Program is a significant contributor to CDC-wide goals by helping CDC centers, institutes, and offices achieve progress in meeting their goals. The program's commitment to supporting prevention research, and the translating of that research into programs and policies, has created funding collaborations and tested interventions with many partners, such as the Association of State and Territorial State Health Officials and National Association of County and City Health Officials. The Program facilitates opportunities for PRCs to collaborate with other multisite research networks, including NIH's Clinical and Translational Science Awards, the Public Health Practice-Based Research Networks, and the Health Resources and Service Administration's Public Health Training Centers.

These collaborations are contributing to developing common benchmarks and performance measures/metrics to demonstrate increased collective public health impact. The PRC Program continues to produce a wealth of research supporting effective evidence-based research-to-practice approaches for communities experiencing health disparities.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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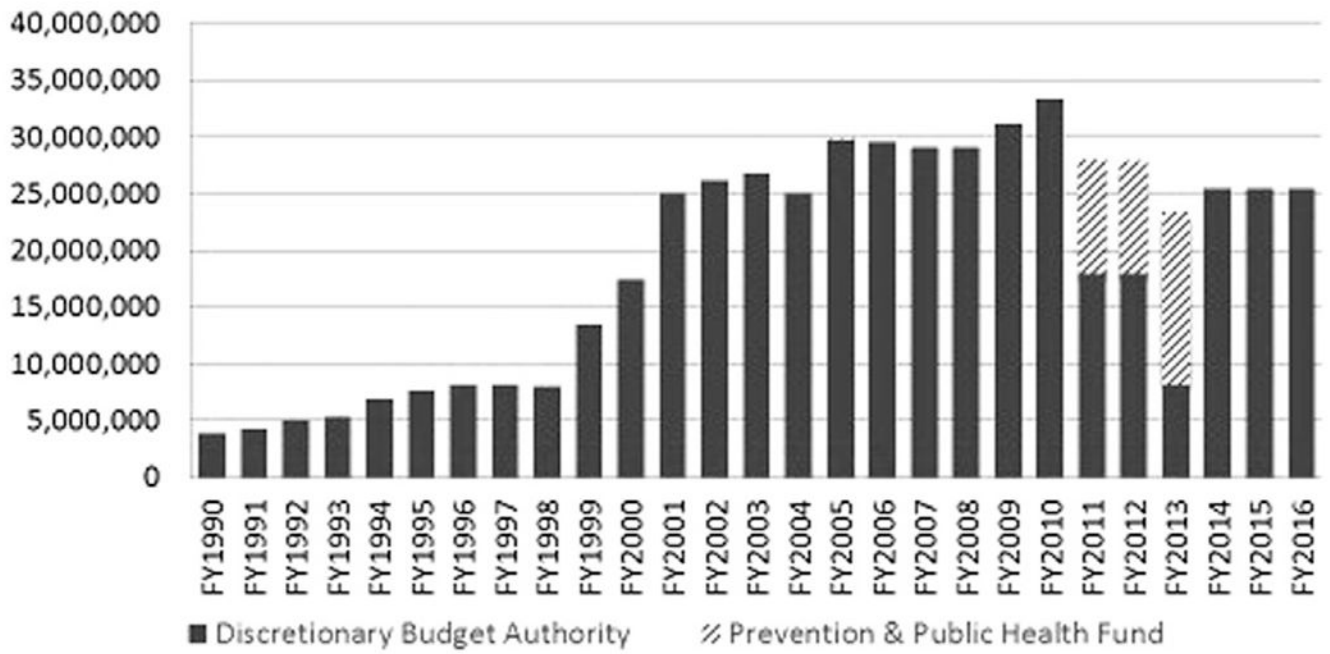


Figure 1. Centers for Disease Control and Prevention’s Prevention Research Centers appropriations. PPHF, Prevention and Public Health Fund.

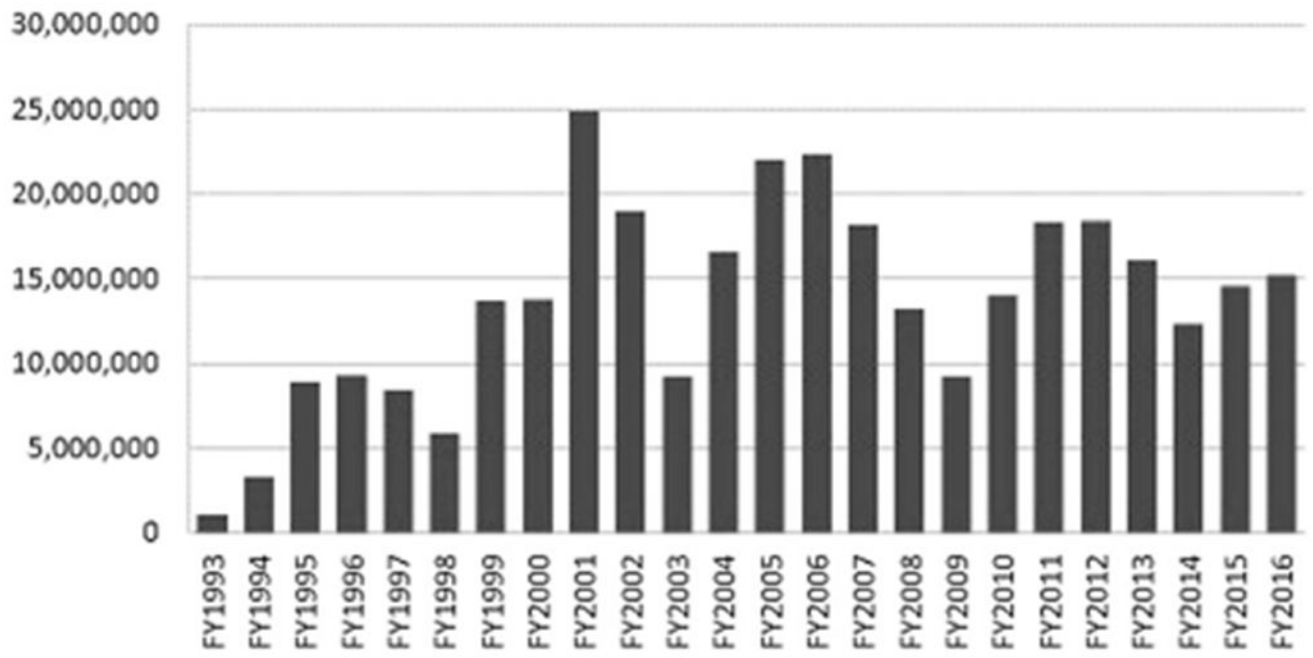


Figure 2. Centers for Disease Control and Prevention’s Prevention Research Centers Special Interest Project funding.

Program	PRC	Description
CBITS (Cognitive Behavioral Intervention for Trauma in Schools)	University of California at Los Angeles	An intervention to reduce symptoms of post-traumatic stress disorder, depression, and behavioral problems in fifth- to twelfth-grade students who have witnessed or experienced traumatic events such as violence, abuse, or injuries (Stein, Jaycox, Kataoka, Wong, Tu, Elliott, et al., 2003).
EnhanceFitness	University of Washington	An exercise program effective for improving strength, balance, flexibility, and heart health in older adults (Ackermann, Cheadle, Sandhu, Madsen, Wagner, & LoGerfo, 2003; Belza, Shumway-Cook, Phelan, Williams, Snyder, & LoGerfo, 2006; Wallace, Buchner, Grothaus, Leveille, Tyll, LaCroix, et al., 1998). Also effective for helping people with arthritis; one of 6 evidence-based physical activity programs the CDC Arthritis Program includes on its menu of approved interventions.
EnhanceWellness	University of Washington	A motivational intervention designed to help participants with challenges such as depression, weight control, and chronic disease management (Fitts, Won, Williams, Snyder, Yukawa, Legner, et al., 2008).
It's Your Game: Keep It Real	University of Texas Health Science Center at Houston	A classroom- and computer-based program for middle school students that helps reduce sexually transmitted diseases and unintended pregnancy among teenagers (Tortolero, Markham, Peskin, Shegog, Addy, Escobar-Chaves, et al., 2010).
NAP SACC (Nutrition and Physical Activity Self-Assessment for Child Care)	University of North Carolina at Chapel Hill	Aims to improve nutrition and physical activity environments, policies, and practices in child care centers through self-assessment and technical assistance (Ammerman, Ward, Benjamin, Ball, Sommers, Malloy, et al., 2007; Benjamin, Ammerman, Sommers, Dodds, Neelon, & Ward, 2007).
<i>Pasos Adelante</i>	University of Arizona	A chronic disease prevention program, led by community health workers, that includes walking groups and educational sessions on nutrition, physical activity, and other risk factors; designed for Mexican Americans living on the U.S.-Mexico border (Staten, Scheu, Bronson, Peña, & Elenes, 2005).
PEARLS	University of Washington	A low-cost program, consisting of 6 to 8 sessions in the participant's home, that reduces depression in older adults (Ciechanowski, Wagner, Schmalings, Schwartz, Williams, & Diehr, 2004) and in all-age adults with epilepsy (Ciechanowski, Chaytor, Miller, Fraser, Russo, Unutzer, et al., 2010).
Planet Health	Harvard University	An interdisciplinary curriculum for sixth- through eighth-grade students focuses on improving nutrition and physical activity levels while building and reinforcing skills in language arts, math, science, social studies, and physical education (Gortmaker, Peterson, Wiecha, Sobol, Dixit, Fox, et al., 1999).
Project Joy	Johns Hopkins University	A campaign of nutrition and physical activity interventions developed to improve cardiovascular health in African-American women in church settings (Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001).
Project UPLIFT (Using Practice and Learning to Increase Favorable Thoughts)	Emory University	An 8-session depression reduction program for people with epilepsy delivered via Internet or by telephone (Walker, Obolensky, Dini, & Thompson, 2010).
Verb Summer Scorecard	University of South Florida	A physical activity intervention for children aged 9–13 years based on the CDC's national Verb™ Campaign. Enables youth to participate in community-organized physical activity events (Alfonso, McDermott, Thompson, Bryant, Courtney, Jones, et al., 2011).
WebEase (Web Epilepsy, Awareness, Support and Education)	Emory University	An online self-management program for people with epilepsy (Dilorio, Escoffery, McCarty, Yeager, Henry, Koganti, et al., 2009).

Figure 3.
Selected PRC-developed programs.
CDC, Centers for Disease Control and Prevention; PRC, Prevention Research Center.

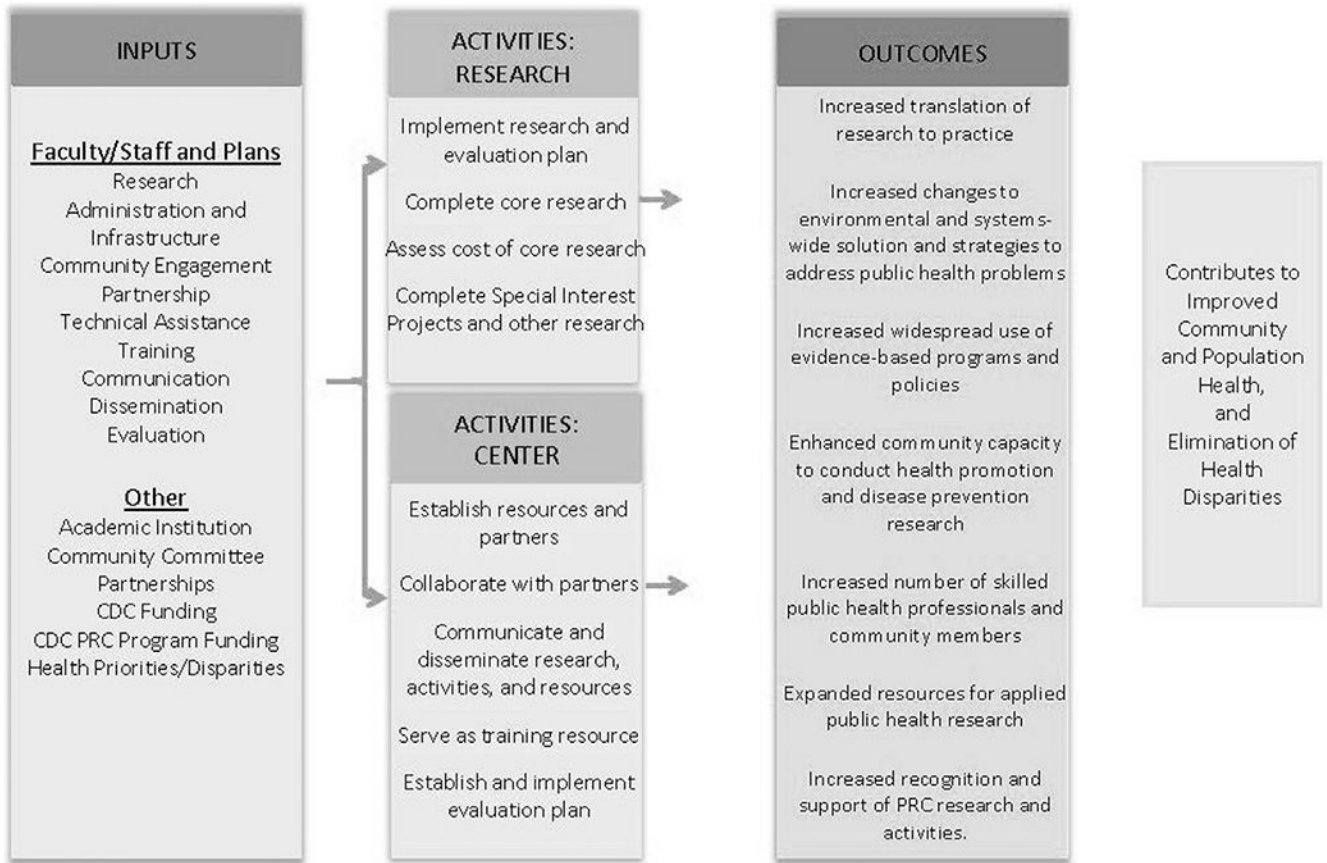


Figure 4. PRC logic model: Context, partner and community engagement, and evaluation. CDC, Centers for Disease Control and Prevention; PRC, Prevention Research Center.

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