COMMUNITY HEALTH CENTER INTER-ORGANIZATIONAL RELATIONSHIPS

A Thesis in
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by
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ABSTRACT

This dissertation is divided into three distinct but related articles on safety net providers’ inter-organizational relationships (IORs). The first article presents an overview of the key U.S. safety net providers and their changing environment, which has prompted their pursuit of collaborative efforts. The second article focuses on gaining insight into the collaborative efforts of a single type of safety net provider, the community health center (CHC), and the development of a partnership typology for use in measuring partnership outcomes of safety net providers. The third article examines the impact of IORs on access to care using a nationally representative sample of CHCs and the partnership typology developed in the second article.

The first article provides a broad overview of the safety net providers who are a critical source of health care for the Nation’s 45 million uninsured as well as the 51 million low-income people who are covered by Medicaid. The overview of the safety net providers includes a description of their patient populations and financing structure. The changes to the safety net’s environment include changes in the demand for safety net services, in the competitive environment, and in the safety net’s financial support and public insurance coverage. In response to these changes, safety net providers have pursued inter-organizational relationships with each other in pursuit of gaining greater efficiencies and expanding access to care for their patients. This article describes some of what is known about these collaborative efforts.

The second article describes community health center IORs, the stated reasons for their formation and their reported outcomes. A qualitative and cross-sectional approach was taken, applying grounded theory techniques. The sample consists of 51 California and Florida federally-funded community health centers. The data are from the narrative portions of the
Bureau of Primary Health Care grant applications, which are a rich and untapped source of information on IORs.

The study results include the inductive development of constructs related to environmental motivations and organizational objectives for entering IORs, IOR members, IOR activities, and IOR outcomes. These constructs provided the basis for the development of a community health center organizational collaboration model. The model depicts the interrelationships among the constructs and provides a framework and IOR typology for further discussion and future study of each construct.

There are several findings from this analysis. The primary environmental force cited was the underlying health needs of the community or a specific population. Consistent with this external motivator, CHCs reportedly pursued IORs primarily for the purpose of improving their patients' quality and access of care and to gain needed resources to meet that objective. Eighty percent of the sampled CHCs were involved in service delivery coordination activities, mostly with inpatient facilities and local community providers. Forty-three percent of CHCs reporting IORs did not identify any IOR outcomes. However, of those CHCs that reported outcomes, the most frequently cited IOR outcome was increased service access.

Overall, the findings of this research indicate that CHCs widely participate in IORs with a variety of organizations, many of which are other safety net providers. However, the benefits of these IORs have not been well documented within the grant applications. Future research should focus on measuring the types of outcomes identified in this study and linking those outcomes to the seven types of IORs most common amongst CHCs and other safety net providers.
Therefore, the third article continues the research by testing for specific access to care IOR outcomes using the typology developed in the second article. This research addresses the following questions: Do CHC IORs increase access to CHC services? What specific types of organizational partners and activities contribute to improved access? Do CHC IORs specifically improve access to specialty, dental, and mental/substance abuse treatment for CHC patients? Data for this study are from the Bureau of Primary Health Care (BPHC) 2000 and 2001 grant applications, including both quantitative data that is made available through the BPHC Uniform Data System and qualitative data taken from the narrative portions of the grant applications. The sample consists of 424 federally-funded community health centers that were randomly selected from the 730 CHCs that were funded by the BPHC in 2000. A lagged multiple linear regression (ordinary least squares) analysis was performed to test for the influence of IORs on access to care outcomes as measured by the number of CHC users and number of specialty care providers (i.e., dental, behavioral health, and other specialty care).

The study results do not find that IORs improve access to CHC services, in general, or to specialty types of care. It is possible that IORs improve access to care, but do so indirectly through improvements in financial outcomes, such as through creating greater efficiency or by adding financial resources, that in turn enable CHCs to see more patients.
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EPIGRAPH

"Defend the cause of the weak and fatherless; maintain the rights of the poor and oppressed. Rescue the weak and needy; deliver them from the hand of the wicked".
Psalm 82:3-4
Chapter 1

Introduction

As part of the Nation’s medical safety net, community health centers (CHCs) have contributed to the care of low-income Americans for 40 years. CHCs have not worked in isolation, but have established inter-organizational relationships (IORs) for the purpose of expanding access to care for the Nation’s uninsured and vulnerable populations. This dissertation describes the safety net (i.e., community health centers, public hospitals, and local health departments) and explores how safety net providers are working together, and with other organizations, from the perspective of the community health center.

Organization of Dissertation

This dissertation follows the alternative format approved by The Graduate School of Penn State and is divided into three manuscripts that have been written for publication in peer-review journals. These articles are found in Chapter 2, 3, and 4. A unifying conclusion is found in Chapter 5. Each article contains a separate bibliography; however, the appendices are consolidated at the end of the dissertation.
Overview of the Three Articles

The purpose of article one, *Who is Caring for the Nation’s Medically Vulnerable Population and Are They Working Together?*, is to present an overview of the key U.S. safety net providers, the changing environment in which they operate, and their joint pursuit of collaborative efforts in response to these environmental challenges. Article two, *Florida and California Community Health Centers’ Inter-Organizational Relationships: Developing a Typology of Partnership Types, Predictors, and Outcomes*, focuses on gaining insight into the collaborative efforts of a single type of safety net provider, the CHC, and the development of a partnership typology for use in measuring partnership outcomes of safety net providers. The purpose of article three, *Community Health Centers’ Inter-Organizational Relationships: Do These Relationships Improve Population Access to CHCs and to Specialty Care Services?*, is to examine the impact of collaboration on access to care using a nationally representative sample of CHCs and the partnership typology developed in article two.

Collectively, these three articles lead the reader from a broader view of the safety net and their collaborative efforts to a more detailed description of CHC IORs and their outcomes. The insight gained on CHC IOR predictors, types, and outcomes are likely mirrored in the broader safety net given that many of the CHC IORs are with other safety net providers.

Collaboration amongst health care organizations has become more of a norm over the past two decades (Goes & Friedman, 2001). Safety net providers, feeling the pressures of trying to deliver care to a growing number of uninsured in an increasingly competitive managed care environment, have turned to IORs to seek more efficient ways to expand their delivery of care (Lewin & Altman, 2000). Despite the prevalence of health care IORs, there has been relatively
little research on IOR outcomes, and even less on IORs ability to increase access to care. The Bureau of Primary Health Care has funded CHCs and their safety net partners to promote greater coordination of health care delivery services (BPHC, 2004). As grant funds from this program and other state and local initiatives recede, collaborative efforts are likely to dissolve if they are unable to demonstrate quantifiable benefits to the participating organizations and the communities they support. This research on CHC IORs not only describes safety net provider collaborative efforts, but also seeks to answer the question of do IORs actually improve access to care for their target population.
References


Chapter 2

Who is Caring for the Nation’s Medically Vulnerable Populations and Are They Working Together?

Abstract

Safety net providers are a critical source of health care for the Nation’s 45 million uninsured as well as the 51 million low-income people who are covered by Medicaid. This article presents an updated overview of the key U.S. safety net providers (i.e., community health centers, public hospitals, and local health departments), the changing environment in which they operate, and their joint pursuit of collaborative efforts in response to these environmental challenges. The overview of the safety net providers includes a current description of each safety net provider’s patient population and financing structure. The changes to the safety net’s environment include changes in the demand for safety net services, in the competitive environment, and in the safety net’s financial support and public insurance coverage. In response to these changes, safety net providers have pursued inter-organizational relationships with each other in pursuit of greater efficiencies and expanding access to care for their patients. This article describes some of these collaborative efforts and how they are working together to address common needs.
Introduction

As of January 2005, the U.S. national debt reached an all time high of 7.6 trillion dollars and it is expected to continue to increase (Department of Treasury, 2005). Federal taxes have been reduced and federal spending has leaped 23 percent from 2001 to 2003, resulting in a budget deficit of $374 billion in 2003 alone (Riedl, 2004a, 2004b). Meanwhile the population is aging, leaving behind a shrinking workforce and a social security system that is predicted to have major shortfalls by 2015 (Riedl, 2004c). The United States is facing a fiscal crisis. The individual states have not fared much better. From 2001 to 2003, the states faced their largest fiscal crisis in 60 years, during which time they were forced to make drastic budget cuts, increase taxes, and drain their reserve funds (NGA, 2004). Only recently, in 2004, have the states started on a path toward recovery (NGA, 2004). In this type of economic environment, the health care safety net is particularly vulnerable due to its dependence on public funding. Decreases in public funding would compound the dilemmas already facing safety net providers, dilemmas such as how to care for a growing uninsured population concurrently with intense competition for insured patients.

In turbulent times, one adaptive strategy organizations can select is collaboration with other organizations. There has been a substantial increase in the use of strategic alliances in the health care industry (Zajac & D'Aunno, 1994). Indeed, there appears to even be a general culture of cooperation for the purpose of pursuing common goals. Two such common goals that SNPs have pursued through collaboration have been improved patient access to needed services and greater organizational efficiency.
The purpose of this paper is to provide health care managers with an updated understanding of the key types of organizations found within the safety net, the policy and market environmental changes impacting the safety net, and how SNPs are currently working together to deliver care to the Nation’s medically vulnerable population and to address common needs. The first part of this paper defines the safety net and then describes the commonality linking the various safety net providers, that is, the populations they serve. The second part presents a current picture of each of the safety net provider types: community health centers, local health departments, and public hospitals. The third and fourth parts provide the environmental context that has acted as a stimulus for safety net providers’ collaboration and a review of current SNPs’ efforts to work together.

The Safety Net Defined

The Institute of Medicine defines safety net providers as those providers that (1) by legal mandate, or as part of their mission, offer services to patients regardless of their ability to pay, and (2) have a substantial share of their patient mix consisting of patients who are uninsured, covered by Medicaid, or are otherwise considered medically vulnerable, such as uninsured individuals with low incomes, individuals residing in medically underserved areas, and patients with special needs (e.g., homelessness, serious chronic illnesses or disabilities) (Lewin & Altman, 2000). This definition, which has been adopted for this article, includes community health centers (CHCs), local health departments (LHDs), and public hospitals.

The legal mandates referenced in the Institute of Medicine safety net provider definition often require safety net providers to be located in a medically underserved area.
underserved areas are communities that have been federally designated as having a shortage of health professionals, high poverty rates, high uninsured rates, and overall poor health status (Rosenbaum, Shin, Roby, & Park, 2001). Approximately 71 million Americans live in medically underserved areas and these areas are primarily located in inner-cities and rural areas that have very limited access to providers and have very poor economic bases (Lewin & Altman, 2000). The following sections further describe the medically vulnerable populations served by these safety net providers.

*The Uninsured and Underinsured Population*

Data from the U.S. Census Bureau indicates that the number of Americans without health insurance grew between 2000 and 2003 from 40 million to 45 million (i.e., 15.6 percent of the U.S. population) (DeNavas-Walt, Proctor, Mills, & Bureau, 2004). When those people under the age of 65 who were uninsured only part of the year are included, this figure grows to 81.8 million people uninsured in 2003 (32.2 percent of the U.S. population) (Stoll & Jones, 2004). People without health insurance generally have less access to medical care than those with coverage, particularly moderate- and low-income individuals who are unable to afford the out-of-pocket expenses for care (Brown, Wyn, & Teleki, 2000). Uninsured individuals, in general, may be less likely to receive preventive and necessary medical care than those who are insured, resulting in more serious illness episodes once they finally obtain health coverage and/or present for care (Families USA, 2001). Because of their mandates or missions, safety net providers tend to provide care for the uninsured and underinsured either on a charity basis or on sliding-fee
scale basis. Study findings indicate that living in closer proximity to a safety net provider does improve access to care for the uninsured (Hadley & Cunningham, 2004).

An individual’s economic status is associated with his or her likelihood of being uninsured (DeNavas-Walt et al., 2004). Over a third of the poor (less than 100 percent of the federal poverty level) and nearly a third of the near-poor (100 percent – 199 percent of federal poverty level) lacked health insurance coverage for an entire year in 2003 (Kaiser Foundation, 2004). However, it should be noted that being uninsured is not limited to those who are unemployed. More than four in five individuals who were uninsured for any part of 2002-2003 were connected to the workforce (Stoll & Jones, 2004). Low-income workers are less likely to be offered health insurance coverage through their own or a spouse’s employment (Kaiser Foundation, 2004). One reason is that low-income workers tend to be employed either on a part-time basis for which health insurance coverage is not usually offered or by small businesses or industries (e.g., farming) that cannot afford to provide the coverage.

Three populations stand out as being disproportionately uninsured: Hispanics, individuals residing in rural areas, and immigrants. Thirty-three percent of Hispanics were uninsured in 2003 compared to 14.7 percent of Caucasians and 19.4 percent of African Americans (DeNavas-Walt et al., 2004). Income levels and family structure both contribute to the prevalence of Hispanic uninsurance. Thirty-six percent of Hispanic households have annual incomes of less than $25,000, $9,000 less than the average U.S. household (Wellner, 2002). Unlike the U.S. population in general, the Hispanic population tends to be much younger and have larger families with younger children at home and only one parent working (Schur & Feldman, 2001; Wellner, 2002). The lower income and increased expense of having young children impact Hispanic families’ ability to purchase health insurance.
Individuals residing in rural locations had an uninsured rate that was 20 percent higher than individuals residing in urban areas (NRHA, 1999). Rural people often are self-employed, seasonally or part-time employed, or work for small businesses, thereby contributing to the higher unemployment rate.

In 2003, 35 percent of immigrants were uninsured compared to 13 percent of native-born Americans (Current Population Survey, 2004; DeNavas-Walt et al., 2004). Over half of immigrants arrive from Latin American, contributing to some overlap with the aforementioned Hispanic population (Hudman, 2000). Between 1990 and 1998, immigration contributed to 30 percent of the total population increase in the U.S. (Martin & Midgley, 1999). If net legal and illegal immigration continues to average 820,000 per year, first- and second-generation Americans will make up only one-third of the U.S. population by 2025. Immigrants are not eligible for Medicaid for the first five years following arrival in the U.S. and illegal immigrants are not entitled to any benefits. Many immigrants who are eligible do not sign up for Medicaid coverage due to fear of deportation as a result of using public resources (Guendelman, Schauffler, & Pearl, 2001; Ku & Freilich, 2001a; Lewin & Altman, 2000). This growing population of legal and illegal immigrants, while not eligible for social programs, still continues to be treated by most safety net providers, falling into the uninsured and uncompensated care categories.

Another group of interest to the safety net providers is the underinsured. The insured don’t always have sufficient coverage to meet their medical needs. Thirty-eight percent of insured individuals reported that they or their families experienced at least one problem in accessing medical services (Kaiser Foundation, 2002). People may be considered underinsured if they experience insurance coverage gaps as a result of having uninsurable pre-existing medical
conditions. Others may simply not be able to afford the cost-sharing associated with the covered benefits and therefore, forego or delay necessary care. Even others may have chosen a less comprehensive insurance plan to avoid higher premiums.

**Medicaid/State Children’s Health Insurance Program (SCHIP)**

Medicaid provides health insurance coverage for 51 million low-income people (Steinberg & Merlis, 2004). Medicaid enrollment has increased by 25 percent since 1999 with the rate of growth peaking at 9.8 percent in 2002 (Ellis, Smith, & Rousseau, 2003). To receive federal matching funds, states are required to provide coverage for some low income families with children, Supplemental Security Income recipients, infants born to Medicaid-eligible pregnant women, children under age 6 and pregnant women whose family income is at or below 133 percent of the federal poverty level, and certain Medicare beneficiaries (CMS, 2004). SCHIP, created in 1997 as part of the Balanced Budget Act, has expanded health insurance coverage beyond that of the traditional Medicaid program to include low-income children with slightly higher family incomes (up to 200 percent of the federal poverty level). Federal Medicaid laws do permit states to expand coverage to other groups, such as certain categories of parents and immigrants. However, most states have set their income eligibility levels too low for most low-income parents and adults without children to qualify (Steinberg & Merlis, 2004). An estimated 81 percent of low-income (i.e., incomes below 200 percent of the federal poverty level), uninsured adults are ineligible for Medicaid coverage in their state (Stoll, 2001).

Even as enrollment was increasing, most states began implementing some form of cost containment measures (Kaiser Foundation, 2004a). Medicaid spending, however, has continued
to grow faster than state revenues (Kaiser Foundation, 2004a). In fiscal year 2002, 36 states experienced Medicaid budget shortfalls (Kaiser Foundation, 2002). As a result, in May 2003, Congress passed a temporary federal fiscal relief act providing $10 billion to states to assist their Medicaid programs (Kaiser Foundation, 2004a).

Safety Net Providers

This section provides detailed descriptions of CHCs, public hospitals, and LHDs. These safety net providers have a substantial share of their patient mix who are uninsured, are covered by Medicaid or are otherwise considered medically vulnerable. Safety net providers also share the characteristic of having a smaller share of privately insured patients compared to their non safety net counterparts and they frequently must rely on federal, state and local grants/subsidies and other private donations to operate (Davis, Collins, & Hall, 1999; Lewin & Altman, 2000). These commonalities have motivated SNPs to link together, especially during fiscally constrained time periods, to obtain services for their uninsured patients and to achieve greater efficiencies.

Community Health Centers

Federally funded CHCs began as migrant health centers and neighborhood health center demonstration projects as part of President Johnson's War on Poverty in 1965 (BPHC, 2000b). The federal funding is administered by the Division of Health Center Management, Bureau of Primary Health Care, within the Health Resources and Services Administration of the U.S.
Department of Health and Human Services. CHCs are ambulatory care facilities that provide primary and preventive health care services, including family planning, outreach, social services and immunizations. The majority of CHCs now provide mental health services (70 percent), preventive dental services (74 percent) and restorative dental care (65 percent) as well (BPHC, 2004a).

Besides the requirements for federally-funded CHCs to be located in medically underserved areas and to serve anyone seeking care regardless of ability to pay, CHCs must also have a nonprofit, tax exempt or public status, and have a board of directors that is comprised of 51 percent or more of consumers (Lewin & Altman, 2000; McLaren, 2002).

As a result of the President’s Growth Initiative for CHCs, from 2001 to 2003 the number of CHCs increased from 748 to 890 and the number of users increased by 22 percent (BPHC, 2004a; HRSA, 2002b). There are 4,990 CHC sites with a network of over 78,000 providers serving over 12.3 million people, including community, migrant, school-based, public housing, and health care for the homeless sites in all 50 states.

**Community Health Center Patient Characteristics and Financing**

In 2003, 69 percent of CHC users had incomes at or below 100 percent of the federal poverty level and 90 percent were at or below 200 percent (BPHC, 2004a). Seventy-five percent of CHC users were either uninsured or were covered by Medicaid (see Figure 2-1). Of the 12.3 million plus users, 5.6 percent were migrant/seasonal workers and their families and 5.5 percent were homeless. Sixty-four percent of CHC users were of minority race/ethnicity, with over a third of users being Hispanic or Latino and a quarter of users being African American. Thirty
percent of CHC users have linguistic barriers to receiving care. And finally, almost 178,000 children were served by school-based CHCs.

Data Source: (BPHC, 2004a)

Figure 2-1: Community Health Center Users by Insurance Status for 2003

CHCs depend on grants and donations to support their operations. In 2003, the 890 federally-funded CHCs spent, in total, over 6.1 billion dollars, of which 1.3 billion was funded by the BPHC, the single largest grant contributor (BPHC, 2003). A portion of the BPHC grant funding is also tied to the establishment of specific types of collaborative activity. Without federal, state and local grants, CHCs would have had a cash shortfall of over $2.6 billion. Only 56 percent of CHC funding was derived from patient revenues, most of which were received from Medicaid (see Figure 2-2). CHCs also received donated services and supplies valued at 181.1 million dollars or 3 percent of CHC total costs (BPHC, 2003). Overall, CHCs generally
are financially strained, with 50 percent of CHCs having negative total margins, a figure that increases to 98 percent when grant funding is excluded (UDS, 2000).

Data Source: (BPHC, 2003)

Figure 2-2: Community Health Center Revenue Sources for 2003

CHCs can receive federal funding through one or more of the following BPHC grant programs, each of which provides different opportunities for collaborative efforts: community health center, migrant health center, health care for the homeless, public housing primary care, and Healthy Schools, Healthy Communities. The Migrant Health Program supports 125 community nonprofit organizations at 400 migrant clinic sites throughout the U.S. and Puerto Rico (BPHC, 2003; UDS, 2001). The Migrant Health Program provided medical services to over 656,000 migrant and seasonal farm workers and their families in 2003 (BPHC, 2004a).

The Health Care for the Homeless Program, initially created in 1987, combines assertive street outreach, case management, client advocacy, and coordination with other community
health providers and social service agencies (NACHC, 2003). In 2003, 159 Health Care for the Homeless grantees served approximately 588,000 people, roughly half of the U.S. homeless population (BPHC, 2001, 2004a; UDS, 2001). Under this program grantees provide primary care and substance abuse services at locations accessible to homeless individuals, 24-hour access to emergency services, referral for hospital care, mental health services or referral to such services, outreach efforts to inform homeless individuals of available services, and assistance with establishing eligibility for housing entitlement programs (BPHC, 2003). Eight additional grants help clinics target medical care to homeless children through the Homeless Children’s Program (BPHC, 2001; UDS, 2001).

The Public Housing Primary Care Program, originated in 1990, funds comprehensive primary health care services on the premises of public housing developments or at other immediately accessible locations (NACHC, 2003). In 2003, 33 grants improved health care access for approximately 110,000 people living in public housing projects, double the number of people served in 2001 (BPHC, 2001, 2004a; UDS, 2001). The Healthy Schools, Healthy Communities Program that was established in 1994 was the first federal program to support the creation of school-based health centers (BPHC, 2003). Eighty CHCs provide school-based services under this program, serving over 177,800 students (BPHC, 2004a).

There are 111 “Federally Qualified Health Center (FQHC) look-alike” designated freestanding or hospital community-based organizations that meet FQHC eligibility criteria but do not receive federal Section 330 grant funds (BPHC, 2003). This designation allows centers to receive FQHC cost-based Medicaid and Medicare payments.

The next section describes another type of safety net provider, the public hospital.
Public Hospitals

Public hospitals have provided uncompensated charity care to the poor for more than 200 years and were the primary source of care for low-income patients until the development of Medicare and Medicaid (Gage, 1998). There are now approximately 1,121 public hospitals in the United States (AHA, 2004). The past decade has seen many public hospitals close or become acquired by for-profit or not-for-profit hospital systems, possibly changing their charity roles (Legnini et al., 1999; Lewin & Altman, 2000). Despite these changes, more than half of safety net providers, as classified by high levels of uncompensated care delivery, are nonfederal public hospitals with state, county, city, or hospital district authority ownership (Fishman, 1997a). The large public hospitals, many of which are academic medical centers, are mostly located in urban areas and still have a mission to primarily serve uninsured and Medicaid patients (Legnini et al., 1999; Lewin & Altman, 2000).

Public hospitals provide not only vital sources of care for the uninsured and medically indigent populations, but also specialty services for the entire community, including burn care, pediatric and neonatal intensive care, trauma care, psychiatric inpatient and outpatient care and alcoholism inpatient treatment. In 2000, National Association of Public Hospitals and Health Systems (NAPH) member hospitals maintained only 16 percent of hospital beds in their respective markets but provided 25 percent of the neonatal intensive care beds, 52 percent of burn care beds, 26 percent of pediatric intensive care beds, 40 percent of Level 1 trauma centers and 22 percent of emergency room visits in the U.S. (Singer, Kuzner, & Fagnani, 2002). This places some public hospitals in a favorable position to collaborate with other SNPs for other services the public hospital may be lacking (e.g., primary care).
Public Hospital Patient Characteristics and Financing

Public hospitals' patient populations are similar to CHC patients in that the majority of their patients are Medicaid beneficiaries or are uninsured. In 2002, 65 percent of NAPH hospital outpatient visits and 60 percent of patient discharges were by either uninsured patients or Medicaid beneficiaries (Singer, Davison, Tolbert, & Fagnani, 2004). Compared with other urban hospitals, urban safety net hospitals, of which over half are public hospitals, see twice as many Hispanics (23 percent of patients) and African Americans (24.6 percent of patients) and 85 percent of their patients have incomes below 150 percent of the federal poverty level (Gaskin & Hadley, 1999b; Lewin & Altman, 2000).

Overall public hospitals are not performing as well financially as other hospitals. In 2002, over half of NAPH hospitals and health systems lost money, compared to a national average 4.5 percent profit margin (Singer et al., 2004). Public hospitals tend to rely heavily on Medicaid and federal, state and local government subsidies as major sources of revenues with 80 percent of their services being financed through public funds (Gaskin & Hadley, 1999b; Hospitals, 2002; Singer et al., 2002). However these subsidies, specifically the Medicare and Medicaid disproportionate share hospital payments, covered only 29 percent of the public hospitals' uncompensated care bill in 2002, down from covering 49 percent of uncompensated care in 1995 (Gage, 1998; Singer et al., 2004). Public hospitals' state and local subsidies are also covering less of the uncompensated care bill (39 percent of uncompensated care in 2002 versus 51 percent in 1995) (Singer et al., 2004). Public hospitals are now relying more heavily on revenues unrelated to patient care, such as cafeteria and parking revenues, to cover the balance of their uncompensated care bills. The public hospital uncompensated care bill is not a
trivial figure, representing 21 percent of public hospital costs compared to only 5.4 percent of costs for hospitals nationally (Singer et al., 2004). Some hospitals may be able to reduce their uncompensated care bill through collaboration with CHCs or LHDs, linking their uninsured patients to a regular source of primary care and thereby reducing their use of the emergency room as an acute care clinic (Gabow, Eisert, & Wright, 2003).

The next section describes the last type of safety net provider, the local health department.

**Local Health Departments**

LHDs originated out of state and local health department laboratories in the 1890s whose primary mission was to improve sanitation through detection and control of bacteria in water systems (Institute of Medicine, 1988). Following the success of bacteriology and health departments’ increased stature as a vital source of scientific knowledge in health, the identification and treatment of contagious diseases in individuals was the next natural progression. By 1915, public health agencies’ focus had shifted from disease prevention to promotion of overall health and there were more than 500 tuberculosis clinics and 538 baby clinics providing direct clinical care and health education (Institute of Medicine, 1988).

There are now over 2,800 LHDs in the U.S. that provide services to the uninsured, homeless, immigrant and other vulnerable populations (Rosenblatt, Casey, & Richardson, 2002). The organization of LHDs varies from state to state, but LHDs, for the most part, fall under each state’s department of health (APHA, 2003). Most states organize their public health system around county health departments, while other states organize around municipalities (Wall,
1998). Some larger cities support their own city health department and others operate a joint
city/county health department. The services offered range from providing direct care to public
health surveillance. In 1998, the majority of LHDs provided immunizations (96 percent), well-
child clinic services (79 percent), Women, Infant and Children services (78 percent), Medicaid
Early Periodic Screening Diagnosis and Treatment program services (72 percent), sexually
transmitted disease testing and counseling (71 percent), and family planning services (68
percent) with only one quarter of LHDs sponsoring school-based health clinics (Institute of
Medicine, 1988). Most of the LHDs are small and rural with two-thirds of the LHDs serving
populations smaller than 50,000 people (Rosenblatt et al., 2002).

LHDs are responsible for a set of core public health functions as defined by the U.S.
Department of Health and Human Services (Baxter, 1998). These functions include monitoring
the health status of the community and resolving health problems and hazards, educating the
public about health issues, and conducting relevant research. Three additional core functions
provide the opportunity for LHD collaboration, that is, initiating community partnerships to
identify and solve health problems (e.g., community-wide health needs studies), referring
individuals for personal health services not available at the LHD, and ensuring the provision of
needed health care when it is not otherwise available in the community (e.g., collaboration with
other SNPs to initiate a new joint service).

The 1988 Institute of Medicine report stated that LHDs should focus on the above listed
core public health functions, which primarily focus more on public health assessment and
provide safety net direct medical care services only until alternative sources become available
(Institute of Medicine, 1988). However, many LHD directors are experiencing tensions between
the two roles, with 88 percent believing LHDs should also provide direct health care services
(Keane, Marx, & Ricci, 2001). Some LHD directors believe many vulnerable populations would be left without access to care should the LHD not provide it, particularly since many private physicians in their communities do not accept Medicaid. Despite LHD director sentiments, many LHDs are following the Institute of Medicine’s recommendations and through collaborations, have contracted out services with the most frequently privatized personal health services being primary care, substance abuse, and communicable disease services (Keane, Marx, & Ricci, 2002a). Data from 1999 show that 73 percent of LHDs have delegated the direct performance of some public health services to outside organizations (Keane et al., 2001).

**Patient Characteristics and Funding Sources**

LHDs provide free health care services for vulnerable populations and for those with special needs, such as patients with HIV/AIDS, sexually transmitted diseases or drug dependence, particularly when other sources of care are lacking in the local community (Keane et al., 2001; Lewin & Altman, 2000). LHD funding sources include state government, including federal pass-through funds (40 percent), local government (ranges from 9 percent in some states to 50 percent in other states), and Medicaid (7 percent) (Wall, 1998).

**Policy and Market Environment Impacting the Safety Net**

The safety net has been faced with a constantly changing health care environment, which includes policy efforts aimed at reducing overall health care spending. The key factors challenging safety net providers and their ability to support their missions include changes in the
demand for safety net services (i.e., higher number of uninsured), changes in the competitive environment (i.e., expansion of Medicaid managed care), and changes in financial support of safety net providers and public health insurance coverage (GAO, 1994; Lewin & Altman, 2000; Meyer, 2004; Rosenbaum, Shin, Markus, & Darnell, 2000).

**Changes Impacting Demand for Safety Net Services**

Policy changes impacting the number of uninsured and underinsured also effect the demand for safety net services (Baxter & Mechanic, 1997). As previously mentioned, the number of uninsured has grown considerably since 2000, thereby increasing the demand for safety net services (DeNavas-Walt et al., 2004). This increase is partially attributable to changes in employer-sponsored insurance coverage and welfare reform. Starting with the economic downturn in 2001, the share of Americans with employer-sponsored insurance has continued to decline annually (Kaiser Foundation, 2004). Many Americans have lost their jobs as reflected in the rise in unemployment (i.e., from a low of 3.6 percent in 2000 to a 10-year high of 6 percent in 2003) and consequently lost their employer-sponsored health insurance coverage (Bureau of Labor Statistics, 2005). For those who are still employed, many have felt the increased financial burden of the escalating health insurance costs as employers passed more of the increased cost onto their workers. Health insurance premiums have increased by 59 percent since 2001 and employee contributions have also grown by 57 percent (Gabel, Claxton, Gil, Pickreign, & al., 2004). Employers are estimated to have decreased health benefits in order to “buy down” their insurance premiums by 2-3 percent in 2002 and by another 3 percent in 2003 (Strunk & Ginsburg, 2003).
The Health Insurance Portability and Accountability Act of 1996 was intended to improve coverage for some uninsured individuals and should have eased the transition during this peak unemployment period. The goal was to make employer-sponsored insurance more portable between jobs and available to those who were self-employed or unemployed. However, the premiums charged by insurers have been too expensive for most people with serious pre-existing medical conditions to afford the coverage (Lewin & Altman, 2000).

Changes in welfare eligibility and immigration laws have left many without Medicaid coverage, also shifting them to the uninsured ranks (BPHC, 2000b). Medicaid coverage for non-citizens declined from 19 percent of low-income non-citizens in 1995 to 13 percent in 2001, corresponding to uninsured rates increasing from 54 to 60 percent for the same population (Kaiser, 2003a). Prior to the Personal Responsibility and Work Opportunity Act of 1996, most individuals who were legal immigrants and permanent U.S. residents were entitled to full Medicaid coverage and coverage for undocumented individuals was limited to emergency care only (Feld & Power, 2000). After the policy change, states were given the option to deny Medicaid benefits to qualified immigrants who entered the country prior to August 1996. Immigrants arriving since that date have been barred from receiving Medicaid and SCHIP for five years. However, states are not required to provide these services after the five-year period. Despite the federal-level change, states still have many policy options available for covering immigrants and one of these is to provide Medicaid and SCHIP coverage without federal matching funds. Only one state, California, out of the six states with the largest immigrant populations has opted to include immigrants in all of its health programs, including Medicaid, despite the loss of federal matching funds (Hudman, 2000).
Changes in the Competitive Environment

The Balanced Budget Act of 1997 expanded managed care options for states, granting them authorization to mandate Medicaid managed care (MMC) enrollment without a federal waiver and eliminating the requirement that 25 percent of health plans' enrollment come from privately insured patients (Kaiser Foundation, 2001b). This permitted states to contract with Medicaid-only providers without obtaining waivers and opened the door for provider-sponsored organizations (i.e., CHCs and hospitals) to participate in Medicaid and Medicare independently of insurance companies. Provider-sponsored organizations are still required to be licensed under state laws as risk-bearing organizations but they can obtain a waiver to operate without the required cash reserves. This has created both opportunities and competition for SNPs for which most were not prepared.

Medicaid now provides health and long-term care coverage for 60 percent of its beneficiaries through a variety of managed care arrangements (CMS, 2003). MMC enrollment experienced rapid growth throughout the late 1990's, increasing from 9.5% of the beneficiaries enrolled in 1991 to 59% by 2003 (CMS, 2001, 2003). As of December 2003, 42 states and D.C. had more than half of their Medicaid beneficiaries enrolled in MMC and of these, 17 states had more than 75 percent enrolled (CMS, 2003).

The initial MMC impact on SNPs in the late 1990's raised concerns over the future viability of the safety net itself. Safety net providers, particularly CHCs, relied heavily on Medicaid revenues to cross subsidize care for the uninsured and now they were competing for the very Medicaid patients they had traditionally served. Study findings indicated that SNPs in communities with higher MMC enrollment faced greater competition from the private sector for
Medicaid patients than those SNPs located in communities with lower MMC enrollment (Lipson & Naierman, 1996).

SNPs also experienced marked increases in workload and financial stress, especially in rural areas (Waitzkin, Williams, Bock, & McCloskey, 2002). Despite the rapid growth in MMC enrollment, few states were enrolling the elderly or disabled, which are the most expensive Medicaid beneficiaries, leaving this high-cost group to be cared for by the SNPs (Holahan, Zuckerman, Evans, & Rangarajan, 1998). Those SNPs that opted to participate in MMC incurred greater administrative burdens due to the complexity of the eligibility and referral requirements, frequently changing policies, the need to deal with multiple managed care organizations, requirements for utilization review/credentialing, and a loss of provider productivity attributed to administrative functions such as seeking approval of specialty care and non-formulary drugs (Waitzkin et al., 2002).

The resulting increased financial burdens threatened the SNPs’ ability to care for the uninsured. A longitudinal study of CHCs involved in MMC from 1990 to 1998 found that CHCs participating in MMC served a significantly smaller proportion of uninsured patients than those not participating in MMC (Shi, Politzer, Regan, Lewis-Ideema, & Falik, 2001). Other studies have consistently shown that the volume of hospital uncompensated care declines as hospitals face greater financial pressures (Davidoff, LoSasso, Bazzoli, & Zuckerman, 2000; Mann, Melnick, Bamezai, & Zwanziger, 1997). Study results indicate that a 10-percentage point increase in managed care penetration is associated with a 2-percentage point reduction in hospital total profit margin and a 0.6 percentage point decrease in uncompensated care (Thorpe, Seiber, & Florence, 2001).
Changes in Financial Support and Public Insurance Coverage

Federal and state policymakers have targeted many new initiatives and legislative amendments in an effort to curb the high cost of health care in the U.S. The Omnibus Budget Reconciliation Act (OBRA) of 1993 placed a cap on the amount of federal disproportionate share hospital (DSH) funds that could be paid to an individual hospital. As a result of OBRA ’93 and previous OBRA ’91 limitations, Medicaid DSH spending decreased from $18.1 billion in 1994 to $14.9 billion in 1997, an average decrease of 6 percent per year (Fagnani & Tolbert, 1999). The Balanced Budget Act (BBA) of 1997 placed further restrictions on the use of DSH payments and would have decreased DSH spending by 8.6 percent ($10.4 billion) between 1998 and 2002 (Fagnani & Tolbert, 1999; NAPHHS, 2002). However, the Medicare, Medicaid, SCHIP Benefits Improvement and Protection Act (BIPA) of 2000 postponed the BBA cuts until fiscal year 2003.

As of October 2002, the BBA Medicaid DSH cuts took effect and DSH allotments were reduced by approximately $1 billion (11.5% of total DSH spending) in fiscal year 2003 alone with an additional $9 billion in cuts to be taken over the following nine years (NACH, 2004; NAPHHS, 2003).

In response to the overall fiscal pressures and Medicaid shortfalls described earlier, states have also taken actions to control Medicaid spending growth. In fiscal year 2004, 48 states implemented new pharmacy cost controls, 50 states either froze or reduced provider reimbursement rates, 20 states imposed new or higher beneficiary co-payments, 21 states implemented greater eligibility restrictions, and 19 states either restricted or reduced benefits (Kaiser Foundation, 2004a). These actions are likely to further increase the number of uninsured and underinsured, thereby increasing the uncompensated care burdens of safety net providers.
Such changes in the regulatory environment significantly affected CHCs. For instance, the BBA of 1997 initially called for a phase out of cost-based reimbursement for federally qualified CHCs over a 5 year period. However, the BBA Refinement Act of 1999 extended the year of final repeal from 2003 to 2005 and reduced the scope of the annual decreases (Lewin & Altman, 2000). This reimbursement was modified again under BIPA of 2000, which required states to implement either a prospective payment system or an alternative payment system, starting in January 2001 (CMS, 2004a). Under the prospective payment system, in all states, including those states previously exempt under section 1115 demonstration programs (i.e., Medicaid managed care), CHCs were to receive per visit payments that reflected 100 percent of the average costs of providing Medicaid services based on costs in fiscal years 1999 and 2000 with further adjustments occurring in fiscal year 2001 (Markus, Roby, & Rosenbaum, 2002).

Also, following a stagnant period of federal appropriations to CHCs from 1995 to 2000, Congress increased the federal grant appropriations for fiscal year 2001 by $150 million (a 15% increase over the previous year’s $1 billion) with additional increases planned for the next five years (BPHC, 2001; Markus et al., 2002). The number of patients served was also expected to increase from 10 million to 16 million as a result of the expanded funding (HRSA, 2002a). However, despite the expansion in funding, CHCs, along with other SNPs, continue to have limited capacity for mental health, outpatient specialty and dental services, particularly for their uninsured patients (Felland, Felt-Lisk, & McHugh, 2004).
The Safety Net’s Response

Despite all of the changes that have threatened safety net providers’ ability to fund and cross-subsidize care for the uninsured, safety net providers have demonstrated great resilience (Felland, Kinner, & Hoadley, 2003a). Reductions in Medicaid revenues as a result of Medicaid managed care did not occur as drastically as anticipated partly due to states’ efforts to protect the safety net and partly attributable to the aggressive strategies undertaken by many safety net providers (Felland, Lesser, Benoit Staiti, Katz, & Lichiello, 2003). One of these strategies has been collaboration.

In response to Medicaid managed care, some safety net providers took assertive stances to compete for the Medicaid population they had always served. Many safety net providers became involved with health maintenance organizations or formed their own managed care plan with each other to contract with states for Medicaid managed care (Baxter, Levin, Legaspi, Bailey, & Brown, 2002; Lewin & Altman, 2000; Mueller et al., 1999; Sparer & Brown, 2000). In 1998, CHCs sponsored one-third of the existing safety net plans and were the leading organization in 23 percent of those plans (Gray & Rowe, 2000). Many safety net hospitals pursued vertical integration, some with CHCs, to extend their primary care capabilities and then sell their integrated services to Medicaid managed care health plans (Gurewich, 2002; Lipson & Naierman, 1996). Of all the safety net providers, local health departments were the most disadvantaged since their primary care services were weaker compared to other safety net providers. This has hampered their ability to negotiate with health plans, leaving many local health departments opting out of the primary care business entirely (Lipson & Naierman, 1996). However, some local health departments have still pursued collaborative arrangements with
hospitals, CHCs and some managed care plans (Lambrew, Ricketts, & Morrissey, 1993; Mays, Halverson, & Kaluzny, 1998).

Some safety net providers have also participated in collaborative efforts, which have not necessarily involved managed care, in order to strengthen their ability to better serve their patients and to remain financially viable (Baxter et al., 2002; Bazzoli et al., 1997; Mays et al., 1998). One of the more commonly discussed arrangements is between CHCs and hospitals (Felt-Lisk, McHugh, & Howell, 2002; Gabow et al., 2003; Gurewich, 2002; Ulmer et al., 2000). CHCs and hospitals have collaborated to coordinate care for the uninsured, taking steps to improve their access to specialty care, as well as providing CHC providers with admitting privileges. Academic health centers and CHCs have also collaborated, motivated by CHC needs for providers and specialty care access and academic health center needs for sites to train their primary care physicians (Redington, Lippincott, Lindsay, & Wones, 1995). Safety net providers have attempted to improve efficiency by consolidating with each other (i.e., integration or establishing networks) (Dievler & Giovannini, 1998). CHCs networks are a prime example of SNP networks focusing on efficiency through integration in the areas of clinical (e.g., quality improvement efforts), administrative (e.g., human resources), information systems, and financial systems (Baxter et al., 2002).

The safety net’s pursuit of inter-organizational relationships is a response to the environmental demands as previously described and their own organizational limitations to meet those demands. The increase in the number of uninsured and underinsured individuals has increased demands for safety net services. Safety net providers have likely turned to collaboration to expand their capacity to meet their social responsibilities of caring for these medically vulnerable individuals. Following the implementation of Medicaid managed care,
safety net providers experienced increased competitive pressures. Their lack of managed care savvy and threat of losing Medicaid revenues can be connected to safety net providers positioning themselves with managed care organizations or forming larger managed care networks in order to enhance their strategic positions. Finally, as a result of fiscal constraints and limited resources, safety net providers have sought collaborative efforts with each other to gain access to resources they needed, such as specialty providers, or to gain operational efficiencies through economies of scale.

Conclusion

The President of the Commonwealth Fund, Karen Davis, wrote in their 2004 Annual Report that, "Transformational change is not the same as radical restructuring. We do not need to replace the current system with a single-payer, all government system or eliminate fee-for-service methods of payment; nor do we need to eliminate public insurance or convert Medicare into competing systems of private insurers. But we do need to make sure that we are achieving commensurate value for what we spend on health care" (Davis, 2004, p.3). In a health care system as fragmented as the one in the U.S., collaboration across and within public and private entities may be one way to improve capacity in an efficient manner. However, further research is needed to identify the types of collaborative efforts that are likely to lead to the greatest improvements in access to care for the Nation’s vulnerable populations, either through increases in direct access to services or through organizational financial gains. The current safety net’s sustainability is susceptible to changes in demand for their services, public funding, competition,
and insurance reimbursement rates. Collaborative efforts may provide a strengthening element that reduces the impact of such future changes.
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Chapter 3

Florida and California Community Health Centers’ Inter-Organizational Relationships: Developing a Typology of Partnership Types, Predictors and Outcomes

Abstract

**Purpose:** This study describes community health center inter-organizational relationships (IORs), the stated reasons for their formation, and their reported outcomes.

**Design and Methods:** The approach taken in this study is qualitative and cross-sectional, using grounded theory techniques. The sample consists of 51 California and Florida federally-funded community health centers. The data are from the narrative portions of the Bureau of Primary Health Care grant applications, which are a rich and untapped source of information on IORs.

**Results:** The study results include the inductive development of constructs related to environmental motivations and organizational objectives for entering IORs, IOR members, IOR activities, and IOR outcomes. These constructs provided the basis for the development of a community health center organizational collaboration model. The model depicts the interrelationships among the constructs and provides a framework and IOR typology for further discussion and future study of each construct.

There are several findings from this analysis. The primary environmental force cited was the underlying health needs of the community or a specific population. Consistent with this external motivator, CHCs reportedly pursued IORs primarily for the purpose of improving their
patients' quality and access of care and to gain needed resources to meet that objective. Eighty percent of the sampled CHCs were involved in service delivery coordination activities, mostly with inpatient facilities and local community providers. Forty-three percent of CHCs reporting IORs did not identify any IOR outcomes. However, of those CHCs that reported outcomes, the most frequently cited IOR outcome was increased service access.

**Implications:** The findings of this research indicate that CHCs widely participate in IORs with a variety of organizations, many of which are other safety net providers. However, the benefits of these IORs have not been well documented within the grant applications. Future research should focus on measuring the types of outcomes identified in this study and linking those outcomes to the seven types of IORs most common amongst CHCs and other safety net providers.
Introduction

Federal community health centers (CHCs), administered by the Division of Health Center Management, Bureau of Primary Health Care, within the Health Resources and Services Administration of the U.S. Department of Health and Human Services, have a forty year history of providing medical care for low-income people. CHCs began as migrant health centers and neighborhood health center demonstration projects as part of President Johnson's War on Poverty in 1965 (BPHC, 2000b). CHCs are ambulatory care facilities that provide primary and preventive health care services, including family planning, outreach, social services and immunizations. Many CHCs also provide mental health services and dental services. In 2001, there were 748 health centers with over 4000 sites and a network of 7,170 primary care providers serving over 10 million people across all 50 states (BPHC, 2001, 2003; UDS, 2001).

CHCs have traditionally served the uninsured and other vulnerable populations. CHCs’ ability to meet this mission have been challenged over the past decade by a growing uninsured population (Rosenbaum & Shin, 2003), competition for Medicaid patients (GAO, 2000), and legislation that has restricted reimbursement rates (BPHC, 2001). CHCs with large increases in the proportion of uninsured patients and those participating in managed care have disproportionately experienced operating deficits (McAlearney, 2002; Shi, Frick, Lefkowitz, & Tillman, 2000). Approximately half of all CHCs have financial or operational problems. Ten percent of CHCs are struggling to maintain operations (GAO, 2000; McLarney, 2002). In the midst of this situation, the President has proposed a growth initiative for CHCs, which is expected to create new or expanded health center sites in 1200 communities and serve an
additional 6 million people by the end of fiscal year 2006 (HRSA, 2002b). However, simply expanding the number of CHCs, alone, may not be sufficient to improve the uninsured population’s access and quality of care, nor is it likely to ensure continued CHC viability in the long-term.

To remain operational under these conditions, an increasing number of CHCs are pursuing involvement in collaborative alliances (Mays, Halverson, & Kaluzny, 1998). According to a Government Accounting Office report, CHCs that respond and adapt to the changes in their environments, such as forming alliances, are more likely to succeed (2000). CHC managers have asserted that networks help them achieve their missions, yet little is known about either the forms these CHC networks take or their outcomes (Baxter, Levin, Legaspi, Bailey, & Brown, 2002).

Despite the work that has been done on the topic of inter-organizational relationships (IORs) in the health care sector, few studies beyond individual case studies have focused on CHC IORs. CHCs are distinctive enough from other types of health care organizations to warrant a special investigation into their IOR involvement. CHCs have a distinct mission of caring for the underserved and uninsured populations within their respective communities. CHCs target the needy populations through a variety of locations, establishing clinics at prisons, schools, and homeless shelters, to name a few. CHCs tend to have a strong local and political base, as many originated from local grassroots organizations. CHCs also have very little financial slack and rely heavily upon grants and donations for survival. Given the distinctive combination of CHC characteristics, CHCs are likely to pursue a variety of IOR types for different reasons and with different outcomes from other health care organizations.
Given the growing importance of IORs to CHCs and the lack of research on CHC IORs, a study was undertaken to explore the structure of CHC IORs, the apparent reasons behind CHC IOR formation, and the types of IOR outcomes reported by CHCs. This study contributes to existing research by being the first to describe CHC IORs from the CHC perspective using a large, random sample of CHCs. The first IOR typology of member types and activities specifically designed for CHCs is presented, which will aid future researchers in assessing CHC IOR outcomes. Additionally, a comprehensive organizational collaboration model is presented, which can be applied to studies of IORs in other ambulatory health care settings.

**Research Questions and Supporting Literature**

The research has been organized around three questions: “What are the apparent reasons for CHC IOR formation?”, “In what types of IORs are CHCs involved?”, and “What are the reported outcomes of CHC IORs?”

**Reasons for CHC IOR Formation**

Several health care studies have used market and community characteristics to explain the formation of healthcare IORs. A variety of public, private, health and non-health institutions have formed integrated delivery systems or networks in response to the financial pressures created as a result of managed care (Bazzoli et al., 1997; Burns, Bazzoli, Dynan, & Wholey, 2000; Halverson, Mays, & Kaluzny, 2000; Hudson, 1996; Mays et al., 1998; Mueller et al., 1999). In contrast, little effort was made to develop networks in communities where the
managed care threat was either non-existent or minimal (Mueller et al., 1999). Providers, when faced with competitive pressures, appear to pursue IORs in order to reduce the environmental uncertainty that is generated by resource scarcity (Oliver, 1990). In this case, the scarce resources are the public and employer-funded patients. Other findings, however, suggest that in less competitive markets where there is greater market consolidation (i.e., fewer number of competitors in a market), organizations may be using their slack resources to participate in IORs (Mays et al., 1998).

Another market characteristic, the availability of health market resources, such as the percentage of physicians trained locally, the number of physicians per 100,000 of population, and the number of hi-tech services available, has also been found to influence IOR development, but the results vary depending on the type of IOR activity being pursued (Bazzoli et al., 1997). In a comparison of rural and urban hospitals, Zinn found that the less munificent a community was (i.e., fewer resources available), the more likely it was that hospitals would trade their autonomy for control over scarce resources through involvement in IORs (Zinn, Proenca, & Rosko, 1997). This is supported by findings indicating that health departments formed IOR arrangements with hospitals and managed care plans in communities where there was a shortage of physicians (Mays et al., 1998). On the other hand, other findings on behavioral health IORs imply that organizations pursue IORs more readily to coordinate services when provider resources are greater within the community (Bazzoli et al., 1997). These conflicting results suggest that there may be a need for a certain level of resources to be present in a community in order to have enough players to form IORs, but at the same time, a much greater abundance makes cooperation less necessary.
Case studies have provided some additional insight into the development of IORs in response to health market resource availability. An alliance between an academic health center and a CHC was motivated by the CHC's need for providers and specialty care access and the academic health center's need for sites to train their primary care physicians (Redington, Lippincott, Lindsay, & Wones, 1995). In another community, an alliance was formed between the CHC and local health department in response to an external crisis: the closure of the local hospital (Lambrew, Ricketts, & Morrissey, 1993). The local health department and the CHC each had health resources the other needed. The local health department and CHC were jointly relocated to the old hospital facility, which provided the local health department with the expansion space it needed, eliminated duplication of common functions, facilitated the sharing of resources and enabled the CHC to meet federal grant encounter quota requirements.

The above cases are examples of organizations pursuing collaboration for the purpose of resource interdependence. Resource interdependence involves pursuit of IOR membership for the purpose of gaining greater access to necessary resources, which are obtainable from complementary IOR partners (Bailey & Koney, 2000). Complementary organizations are those organizations that bring non-redundant competencies to a partnership (Hill & Hellriegel, 2004).

Community characteristics that influence the population's health have also been found to influence IOR development. These include a higher proportion of elderly within the community (Bazzoli et al., 1997), increases in disease prevalence and/or poor health outcomes (Bazzoli et al., 1997; Boex, Cooksey, & Inui, 1998; Topping & Hartwig, 1997), social service needs not being met (Leon, 1999) and community poverty rates (Mays et al., 1998). These findings suggest that IORs are being developed in response to community health needs.
Despite these health care studies on IOR predictors, there are very few studies, except for individual case studies, that have explored the relevant predictors for CHC IOR development. The only survey study mentioned above that looked at alliances in 60 communities and included CHCs was limited to information collected from local health department directors about health department IORs (Halverson et al., 2000; Mays et al., 1998).

**Types of IORs**

There are numerous perspectives from which to describe and differentiate IORs. Health care IORs have been classified by the number and types of partner organizations (i.e., composition) (Bazzoli et al., 1997; Mays et al., 1998; Mitchell & Shortell, 2000; Zajac & D'Aunno, 1994), membership that varies by lateral (i.e., similar types of organizations with similar dependencies) versus integrative (i.e., dissimilar organizations pursuing a competitive advantage) (Zuckerman, Kaluzny, & Ricketts, 1995), IOR governance structure (Zajac & D'Aunno, 1994), voluntary versus mandatory participation (Longest, 1990; Zajac & D'Aunno, 1994), the nature of their activities (i.e., differentiation of services provided) (Bazzoli et al., 1997; Mays et al., 1998; Mitchell & Shortell, 2000), structural characteristics (i.e., informal, contractual, shared governance, and shared ownership) (Mays et al., 1998), relationship transactions (i.e., co-opting, coalescing, quasifirm, and complete ownership) (Longest, 1990), differentiation/centralization of the delivery of care/integration (Bazzoli, Shortell, Dubbs, Chan, & Kralovec, 1999; Shortell, Bazzoli, Dubbs, & Kralovec, 2000), and resource/funding mix (Mitchell & Shortell, 2000). Despite the numerous typologies that have been proposed, none have been devised specifically for, or tested against, CHC IORs. This current study contributes
to the literature by building upon existing IOR typologies using CHC IOR data. The typology
presented in this study is based upon CHC IOR participation and varies by IOR membership and
by IOR activities.

**IOR Outcomes**

Many health and human service studies have assessed IOR outcomes at the community
level (Boex et al., 1998; Fawcett, Lewis, Paine-Andrews, & Francisco, 1997), network level
(Andrulis & Gusmano, 2000; Provan & Milward, 1995; Rosenheck, Morrissey, Lam, &
Calloway, 1998), or organizational/client level (Gabow, Eisert, & Wright, 2003; Glisson &
Hemmelgarn, 1998; Gurewich, 2002; Hendryx, Ahern, Lovrich, & McCurdy, 2002; Lambrew et
al., 1993; Lipson & Naierman, 1996; Rosenheck et al., 1998; Wells & Weiner, 2005; Yeatts,
Ray, List, & Duggar, 1991) with mixed results concerning access to services, patient health
outcomes, and organizational costs. IORs have been found to improve access to care for
neglected populations by targeting particular groups and by developing well-coordinated systems
of care (Andrulis & Gusmano, 2000) as well as to improve access to housing services for the
homeless (Rosenheck et al., 1998). However, some of the same research has found that
collaborations do not improve access to health care services among homeless people with mental
illnesses (Rosenheck et al., 1998) or for those living in communities with public health
department partnerships (Hendryx et al., 2002). These negative findings have been attributed to
the relationships with health sector organizations primarily occurring prior to the study phase
(Rosenheck et al., 1998), and the fact that the public health collaborations affected a relatively
small proportion of the study population (Hendryx et al., 2002).
Positive patient health outcomes of collaborative programs have included reduced hospital infections, decreased asthma mortality and morbidity, improved prenatal care and birth outcomes (Boex et al., 1998), and decreased alcohol and drug use among school-age children (Fawcett et al., 1997). However, not all studies have found favorable patient health outcomes as a result of inter-organizational coordination. Glisson and Hemmelgarn (1998) found that inter-organizational coordination amongst children's services, to include health and mental health services, did not have an effect on children's psycho-social functioning and had a negative effect on the quality of services provided to the children (i.e., comprehensiveness of services received, continuity between providers, and responsiveness of the caseworkers).

Inter-organizational collaboration can also provide organizations with cost benefits. Study findings have documented the ability of IORs to reduce costs for enrolled populations (Andrulis & Gusmano, 2000). Costs have also been decreased by shifting non-urgent patient care from the emergency room setting to more appropriate outpatient clinics (Andrulis & Gusmano, 2000).

Only a few studies that have included CHCs have looked at IOR outcomes at the organizational level. CHC involvement in integrated networks has reportedly led to improved access to the CHC itself, to other non-CHC providers, such as specialists, and to hospitals through their managed care activities (Wells & Weiner, 2005). Other case study results indicate that IOR involvement has led to greater access to patients by CHCs (Yeatts et al., 1991), increased access to diverse payment sources, particularly private-pay patients, and other financial resources (e.g., local and state grants and capital) (Gabow et al., 2003; GAO, 2000; Lambrew et al., 1993; Lipson & Naierman, 1996; Wells & Weiner, 2005), and improved organizational efficiency (Baxter et al., 2002; Wells & Weiner, 2005). One study of 167 those formally
affiliated with a hospital were more likely to report their patients had better access to hospital services and their continuity of care was excellent (Gurewich, 2002).

The existing literature on CHC IOR outcomes is limited to case studies, studies of specific IOR membership types (e.g., CHCs with hospitals), or studies with small, non-random samples that only assessed outcomes from a few key activities of existing IOR relationships (e.g., managed care contracting). This study on CHC IORs presents findings of CHC IOR outcomes, at the organizational level, across a wide range of IOR member and activity types.

In summary, health care organizations have pursued IORs in response to the competitive pressures of Medicaid managed care and competition for scarce health care resources (Bazzoli et al., 1997; Burns, et al., 2000; Halverson et al., 2000; Hudson, 1996; Mays et al., 1998; Mueller et al., 1999). Community characteristics that influence the population’s health have also been found to influence IOR development as organizations join forces to address the health needs of target populations (Bazzoli et al., 1997; Boex, et al., 1998; Leon, 1999; Topping & Hartwig, 1997). Study findings regarding IOR outcomes have been mixed, but most do suggest that IORs may improve patients’ access to quality care and provide organizations’ with financial benefits.

Methodology

Data Description

Data for this study came from federally-qualified CHC grant applications for the year 2000. Grant applications are submitted annually to the Bureau of Primary Health Care (BPHC), Department of Health and Human Services for the purpose of initiating or maintaining federal
funding. Each CHC seeking federal funding through the BPHC must complete an initial grant application for each new project and submit annual renewal applications thereafter. During the study year, grant applications were submitted in paper form and in a specific format as presented in the BPHC Uniform Data System (UDS) Manual (2000).

Some quantitative data are extracted from the grant applications for inclusion in the BPHC's UDS. The UDS quantitative data, which are used to ensure compliance with legislative mandates and to report to Congress and other policy makers on the program's achievements (BPHC, 2000a), have frequently been used in studies on CHCs (GAO, 2000; Markus, Roby, & Rosenbaum, 2002; Rosenbaum, Proser, Shin, Wileensky, & Sonosky, 2002; Rosenbaum, Shin, Roby, & Park, 2001; Shi et al., 2000; Shi, Politzer, Regan, Lewis-Idema, & Falik, 2001; Shi, Regan, Politzer, & Luo, 2001a; Shi et al., 1994). In 2000 the quantitative data only contained one question about whether or not the CHC belonged to a network, whereas the narrative portion of the grant application contained much more information relative to the specifics of the IORs. This current study on CHC IORs is the first study to capture data from the narrative portion of the grant applications, which provides a rich source of untapped information regarding CHC activities.¹

Study Sample

A random and stratified (by state) sample of 448 CHCs was selected from the sampling frame of the 730 CHCs for which grant applications existed in 2000. From this sample, the 51

¹ Details on the sampling, collection, and preparation of the grant applications for use in this study are available from the author.
CHCs located in Florida and California were then selected for use in this study. The states of Florida and California were chosen to be the most representative states for CHC IOR involvement through a theoretical sampling approach.

Theoretical sampling, developed by Glaser and Strauss (1967), is a process by which cases are selected, purposely, based upon "...their (expected) level of new insights for the developing theory, in relation to the state of theory elaboration so far. Sampling decisions aim at that material which promises the greatest insights, viewed in the light of the material already used and the knowledge drawn from it" (Flick, 2002 p.64). Intensity sampling, a sampling strategy based in theoretical sampling, was used for the selection of Florida and California as the sample for this study (Flick, 2002). Intensity sampling is a sampling procedure whereby cases are chosen according to the intensity with which the interesting features, processes, experiences, etc. are given or are assumed in them. The primary distinguishing features used in the state selection process were the population demographics (i.e., relative proportion of immigrants and minorities to non-minorities), level of Medicaid managed care penetration, and proportional split of rural and urban CHCs (50/50 split). Each state was comparatively assessed on each of these key features so as to select states in which the environment provided the greatest opportunity for the existence of a wide range of CHC IOR involvement.

Sample Description

Table 3-1 provides a comparison of the sampled Florida and California CHCs against the other 679 CHCs receiving federal funding in 2000. The sampled Florida and California CHCs were approximately 60 percent larger in terms of full-time equivalent (FTE) employees and
average number of users and had 49 percent more encounters than the rest of the CHCs in the U.S. Additionally, the sampled Florida and California CHCs saw more uninsured patients and fewer private-pay patients than other U.S. CHCs. A slightly larger number of the sampled CHCs were located in non-urban areas as compared to the rest of the U.S. CHCs. However, the split between urban and non-urban CHCs in the sample was still close to the desired split (50/50).

Table 3-1: Study Sample Demographics for CHCs

<table>
<thead>
<tr>
<th>CHC Demographics</th>
<th>All CHCs excluding CA &amp; FL (N=679)</th>
<th>Sampled FL and CA CHCs (n=51)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average number of users</td>
<td>12,229</td>
<td>19,582</td>
</tr>
<tr>
<td>Uninsured patients</td>
<td>38%</td>
<td>46%</td>
</tr>
<tr>
<td>Medicare patients</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>Medicaid patients</td>
<td>34%</td>
<td>32%</td>
</tr>
<tr>
<td>Other public patients</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td>Private patients</td>
<td>17%</td>
<td>10%</td>
</tr>
<tr>
<td>Homeless patients</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>Average number of FTEs</td>
<td>71</td>
<td>112</td>
</tr>
<tr>
<td>Average number of encounters</td>
<td>49,080</td>
<td>73,178</td>
</tr>
<tr>
<td>Located in urban area¹</td>
<td>53%</td>
<td>45%</td>
</tr>
</tbody>
</table>

Source: UDS 2000 data
Note: ¹ Urban determination was made using 2001 data (information not available in 2000)

The aforementioned differences between the sampled CHCs and the rest of the U.S. CHCs may limit the generality of the study findings to other than Florida and California CHCs. Larger CHCs with a greater number of uninsured patients may be more likely to seek out relationships with other organizations in order to improve their patients’ access to care or to become more cost effective. Therefore, this sample is more likely to reflect larger IORs than the rest of the CHCs in general.
Analyses

The approach taken in this study was qualitative and cross-sectional, using grounded theory techniques. Qualitative research is particularly appropriate when fairly little is known about the subject matter under study (Shortell, 1999). Since little was known about CHC IORs, an exploratory and inductive approach to the data analysis was undertaken instead of using a confirmatory hypothesis-testing approach. The inductive approach allowed for the identification of key patterns through the data itself, a process known as grounded theory (Glaser & Strauss, 1967). Grounded theory methods progress each step of the analytic process toward the development, refinement, and interrelation of concepts (Charmaz, 2000). This process is ideal for creating typologies since, during the analyses, events and outcomes are conceptualized and classified. The categories that emerge, along with their relationships, then become the foundations for developing theory and identifying measures that can later be tested using larger statistically representative samples (Strauss & Corbin, 1994).

Figure 3-1 depicts the steps used in the qualitative analysis of the CHC grant applications. The qualitative analysis was conducted using Qualrus, version 1.2.2, from IdeaWorks, Inc. Several qualitative analysis software products were reviewed and tested and Qualrus was chosen since it was the only software that could accommodate data in tabular format (the format of much of the grant applications).
The first step, following the theoretical sample selection, was to select a subset of grant applications from the Florida and California CHCs for the purpose of developing the initial set of codes and categories. Florida (n = 18) and California (n = 33) grant applications were skimmed to identify the intensity of information about the presence and depth of discussions on IORs. Five CHC grant applications, all of which happened to be for CHCs in California, had the most in-depth discussions on IORs compared to the other grant applications. These five grant applications were selected for the open coding process.

The second step involved open coding of the five CA grant applications. Open coding is the step of theoretical analysis that relates to the initial detection of categories (Glaser, 1992). During the open coding process the grant applications were read in their entirety, line-by-line,
and labels were assigned to text segments that were related to IORs. Each coded segment may have included a single sentence or several paragraphs that were linked to a particular IOR (Strauss & Corbin, 1998). The unit of analysis for coding was the individual IOR. As the number of codes grew (up to 200), codes were grouped together that appeared to pertain to the same events. At this point the following initial construct groups emerged: IOR predictors, IOR members, IOR services, IOR structure, and IOR outcomes.

Core categories emerged for each of the construct groups following several iterations of the third step, conceptual clarification of categories and code refinement. Core categories account for most of the variation in a pattern of actions and emerge from the constant comparative coding and analyzing of the data (Glaser, 1992). The constant comparative method involved comparing coded segments across the different CHC grant applications, within a single grant application, within each of the core categories, and among the core categories (Charmaz, 2000). The conceptual clarification of categories and subsequent refinement of the codes and coded segments were done through the constant comparative process. Insight was gained as segments were compared and the comparison also enhanced the coding consistency. The constant comparative process was used to check for emergent fit with existing knowledge, empirical and theoretical (West, 2000). During this step of the qualitative analysis, it was necessary to frequently alternate between the inductive analysis of the grant applications and the review of existing theoretical and empirical work to seek clarification on the data-driven emerging categories. The conceptual clarification also led to a slight modification of the main construct groups to the following: (1) environmental motivations for entering into IORs, (2) stated objectives for entering into IORs, (3) members of IORs, (4) activities of IORs, and (5) outcomes of IORs.
During the conceptual clarification/code refinement stage, several codes were deleted (i.e., were outside the scope of the study), renamed, or relocated under more appropriate sub-headings and the codes’ dimensions were further clarified. It should be noted that the same IOR was frequently discussed in several different locations throughout each grant application, but care was taken to only code the same IOR when new information was present. Therefore, the coded segments do roughly approximate the number of IORs present for each CHC. Memoing was used to aid in coding consistency, to identify emerging ideas, and to note coding process issues. The electronic memos allowed for easy reference to the coding logic used or facts only presented once in the document. Text that was in a future tense was not considered for inclusion in the coded material since it did not reflect existing IOR activity in the year 2000.

Additional steps were taken to enhance the accuracy of the coding. The UDS Table 9C (i.e., managed care revenue) was used to triangulate the data relative to coding managed care contracting activity. When specific IOR members were unfamiliar, a search for information pertaining to the member was conducted using the Internet.

Once the initial conceptual clarification and code refinement were complete, the coding of additional grant applications continued, including applications for both California and Florida CHCs. Step three of the qualitative analysis was returned to as needed throughout the coding of the rest of the grant applications. The final codebook was developed following the suggested guidelines for developing clear and operationally defined codes (Boyatzis, 1998) (see Appendix A). Theoretical saturation was reached after the first forty grant applications were coded. Saturation occurs when additional data do not reveal any new insights relative to the given constructs under study (Glaser & Strauss, 1967). However, the remaining eleven Florida and
California grant applications were coded in order to gain a sense of the frequency at which these events were occurring.

Coding reliability was checked throughout the above process using intra-coder reliability checks, which measures consistency of coding judgment over time by the same coder (Boyatzis, 1998). "Reliability is consistency of observation, labeling, or interpretation" (Boyatzis, 1998). Reliability of coding is critical to instill confidence that the phenomenon under study has actually been captured. The intra-coder reliability method is useful for checking the internal consistency of coding (Miles & Huberman, 1994). Miles and Huberman recommend that the coder attain at least 80 percent on the intra-coder reliability check, \( \text{reliability} = \frac{\text{number of agreements}}{\text{total number of agreements} + \text{disagreements}} \) (1994). This reliability check involved the recoding of several grant applications throughout the coding process and then the comparison of the results to the previously coded documents. The final intra-coder reliability check produced an 82 percent agreement.

**Results**

*CHC Organizational Collaboration Model*

The CHC organizational collaboration model presented in Figure 3-2 was developed by mapping the CHC IOR constructs that emerged from analyses of the current sample onto existing models/categorizations of health care IORs. This model is divided into three sections, each corresponding to one of the research questions of this study. The first section, IOR predictors, provides a framework for assessing the stated reasons for CHC IOR formation. The IOR
predictors are classified as either organizational strategic objectives, reflecting an organization's internal motives for pursuing IORs, or as environmental characteristics, representing the external pressures that spark an organization to pursue IORs. The second section, IOR participation types, provides a typology of CHC IOR involvement and addresses the second research question. The third section, IOR outcomes, addresses the last research question by categorizing the types of reported CHC IOR outcomes.

The existing IOR model that best reflected the CHC IOR data was Bazzoli's model of organizational collaboration and served as the foundation for Figure 3-2 (Bazzoli et al., 1997). Two of the main constructs in Figure 3-2, organizational strategic objectives and IOR outcomes, are an extension to Bazzoli's basic model. As applicable, other models are presented that complement elements of Bazzoli's overall framework.

The CHC organizational collaboration model proposes that environmental characteristics motivate organizations to participate in IORs. An organization's strategic objective for joining an IOR influences its type of IOR participation by guiding the organization's choice of IOR members and IOR activities. The types of organizational IOR outcomes achieved are the result of the initial strategic objectives and the mix of IOR members and the types of IOR activities pursued. See Table B-1 in Appendix B for a complete listing of constructs and definitions for this paper.
Figure 3-2: Community Health Center Organizational Collaboration Model

**CHC Inter-Organizational Relationship Predictors**

Two groups of constructs, organizational strategic objectives and environmental characteristics, emerged as motivations for CHC IOR involvement. Examining both the reasons
for relationships and the conditions under which the relationships were established permits a researcher to discriminate between the determinants that motivate organizations to begin relations and the external factors that facilitate the development of IORs (Oliver, 1990). The environment presents the external factors (i.e., opportunities and threats) that affect the organization’s perceived need for collaboration (Bazzoli et al., 1997; Zajac & D’Aunno, 1994). The willingness of the organization to collaborate, as an intentional response to the perceived need, is based upon the organization’s motives to do so. There were relatively few references to the reasons for CHC IOR participation within the CHC grant applications, especially given the plethora of CHC IORs discussed. Therefore, once theoretical saturation (20 grant applications) was reached, there was no additional information to be gained for this construct and coding for IOR predictors was discontinued.

**Organizational strategic objectives.**

Organizations’ strategic objectives are an integral component in the determination to participate in IORs, the types of IOR members that will participate, the activities undertaken, and the types of outcomes. Research findings indicate that organizations engaging in a given type of strategic alliance may have widely varying strategic intentions and that anticipated performance will vary correspondingly (Zajac, 1986). Zajac (1994) has suggested that the IOR form may not be as important in signifying particular performance outcomes as the strategic objectives. Bazzoli’s model includes environmental characteristics as motivators driving collaboration, but her model does not specifically identify the organizational objectives behind the response to these environmental stimuli. The types of CHC organizational strategic objectives that emerged
from the grant application analysis, therefore, called for a complementary framework to be added to the model. Four out of Bailly and Koney's (2000) six organizational motives for inter-organizational involvement among nonprofit health care organizations, social responsibility, resource interdependence, strategic enhancement, and operational efficiency, were found to motivate the formation of CHC IORs. The other two theoretical perspectives, environmental validity and domain influence, while probably applicable, were not apparent in the CHC IOR data and therefore were not included in the model. Environmental validity refers to the overall goal of enhancing an organization's legitimacy with external, institutional stakeholders, such as funders and accrediting bodies and domain influence refers to an organization's desire to enhance its organizational strength and/or power in order to protect agency interests (Bailey & Koney, 2000).

Of the CHC strategic objectives that CHCs appear to pursue, the most frequently cited objective (16 of the 20 CHCs) was that of social responsibility. The social responsibility perspective for IOR formation stems from organizations' aspiration to address community issues or public concerns, such as community health needs (Bailey & Koney, 2000). Social responsibility emerged as a core strategic objective category based upon CHCs objectives to improve quality of care, patients' health, access to care, and to address racial and economic health disparities. This category included references to improving coordination, reducing fragmentation, enhancing services, and improving access to specific types of care, such as urgent, emergent, and long-term care services.

The next most frequently stated objective (10 of the 20 CHCs) was resource interdependence. Resource interdependence involves pursuit of IOR membership for the purpose of gaining greater access to necessary resources, which are obtainable from an IOR
partner. The resources CHCs frequently sought through IOR involvement included managed care experience, additional staff, and publicly funded patients. Resource interdependence has been suggested to be the most basic of the six motives for IOR involvement (Bailey & Koney, 2000).

The third most commonly cited reason for forming IORs (7 of the 20 CHCs) was to improve operational efficiency. The goal of these types of IORs is to improve productivity relative to the available resources in service delivery and/or ongoing operations (Bailey & Koney, 2000). CHC objectives under this category were described by motivations for cost containment and efficiencies through economies of scale.

CHCs pursuit of strategic enhancement also emerged from the CHC data; however, it was not a commonly referenced strategy (5 of the 20 CHCs). Organizations that pursue strategic enhancement objectives as their motivation for entering IORs do so as a means of strengthening their capacity for service delivery, thereby gaining market advantage in an increasingly competitive nonprofit environment (Bailey & Koney, 2000). For CHCs, this objective was more commonly framed as an attempt at organizational survival.

Environmental motivations.

Environmental factors, another group of IOR predictor constructs, were rarely identified in the grant applications, at least not when specific IORs were discussed. Environmental forces were discussed in the broader context of challenges facing the CHC. Despite the paucity of information directly linked to IORs, three main reasons, two of which are
consistent with those posed by Bazzoli (1997), were given for forming IORs: **underlying health needs**, **competitive pressures**, and **health market resource availability**.

The most frequently noted environmental motivator for CHC IOR involvement was **underlying health needs** of the community or to target a specific population segment (3 of the 20 CHCs). The majority of these IORs were pursued in response to the number of uninsured in the community. This finding is not surprising as unmet community health needs can create shared objectives among health care organizations that motivate them to work together and form IORs (Mays et al., 1998). The primary mission of federally-funded CHCs is to provide access to comprehensive primary and preventive care and to improve the health status of underserved and vulnerable populations (BPHC, 2001). CHCs, by their primary mission, are interested in serving the health needs of targeted populations within their communities. The underlying health need environmental motivator being the most prevalent is consistent with the **social responsibility objective** for IOR formation being the number one IOR objective motivator.

The next most frequently environmental reason given for IOR formation was in response to **competitive pressures**, specifically, managed care (3 of the 20 CHCs). While not often explicitly cited as the force behind CHC IOR involvement throughout the grant applications, it was apparent from the majority of CHCs’ discussions of their local environments that either the presence of managed care or the anticipation of its presence was a key motivating force for changing their business practices. Many CHCs discussed plans to become more involved in managed care as they developed their managed care expertise through IORs or as newly formed partnerships came to fruition. These findings are consistent with much of the existing research, previously discussed, that has found competitive threats to promote IOR formation (Bazzoli et
al., 1997; Burns et al., 2000; Halverson et al., 2000; Hudson, 1996; Mays et al., 1998; Mueller et al., 1999).

The last and least cited category (2 of the 20 CHCs), health market resource availability, was given as a reason for IOR formation when local health/social services were not available within the community to support existing community health needs. The availability of community health market resources can influence IOR formation by motivating organizations to jointly pursue shared resource needs (Mays et al., 1998). Consistent with resource dependency theory, organizations located in communities with scarce resources are motivated to form IORs in order to gain access to those resources and maintain their autonomy (Oliver, 1990; Pfeffer & Salancik, 1978; Zinn et al., 1997).

**Inter-Organizational Participation Types**

Two main construct groups that describe and differentiate IOR participation emerged from the qualitative analysis of the CHC grant applications: types of IOR members and types of IOR activities. These two construct groups are the basis for the CHC IOR typology, which is presented later in this section.

**Inter-organizational relationship members.**

CHCs are establishing IORs with a wide range of organizations. Seventeen sub-categories of CHC IOR partners emerged from the grant application analysis (see Table 3-2). These findings present a broader view than does most of the existing literature on CHC IORs,
which has found CHC involvement with other CHCs (Baxter et al., 2002; Tieman, 2003),
hospitals (Baxter et al., 2002; Gabow et al., 2003; Gurewich, 2002), managed care organizations
(Baxter et al., 2002; Lipson & Naierman, 1996), local health departments (Lambrew et al., 1993;
Mays et al., 1998), and area agencies on aging (Yeatts et al., 1991).

<table>
<thead>
<tr>
<th>IOR Member Core Category</th>
<th>Sub-Categories</th>
<th>Percent of All CHCs with Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Providers/Insurers</td>
<td>Behavioral health agency or service provider</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>Community health centers</td>
<td>61%</td>
</tr>
<tr>
<td></td>
<td>Community health care providers</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>Inpatient facility</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>Managed care organization</td>
<td>55%</td>
</tr>
<tr>
<td></td>
<td>Public health dept or service provider</td>
<td>69%</td>
</tr>
<tr>
<td></td>
<td>Total CHCs with Core Category</td>
<td>94%</td>
</tr>
<tr>
<td>Academia</td>
<td>Academia</td>
<td>75%</td>
</tr>
<tr>
<td>Professional Associations</td>
<td>Professional associations</td>
<td>53%</td>
</tr>
<tr>
<td>Community Groups</td>
<td>Private commercial entity/firm</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Religious organizations</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>Senior centers</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Transportation agency/business</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>Volunteer service</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>Total CHCs with Core Category</td>
<td>43%</td>
</tr>
<tr>
<td>Social Service Organizations</td>
<td>Housing service agencies/housing projects</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>Law enforcement agency</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>Political leaders</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Social services agencies/organization</td>
<td>59%</td>
</tr>
<tr>
<td></td>
<td>Total CHCs with Core Category</td>
<td>75%</td>
</tr>
</tbody>
</table>
Only one existing study, a monograph analysis of U.S. medicine and public health collaborations, displayed an IOR member categorization that illustrated as wide arrange of IORs members as that found in the CHC grant application data (Lasker, Abramson, & Freedman, 1998). In this study, 130 out of 380 published collaborations included a CHC or publicly funded clinic. Several of Lasker’s IOR member groupings were used to add granularity to Bazzoli’s model. The extension of Lasker’s groupings resulted in the following IOR member core categories being used: academia, community groups, medical provider/insurers, professional associations, social service organizations.

Not only did CHCs, as a group, participate in IORs with a wide range of organizations, each CHC, on the average, had existing IORs with 7 different sub-categories of IOR members. Ninety-six percent of the CHCs were involved in at least one IOR. Ninety-four percent of the CHCs had IORs with members that fell under the medical providers/insurer core category. The top three medical providers/insurer subcategories were inpatient facilities, community health care providers, and public health department or service providers. Inpatient facilities were the number one most common IOR partner amongst all of the member sub-categories (found in 80 percent of all CHCs).

The second most common IOR member core categories were academia (i.e., academic institutions) and social service organizations, each of which were found in 75 percent of the CHCs. The social service organizations included agencies that provide non-medical social support to individuals and included both public and private sector agencies (e.g., department of public social services, violence prevention initiatives and foster care agencies). Other less frequently mentioned partners, professional associations and community groups, are noteworthy since they illustrate the considerable range of CHC IOR partners.
Inter-organizational relationship activities.

The findings from the grant application analysis indicate that CHCs are involved in a wide variety of activities through IORs, averaging three activity types per CHC, with only 2 of the 51 CHCs not being involved in any IOR activity.

Three studies were used to provide conceptual clarification and categorization for the CHC IOR activities: Lasker et al. (1998), Mays et al. (1998), and Bazzoli et al. (1997). For the most part, each of these studies grouped IOR activities differently and no single framework fit the CHC data completely. Therefore, following a comparison of the data to the different categorization schemes, the following core categories were selected to represent the IOR activities in which CHCs were involved: service delivery coordination, managed care contracting, education and outreach, clinical training site, resource sharing, study of community health needs, and advocate government policy.

Service delivery coordination activities were by far the most frequently cited IOR activity in the grant applications and included case management; integrated services, such as horizontally and vertically integrated networks; services provided at the patients’ locations, such as school-based and mobile medical van programs; use of telemedicine; and referrals. This finding was consistent with May’s study on public health department alliances, which indicated that the most common alliance activity with CHCs was service delivery activities (Mays et al., 1998). However, the percentage of CHCs involved in service delivery coordination was much higher in this current study of CHC IORs than the percentage in May’s study (46 percent compared to 84 percent of all CHCs). This difference is most likely attributable to the fact that May’s study focused on IORs from the public health departments’ perspective and therefore, would not have included other CHC IORs not involving public health departments.
The second most frequently cited type of IOR activity was managed care contracting (55 percent of all CHCs). The CHCs were involved in a variety of managed care activities including patient empanelment, gatekeeping, and utilization review. This finding was inconsistent with the results from Bazzoli’s study, which found little collaborative action under direct contracting on a capitated basis (19 percent) (1997). The difference may be reflective of the growth in managed care since 1995, the year of Bazzoli’s study.

The third most frequently occurring CHC IOR activity was education and outreach. Most of the CHC education and outreach activities in the current sample promoted either health education or insurance enrollment. Mays found that 19 percent of the CHCs participated in education and outreach activities, far less than the 49 percent found in the CHC grant applications. Again, the variation is likely attributable to the differences in study perspectives. The grant applications indicated that CHCs coordinate education and outreach activities with many different types of organizations and most frequently with academic institutions.

Clinical training site IOR activity was relatively prevalent among CHCs (43 percent of CHCs), which is consistent with CHCs attempting to deal with a shortage of provider staffing. This activity usually involved student residents in a variety of fields, not just physicians, working on site at a CHC as part of their clinical residency. A comparison with Bazzoli’s findings was not possible since she did not identify clinical training activities in her study. Resource sharing activity was seen in 35 percent of the CHCs, which was consistent with Bazzoli’s finding of a range from 8 percent to 39 percent on similar sub-categories (1997). CHCs sharing activities frequently centered on the sharing of staff, facilities, ideas, and education and training. In some instances, CHCs entered joint ventures to establish new clinics or purchase expensive equipment, such as information technology systems.
The study of community health needs was the next to the last frequently cited IOR activity (33 percent of CHCs). This activity included joint efforts to perform community health surveys, joint research, and development of plans to address community health issues. This finding also differed from that of Bazzoli’s study, which found that the most prevalent collaborative activity (i.e., over two-thirds of the private-public partnerships) was identifying and evaluating community health needs (1997). The difference is likely due to the nature of the collaboratives in Bazzoli’s study. Bazzoli’s study examined partnerships that had applied to participate in the Community Care Network demonstration project, which required a goal of focusing on the health status of the communities. To accomplish this goal, partner organizations may have found it necessary to first collaborate in identifying the community health needs. This would not have been as applicable for CHCs in this current IOR study as the partnerships were not limited to a particular demonstration project.

The last activity that emerged was advocating for government policy (26 percent of CHCs). Even though the evidence does not indicate that CHCs frequently participated in advocacy activities, the need for advocacy to solicit governmental support or policy changes has not been lost on CHCs. This category was also not mentioned in Bazzoli’s study. CHCs appear to have been involved in numerous local, state, and national trade organizations that represent a wide variety of population segments, organizations, and/or particular health problems. CHCs were most frequently involved in partnerships lobbying for policy changes that impacted their CHC reimbursement.
**Relationship analysis and IOR typology development.**

A relationship analysis of IOR members and IOR activities was done by analyzing the combination of codes present in each coded segment of the grant applications. For example, if the combination of “inpatient facilities” and “service delivery activities” codes appeared more often together than apart, then there would appear to be an association between CHC involvement with inpatient facilities and conducting service delivery activities. Recall, each coded segment indicates one IOR, the unit of analysis for the relationship analysis. Since each CHC had multiple IORs, it was necessary to evaluate the construct relationships at the coded segment unit of analysis, and not at the CHC level. The number of CHCs was derived by counting the number of CHCs involved in each partnership type following the relationship analysis and it is provided to display how common the relationships are across the CHCs.

The Qualrus Refine Q-Tool function was used to conduct the analysis of the relationship between combinations of codes (Idea Works, 2002). The results are presented in Table 3-3. The Kappa statistic and z-score were calculated to determine the significance the each relationship.\(^2\) Kappa measures the percent agreement between the two variables after subtracting the agreement that could have occurred by random chance. The z-score, which was calculated for each value of kappa, indicates if the kappa differed significantly from zero.

\(^2\) Details on the use of the Q-tool function and the development of Cohen’s kappa and the z-scores are available from the author. Note only the z-scores are reported in Table 3-3.
<table>
<thead>
<tr>
<th>IOR Members (X)</th>
<th>Academia</th>
<th>Community Groups</th>
<th>Medical Provider/Insurers</th>
<th>Professional Association</th>
<th>Social Service Organ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advocate</td>
<td>1/1</td>
<td>1/1</td>
<td>3/3</td>
<td>12/14</td>
<td>2/2</td>
</tr>
<tr>
<td>Government Policy</td>
<td>78%</td>
<td>90%</td>
<td>41%</td>
<td>94%</td>
<td>84%</td>
</tr>
<tr>
<td>Z = -1.35</td>
<td>Z = -2.21</td>
<td>Z = -3.10*</td>
<td>Z = 12.67*</td>
<td>Z = -1.15</td>
<td></td>
</tr>
<tr>
<td>Clinical Training Site</td>
<td>19/29</td>
<td>1/1</td>
<td>5/5</td>
<td>0/0</td>
<td>1/1</td>
</tr>
<tr>
<td>84%</td>
<td>88%</td>
<td>85%</td>
<td>88%</td>
<td>82%</td>
<td>1/1</td>
</tr>
<tr>
<td>Z = 10.13*</td>
<td>Z = -1.02</td>
<td>Z = -5.77*</td>
<td>Z = -1.62</td>
<td>Z = -1.15</td>
<td></td>
</tr>
<tr>
<td>Education/Outreach</td>
<td>14/27</td>
<td>9/13</td>
<td>15/22</td>
<td>5/8</td>
<td>7/8</td>
</tr>
<tr>
<td>78%</td>
<td>86%</td>
<td>40%</td>
<td>85%</td>
<td>79%</td>
<td>7/8</td>
</tr>
<tr>
<td>Z = 4.41*</td>
<td>Z = 3.75*</td>
<td>Z = -0.8</td>
<td>Z = 1.58</td>
<td>Z = -0.50</td>
<td></td>
</tr>
<tr>
<td>Managed Care Contracting</td>
<td>0/0</td>
<td>0/0</td>
<td>22/44</td>
<td>1/1</td>
<td>3/3</td>
</tr>
<tr>
<td>73%</td>
<td>85%</td>
<td>48%</td>
<td>86%</td>
<td>80%</td>
<td>3/3</td>
</tr>
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<td>Z = -3.61*</td>
<td>Z = -2.10</td>
<td>Z = -4.25*</td>
<td>Z = -1.45</td>
<td>Z = -1.65</td>
<td></td>
</tr>
<tr>
<td>Service Delivery Coordination</td>
<td>22/42</td>
<td>12/19</td>
<td>41/169</td>
<td>2/3</td>
<td>22/40</td>
</tr>
<tr>
<td>58%</td>
<td>64%</td>
<td>55%</td>
<td>60%</td>
<td>64%</td>
<td>22/40</td>
</tr>
<tr>
<td>Z = -1.18</td>
<td>Z = 0.8</td>
<td>Z = 4.64*</td>
<td>Z = -4.38*</td>
<td>Z = 1.38</td>
<td></td>
</tr>
<tr>
<td>Resource Sharing</td>
<td>4/5</td>
<td>4/5</td>
<td>16/39</td>
<td>2/2</td>
<td>4/5</td>
</tr>
<tr>
<td>75%</td>
<td>87%</td>
<td>47%</td>
<td>87%</td>
<td>81%</td>
<td>4/5</td>
</tr>
<tr>
<td>Z = -1.65</td>
<td>Z = .76</td>
<td>Z = 3.55*</td>
<td>Z = -0.82</td>
<td>Z = -0.70</td>
<td></td>
</tr>
<tr>
<td>Study of Community Health Needs</td>
<td>6/7</td>
<td>4/5</td>
<td>12/16</td>
<td>4/6</td>
<td>9/10</td>
</tr>
<tr>
<td>78%</td>
<td>89%</td>
<td>43%</td>
<td>90%</td>
<td>84%</td>
<td>9/10</td>
</tr>
<tr>
<td>Z = .54</td>
<td>Z = 1.91</td>
<td>Z = -0.38</td>
<td>Z = 2.81*</td>
<td>Z = 3.17*</td>
<td></td>
</tr>
</tbody>
</table>

**Description of Cell Contents:**
Number of CHCs with coded pair/Number of segments with coded pair
Percent agreement between the two codes based upon coded segments
Z = z-score based upon coded segments; 2.58 or greater is significant at p < .01

**Note:** Shaded cells represent significant positive relationships as opposed to significant “absent” Relationships.
A typology of the typical CHC IORs was developed based on the strength of the relationships between IOR member codes and IOR activity codes. This typology is presented in Table 3-4 and each grouping is discussed in further detail below.

<table>
<thead>
<tr>
<th>IOR Member</th>
<th>IOR Activity</th>
<th>Percent of CHCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Associations</td>
<td>Advocate Government Policy</td>
<td>24%</td>
</tr>
<tr>
<td>Academia</td>
<td>Clinical Training Site</td>
<td>38%</td>
</tr>
<tr>
<td>Academia &amp; Community Groups</td>
<td>Education &amp; Outreach</td>
<td>33%</td>
</tr>
<tr>
<td>Mixed Members</td>
<td>Study of Community Health Needs</td>
<td>20%</td>
</tr>
<tr>
<td>CHCs</td>
<td>Resource Sharing</td>
<td>18%</td>
</tr>
<tr>
<td>Medical Providers</td>
<td>Service Delivery Coordination</td>
<td>80%</td>
</tr>
<tr>
<td>Managed Care Organizations</td>
<td>Managed Care Contracting</td>
<td>43%</td>
</tr>
</tbody>
</table>

Many CHCs in this study were active in professional associations, particularly state and national community health clinic associations, frequently lobbying for policy changes [advocate government policy] that would affect the CHCs’ reimbursement rates. For example, one CHC in conjunction with the National Association of Community Health Centers and the California Primary Care Association successfully advocated for the Safety Net Preservation Act, which implements an inflation-index prospective payment system for CHCs in the event that cost-based reimbursement were to be discontinued.

Two relatively common types of CHC IORs involved relationships with academic institutions. CHCs were noted as providing good training sites for academic institutions’ students to perform their residencies. The opportunity also provided staffing resources for the CHC, while at the same time it exposed the residents to the special health care needs of CHC
patients. The CHCs accepted a wide range of residents, including physicians, dentists, and nurse practitioners. One CHC even placed business school residents in the billing office, in the front office, and in medical assistant positions.

The grant applicants also coordinated education and outreach efforts with academic institutions, particularly with the head start, elementary, middle, and high schools. Many of the CHCs' efforts focused on risk assessment for drug, alcohol and cigarette use, sex education, teen awareness of the need for prenatal care and how to care for infants, and enrollment of children in public health insurance programs.

A variety of community groups also collaborated with CHCs in education and outreach activities. These community groups were predominantly volunteer organizations, such as churches, food/clothing/homeless shelters, and organizations that provide outreach workers, such as AmeriCorp workers. The joint activities mostly involved health education/screening and insurance enrollment.

Two types of IOR members had a significant relationship with the study of community health needs activity: professional associations and social service organizations. The political leaders sub-category contributed the most to the relationship from social service organizations. A significant relationship still held when the medical providers/insurers group was added to the analysis of political leaders. These findings, along with a review of the actual coded segments, suggest that when the study of health care needs activity occurred, it usually involved a variety of organizations, but almost always included some form of local political leadership or professional association. The strength of the political membership is consistent with assessments of other public-private partnerships targeting the uninsured, which have found that political support was critical to mobilize the support necessary for new collaborative initiatives.
(Andrulis & Gusmano, 2000). Studies were mostly done to determine the need for new medical clinics, to assess community health needs and/or to identify steps to reduce health disparities amongst particular populations. Based upon the mixed results of IOR membership for this activity and the small number of cases used in the analysis, the CHC IOR typology for study of community health needs activity was defined with the broad membership of "mixed members."

The medical provider/insurer IOR members appeared to be the only type of partner with which CHCs predominantly pursued resource sharing activities. Upon further investigation, CHC was the sub-category that contributed the most to the strength of the relationship. This was not surprising as most of the grant application references to resource sharing tended to involve CHC IORs with other CHCs. Activities included the integration of patient billing functions, insurance eligibility and enrollment, some clinical functions, and quality improvement/assurance; the sharing of educational information, staff, and information technology systems, including electronic medical records; the standardization of clinical protocols and financial reporting; and, the joint purchase of supplies. Based upon these results, CHCs were segregated from the medical provider/insurer category for the CHC IOR typology.

An additional CHC IOR type emerged from the relationship between medical provider/insurers and service delivery coordination activities. However, a closer look at this type found that the majority of service delivery coordination activity was occurring with community health care providers, such as private physicians' offices, specialists, home health care organizations, pharmacies, and independent radiologists, and with inpatient facilities. The primary service delivery coordination that occurred with community health care providers was for the provision of specialty care services to CHC patients. CHCs' uninsured patients frequently go without access to needed specialty care services unless the services are provided
on-site or the CHC has negotiated discounted fees with local non-CHC providers (Gusmano, Fairbrother, & Park, 2002). There were several references within the grant applications to local specialists, including dentists and mental health providers, volunteering their services or accepting discounted rates on behalf of CHC patients. Service delivery coordination occurred frequently on behalf of a particular population segment, such HIV/AIDS patients and immigrant farm workers. Pharmacies and pharmaceutical companies also assisted in the delivery of care by providing prescription drugs to CHC patients for free or at a discounted rate. CHC providers frequently had admitting privileges at one or more local hospitals and in some instances the CHC providers shared the hospital call. Several CHCs also had negotiated discounted rates for inpatient services and hospital specialty services for their patients.

Finally, the next posited type of CHC IOR was not readily apparent from the initial analysis results. None of the five IOR member types appeared to specialize in managed care contracting. The sub-category of managed care organizations had a very high agreement (94 percent with a kappa of .595) and was statistically significant (z = 16.32) with managed care contracting, suggesting that managed care organizations should be identified separately as a core category. A check of managed care organizations' relationship with the other IOR activity types did not yield any other significant relationships. This finding led to the exclusion of managed care organizations from the medical provider/insurer category [now renamed: medical provider] for the CHC IOR typology.
IOR Outcomes

The very limited presentation of IOR outcomes in the CHC grant applications was especially noteworthy. Forty-three percent of the CHCs did not report any outcomes in their grant applications. The average number of IOR outcome types reported per CHC was one. The limited presence of this construct could be due to the inability of CHCs to measure the outcomes or due to the fact that the collaborative efforts were too new to have produced results and any discussions of potential outcomes were excluded from the study. The scarce reporting of IOR outcomes may also be attributable to there not being a specific grant application requirement to report IOR outcomes. However, grant applicants are required to describe existing IORs and report on the progress of any existing objectives or goals, which frequently involved IORs. Additionally, CHCs are likely to be highly motivated to report any positive outcomes they may be experiencing from IORs given the purpose of submitting the grant applications.

This current study of CHC IORs expands upon Bazzoli’s conceptual model for organizational collaboration by including the outcomes of IORs as displayed in Figure 3-2. Since IOR outcomes were not a part of Bazzoli’s study, an additional framework was needed. The existing framework that best fit the emergent CHC IOR outcome constructs is one originated by Provan and Milward (2001). Provan and Milward suggest that network involvement for organizations can be evaluated in terms of service access, cost, client outcomes, resource acquisition, and legitimacy. CHC IOR outcomes emerged from the CHC data in all five of the above areas.

Increased service access was the most frequent IOR outcome reported in the CHC grant applications (45 percent). The CHC IORs led to a variety of service access enhancing outcomes,
including immunization rates increasing, health center staff having more time available for patient care and spending less time on different policies and procedures, access to services increasing for their clients and other uninsured clients in the community, "better coordination of services, as well as more streamlined access for clients," and developing capacity to support chronic disease management at the community health center level. One CHC stated that an IOR had "dramatically increased the access of homeless [location removed] residents to health care."

Another CHC found the use of telemedicine services through an IOR increased their access to a non-local network of providers for their patients. Other CHCs reported an increase in the number of patient visits (e.g., a 287 percent increase in four years, an 11 percent increase in obstetrical deliveries in one year).

The second most frequently reported IOR outcome, cost outcomes, almost always entailed cost savings through improved operational efficiencies (e.g., reduced duplication of services) or group purchasing (e.g., for pharmaceuticals) (26 percent of CHCs). One CHC stated, "There are tremendous benefits to our health centers of integrating managed care functions. Since these are all new functions, it would have been prohibitively expensive for each health center to create the infrastructure to carry them out. It would have been close to impossible for each center to recruit the appropriate staff, develop policies and procedures, and implement the necessary information systems. Thus, this contractual arrangement is very important to the financial viability of the [CHC name removed] program."

Client outcomes were reported almost as frequently as cost outcomes (20 percent of CHCs). Client outcomes illustrated improvements in the quality of care being provided, in the overall health status of the patients, and in patient satisfaction. The last two outcome categories,
resource acquisition (10 percent of CHCs) and legitimacy (6 percent of CHCs), were not found as often in the grant applications.

It should be noted that negative IOR outcomes were also reported, but rarely so. Two of the four identified negative outcomes were related to managed care IORs. One CHC reported a negative financial impact from its participation in a Healthy Families contract, stating the payment rate was too low to cover related service requirements for their clients. For example, this CHC was not allowed to use County Vaccines for Children, the immunization program available for low-income families, because it was considered a private insurance product. The CHC found that the cost of immunizations alone tended to absorb the monthly payment per member. Another CHC found that its managed care IORs were creating substantial administrative, utilization review, access, continuity of care, case management, and patient satisfaction challenges. The problem was further complicated by the fact that each plan had its own unique requirements. A third negative IOR outcome identified waiting times for lab results to be returned from an IOR member as a problem. The final negative comment was related to the competitive history for Medicaid patients between the CHC and another IOR member.

Conclusion

The overwhelming majority of CHCs in this study were involved in at least one IOR and tended to have IORs with a wide variety of organizations, not only ones in the health and human services. These CHCs pursued IORs primarily for the purpose of improving their patients’ quality and access of care [social responsibility objective] and to gain needed resources [resource interdependence objective] to meet that objective. The first objective is consistent with the fact
that 80 percent of the CHCs were involved in service delivery coordination activities, mostly with inpatient facilities and local community providers and forty-five percent of the CHCs reported improved service access outcomes.

The second and third most common objectives for pursuing IORs, to gain needed resources and operational efficiency, are not surprising given that CHCs typically have very little financial slack and must depend upon grants and donations to meet their mission. IORs provide another source by which CHCs can obtain needed resources or gain efficiencies and cost reductions through economies of scale. The second and third most common types of IORs pursued, IORs with academic institutions to serve as a clinical training site and IORs with managed care organizations to pursue managed care activities, are consistent with these two objectives. However, despite the frequency of pursuing IORs for gaining resources, very few CHCs reported resource acquisition outcomes from their IORs. On the other hand, cost reduction benefits were the second most commonly reported outcome. Many CHCs reported pursuing managed care activities to both secure access to paying patients and to gain efficiencies through managed care integration efforts. Eight percent of the CHCs found cost benefits associated with their IORs with managed care organizations, which is significant given the limited reporting of outcomes in the grant applications.

This study has also exposed other types of IORs in which a smaller share of the CHCs are participating, which may provide other CHC managers with new coordination ideas. One example is CHCs forming IORs with other CHCs for the purpose of sharing resources. Despite 61 percent of the study CHCs having had IORs with other CHCs, only 18 percent pursued resource sharing opportunities. This option may provide CHCs with additional cost benefit opportunities.
It should be noted that the lack of stated IOR outcomes alone is a significant finding in this study. CHCs pursued IORs to improve access to care, improve quality of care, and gain resources, yet many CHCs did not report on their IOR efforts’ effectiveness in meeting these objectives.

Study Limitations

This study had a few limitations. First, the findings of the qualitative analysis were derived from CHCs located only in California and Florida. However, given the fact that California and Florida were selected as the most representative of all 51 states based on several key constructs relative to CHC IOR involvement, it is likely that the patterns in California and Florida closely reflect CHC participation seen in all CHCs.

Second, the data were drawn from a single source, grant applications, and included only partial triangulation with other sources. Despite the rich, descriptive nature of the grant applications and the exploratory purpose of this study, this limitation may have resulted in some information being excluded. Future research should attempt to triangulate the findings through supplemental surveys or interviews of CHC personnel.

Third, since this was a descriptive study, causality between the constructs could not be presumed. Instead the findings suggest possible associations that may assist future researchers in targeting their studies to specific aspects of CHC IORs.

Fourth, considering the self-reporting nature of the grant application data and their use for determining funding allocation decisions, the data are susceptible to a socially desirable response bias and may tend to describe optimal performance and involvement in IORs. However, this
should not differentially distort results across CHCs since all of the CHCs would tend to report in a similar fashion. Another reporting bias that may be of more significance is related to the uniformity of the reported data. CHCs with less experience in grant writing may not reflect an accurate depiction of their existing IORs in their grant applications. This bias should be minimized by the fact that the BPHC requires grant submissions follow established guidelines that indicate the specific types of information desired on IOR involvement.

**Policy Implications and Future Directions**

CHCs fulfill a critical safety-net role in providing health care services to the nation's uninsured and underserved populations. Continued success of the federally funded CHCs is necessary to ensure access to care for the 45 million uninsured (DeNavas-Walt, Proctor, Mills, & Bureau, 2004). Fifty percent of CHCs in this study had negative total margins with that figure increasing to 98 percent when grant funding was excluded (UDS, 2000). CHC managers could benefit from strategies that would enable them to expand their services to a greater number of the uninsured population (CHCs reached only 9.7 percent of the nation's uninsured in 2000), to increase operational efficiency, and to gain access to additional grant revenues (Mills, 2002; UDS, 2001). CHCs have pursued IORs to achieve these goals.

The results of this study indicate that CHCs widely participate in IORs, but the benefits of the IORs have not been well documented. Specific types of IORs may provide strategic links to expanding access to care and improving financial standing through operational efficiencies. Future research should focus on measuring the types of outcomes identified in this study and linking those outcomes to the seven types of IORs most common amongst CHCs.
Establishing an association between IOR participation and specific outcome measures would provide greater motivation for grant generating organizations to link funding to IOR involvement. The BPHC provides approximately $1 billion annually in grants to federally qualified health centers with a portion of that funding tied to the establishment of specific types of network activity (BPHC, 2001). An additional $124 million was allocated in 2002 to finance expansion of CHC sites (McAlearney, 2002). Further research into IOR outcomes would be beneficial and may lend support for the realignment of a greater portion of governmental funding to the establishment of access to care and efficiency enhancing IORs. Additionally, if quantifiable IOR outcomes continue to remain elusive, existing networks will become vulnerable and may dissolve if federal funds recede.

This study has resulted in the development of an IOR typology, which future researchers may use in subsequent studies to assess IOR outcomes for CHCs and possibly apply to other safety net provider settings. This study has extended the literature on IORs by presenting a detailed description of the predictors, types, and outcomes of CHC IORs. However, this study is only the first step. Additional research on IOR outcomes is critical to clarify the types of IORs that lead to specific outcomes. Also, given the wide variety of reasons for which CHCs pursue IORs, future research should evaluate IOR outcomes in light of their successfulness in achieving their intended strategic objectives.
References


Health Resources and Services Administration (HRSA). (2002b). *HRSA speech: Remarks of Elizabeth Duke (HRSA) to the Texas Association of Community Health Centers on October*


Chapter 4

Community Health Centers’ Inter-Organizational Relationships: Do These Relationships Improve Population Access to CHCs and to Specialty Care Services?

Abstract

Purpose: This study addresses the following three research questions: Do community health center (CHC) inter-organizational relationships (IORs) increase access to CHC services? What specific types of organizational partners and activities contribute to improved access? Do CHC IORs specifically improve access to specialty, dental, and mental/substance abuse treatment for CHC patients?

Design and Methods: Data for this study are from the Bureau of Primary Health Care (BPHC) 2000 and 2001 grant applications, including both quantitative data made available through the BPHC Uniform Data System and qualitative data taken from the narrative portions of the grant applications. IOR measures were developed through an inductive analysis of the grant applications, thereby, building on both the qualitative and quantitative aspects of research. The sample consists of 424 federally-funded community health centers that were randomly selected from the 730 CHCs that were funded by the BPHC in 2000. A lagged multiple linear regression (ordinary least squares) analysis was performed to test for the influence of IORs on access to care outcomes as measured by the number of CHC users and number of specialty care providers (i.e., dental, behavioral health, and other specialty care). A CHC IOR typology was used to identify what types of IORs produce improvements in access to care.
Results: This research did not find that IORs improved access to CHC services, in general, or to specialty types of care. It is possible that IORs improve access to care, but do so indirectly through improvements in financial outcomes, such as creating greater efficiency or by adding financial resources, that in turn enable CHCs to see more patients.

Implications: Safety net providers pursuing IORs for the purpose of enhancing access to care for the uninsured and vulnerable populations may not be able to readily identify such improvements to access. Improvements in access to care may not directly materialize from collaboration with other organizations. However, other organizational benefits may accrue to those organizations involved in IORs. Future research should investigate other types of organizational outcomes relative to IORs, such as the financial benefits gained from such relationships.
Introduction

Federal community health centers (CHCs) are a primary source of care for the uninsured and other medically underserved populations. CHCs' ability to care for vulnerable populations has been threatened by Medicaid managed care, the increasing number of people uninsured, and restrictive reimbursement rates (BPHC, 2001; GAO, 2000; Rosenbaum & Shin, 2003). Despite these challenges, CHCs have been successful at improving access to primary and preventive care in their communities (99 percent of all uninsured CHC users report having a usual source of care compared to only 75 percent of uninsured persons in the U.S.) (Carlson, Eden, O'Connor, & Regan, 2001). Yet there continues to be a critical shortage of diagnostic and specialty care services for CHC patients. Fewer than one-third of CHCs have any specialists on site, the majority of CHCs refer their patients to specialists and require the patient to pay for the care, and CHC physicians often rely on their professional networks and friends to obtain specialty care services for their patients (Gusmano, Fairbrother, & Park, 2002). The most recent report from the Center for Health Systems Change indicated that many low-income and uninsured people face great difficulty in obtaining outpatient specialty care, mental health care, and dental services even in locations where CHCs and other safety-net providers are available (Felland, Felt-Lisk, & McHugh, 2004). One researcher actually suggested that the high rate of emergency department use among low-income people in areas with strong CHC capacity may be a reflection of the lack of access to specialty care (Cunningham & Hadley, 2004).

In an attempt to expand their populations' access to health and human services, CHCs have pursued inter-organizational relationships (IOR) with other private and public organizations
(Mays, Halverson, & Kaluzny, 1998). Given that CHC patients have good access to primary and preventive care (Carlson et al., 2001) and the majority of CHCs are involved in IORs, the question remains as to whether or not IOR involvement has contributed to the improved access. If so, this may suggest options for other safety net providers that are trying to expand access to their services. This leads to the first research question on which this study was based: **Do CHC IORs increase access to CHC services?**

Given that CHCs are involved in IORs with a wide range of different organizations, a second research question was posed: **What specific types of organizational partners and activities contribute to improved access?** Finally, since CHCs continue to experience shortages of specialty, dental, and mental health services, this study also addressed a third research question: **Do CHC IORs specifically improve access to specialty, dental, and mental/substance abuse treatment for CHC patients?**

**New Contribution**

This study, which tests for changes in access to health services as a result of IOR participation, is the first to do so using a representative sample of safety net ambulatory care providers. This research also includes measures and insight obtained from an inductive analysis of CHC IORs, building on both the qualitative and quantitative aspects of research.
Literature Review

The majority of findings relative to health care IORs’ impact on access to health and human services have been limited to cases studies (Andrulis & Gusmano, 2000; Gabow, Eisert, & Wright, 2003; Wells & Weiner, 2002; Yeatts, Ray, List, & Duggar, 1991; Zuvekas, Nolan, Tumayle, & Griffin, 1999) and subjective assessments of outcomes (Conrad et al., 2003; Gurewich, 2002). These studies, for the most part, have found that IORs improve access to services by targeting particular groups and by developing coordinated systems of care. CHC IORs have been associated with improvements in access to specialty care (Gabow et al., 2003), to hospital services (Gurewich, 2002), and to CHC services (Gabow et al., 2003; Yeatts et al., 1991; Zuvekas et al., 1999). In one case of an IOR between the CHCs and a public hospital, service delivery coordination resulted in 98% of all newborn, pediatric, and adult discharged patients being scheduled for a CHC follow-up visit (Gabow et al., 2003).

Three studies have tested IORs’ impact on access to health and human services utilizing objective access outcome data (Hendryx, 2001; Hendryx, Ahern, Lovrich, & McCurdy, 2002; Rosenheck, Morrissey, Lam, & Calloway, 1998). The first study assessed IORs’ impact on service use (i.e., housing assistance, mental health, general health care, substance abuse, income support, and vocational rehabilitation) (Rosenheck et al., 1998). Service use was derived from client survey responses that indicated the clients’ use of each type of service during the previous 60 days. The study found service system integration to be related to improved access to housing services, but not related to any of the health care services. Since housing services typically build on access to basic health and mental health services, it is likely that the linkages with the health care services were not captured within the study phase, leading to the insignificant finding for health care services access (Rosenheck et al., 1998).
The other two studies assessed public health IORs' influence on access to health care services in general (Hendryx et al., 2002) and on access to mental health care services (Hendryx, 2001). Access measures were derived from individuals' responses to survey questions regarding whether or not they had received care within the previous 12 months when care was needed (Hendryx et al., 2002) and whether or not they had seen a mental health provider within the previous 12 months (Hendryx, 2001). Collaboration was found to actually decrease access to health care services in general (Hendryx et al., 2002). This finding is limited by the fact that public health collaborations affected a relatively small proportion of the study’s population. On the other hand, use of mental health services was found to be greater when public health districts collaborated with managed care organizations and other community groups (Hendryx, 2001).

In summary, the majority of the existing literature suggests that IORs can improve patients' access to health care services. Yet the evidence is incomplete: only three studies were structured to use objective access outcome data and none of these studies was based upon a nationally representative sample.

**Conceptual Framework**

The past two decades has seen integration become a necessary component of individual and organizational legitimacy for most health care organizations (Goes & Friedman, 2001). Greater than half of networks fail for one or more reasons and yet it is believed that networks remain one of the best mechanisms available to deliver high-quality, cost-effective care to local communities (Friedman & Goes, 2001). The first hypothesis of this study atheoretically explores one aspect of this belief, that is, collaborations’ ability to impact delivery of care through
changes in access. It answers the question “does a greater number of IORs, in general, improve access to CHC services?”

**Hypothesis 1:** There is a positive association between the number of different IOR types with which a CHC is involved and the number of patients the CHC serves, holding all else constant.

Improving access to health and social services for the underserved and uninsured is a complex issue. This segment of the population, which CHCs target, tend to have a wide range of health problems and face tremendous access barriers, including financial, cultural and transportation, that are related to their social and demographic characteristics (Lewin & Altman, 2000). The next two hypotheses explore how IORs may improve access through complementary organizations. Complementary organizations are those organizations that bring non-redundant competencies to a partnership (Hill & Hellriegel, 1994). In other words, IORs with complementary organizations are likely to provide resources (e.g., staffing, expertise, equipment, patient referrals, etc.) to CHCs that are dissimilar from those resources most commonly available within a CHC.

The concept of IOR member complementarity has been used widely in research on the manufacturing sector, but not in the health care sector. Researchers believe that complementary partners may strengthen the overall resource base and enhance performance of the participating organizations (Dyer & Singh, 1998; Hill & Hellriegel, 1994; Lasker, Weiss, & Miller, 2001). Since organizations develop multiple distinctive competencies (Hitt & Ireland, 1985, 1986), the combination of these complementary capabilities can create value by overcoming the weaknesses in one or both of the participating partners (Harrison, Hitt, Hoskisson, & Ireland, 1991). For example, a homeless shelter may be competent at providing housing and food for the
homeless, but unable to address for their clients’ medical needs. CHCs have the resources to provide medical care, but usually do not have access to housing services for their patients who may need that service. A partnership between these two organizations could enhance each organization’s ability to serve their clients.

Complementary IOR members can expand patient access to health services by bringing additional patients into CHCs. Complementary organizations provide CHCs an additional source from which to recruit patients, such as homeless shelters, schools, prisons, and migrant farmworker camps. This leads to the second hypothesis, which focuses on specific types of IORs and answers the question “do complementary IORs improve access to health services more than IORs with similar types of organizations?”

**Hypothesis 2:** CHCs involved in IORs with complementary organizations serve more patients than CHCs involved in IORs with similar organizations, holding all else constant.

Complementary IOR members can also expand patient access to health and human services by bringing additional providers and support staff into CHCs. For example, CHCs serve as residency training sites for medical and nursing students, a variety of social services are frequently co-located at CHC sites, and local providers donate their time to treat patients in CHCs. This leads to the third hypothesis, which addresses the research question of “do CHC IORs improve access to specialty, dental, and behavioral health care for CHC patients?”

**Hypothesis 3:** CHCs involved in IORs with complementary organizations have a greater number of specialty, dental, and behavioral health provider staff than CHCs involved in IORs with similar organizations, holding all else constant.
Data and Analytic Methods

Data and Measurements

Data for this study came from federally-qualified CHCs’ grant applications for the years 2000 and 2001. Grant applications are submitted annually to the Bureau of Primary Health Care (BPHC), Department of Health and Human Services for the purpose of initiating or maintaining federal funding. Each CHC seeking federal funding through the BPHC must complete an initial grant application for each new project and submit annual renewal applications thereafter.

Some quantitative data are extracted from the grant applications for inclusion in the BPHC’s Uniform Data System (UDS). The UDS quantitative data, which are used to ensure compliance with legislative mandates and to report to Congress and other policy makers (BPHC, 2000a), have frequently been used in studies on CHCs (GAO, 2000; Markus, Roby, & Rosenbaum, 2002; Rosenbaum, Proser, Shin, Wilensky, & Sonosky, 2002; Rosenbaum, Shin, Roby, & Park, 2001; Shi, Frick, Lefkowitz, & Tillman, 2000; Shi, Politzer, Regan, Lewis-Idema, & Falik, 2001; Shi, Regan, Politzer, & Luo, 2001a; Shi et al., 1994). The UDS quantitative data were used in this study to measure the access to care outcomes and the covariates. However, it was necessary to extract additional data from the narrative portion of the grant applications to obtain the primary independent variables for the purpose of this study.

A random and stratified (by state) sample of 455 CHCs was selected from the sampling frame of all 730 CHCs for which grant applications existed in 2000.3 Eight grant applications were not on file in the BPHC’s electronic database at the time of data collection, thereby

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3 Further details on the sampling methodology are available from the author.
reducing the study sample to 448. Another 23 applications were excluded from the sample because they represented CHCs located outside of the continental United States or they were at the network level as opposed to the CHC level, bringing the final study sample to 424 CHCs. All of the 424 sample CHCs were funded in both 2000 and 2001 and therefore no additional exclusions were necessary.

The unit of analysis for this study was the CHC. An independent sample t-test for equality of means was conducted between the sampled CHCs (N = 424) and the CHCs not included in the sample (N = 306) using the variables examined in this study as well as the various categories of CHC users (e.g., homeless, uninsured, etc.). There was no significant difference found between the sample CHCs and the CHCs not sampled; therefore, the findings of this study can be considered representative of all federally funded CHCs. The following sections present the variables used in this study. See Table B-1 in Appendix B for a list and description of all study constructs, variables, and operational definitions.

Independent Variables

The two primary independent variables of interest are based on the different types of organizations and activities in which CHCs most frequently participate. The sample of CHC grant applications for the year 2000 was coded for IOR member types and IOR activity types, using the inductive qualitative approach outlined in Chapter 3 of this dissertation. The inductive approach allowed for the identification of key patterns to be discovered through the grant application data itself, a process known as grounded theory (Glaser & Strauss, 1967). Grounded theory methods progress each step of the analytic process toward the development, refinement,
and interrelation of concepts (Charmaz, 2000). During this analysis, IOR members and IOR activities were conceptualized and classified into separate categories. A typology, consisting of the most significant IOR member/IOR activity combinations, was then developed. The significance was determined by using kappa measures, which indicate the percent agreement between the two variables (i.e. one activity and one member type co-occurrence rate) after subtracting the agreement that could have occurred by random chance.

These IOR types were then further classified as being either “similar” to CHCs if they provided the same types of services as CHCs or as “complements” to CHCs if they provided primarily different services from those offered by the majority of CHCs. One modification was made to the typology in order to support the conceptual framework of complementarity. Public health departments were separated from the medical providers group since public health departments are more similar to CHCs in the services they provide than the other types of providers that fell under the medical providers group (e.g., inpatient facilities). See Table 4-1 for the typology as it was applied in this study. See Table B-1 in Appendix B for a more detailed description of each IOR member and activity type.
Table 4-1: U.S. Community Health Center Inter-O rganizational Relationship Types

<table>
<thead>
<tr>
<th>Types</th>
<th>IOR Member</th>
<th>IOR Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Academia</td>
<td>Clinical residency training site</td>
</tr>
<tr>
<td>2</td>
<td>Academia and/or Community groups⁴</td>
<td>Education and outreach</td>
</tr>
<tr>
<td>3</td>
<td>Community health centers</td>
<td>Resource sharing</td>
</tr>
<tr>
<td>4</td>
<td>Managed care organizations</td>
<td>Managed care contracting</td>
</tr>
<tr>
<td>5</td>
<td>Medical providers⁵</td>
<td>Service delivery coordination</td>
</tr>
<tr>
<td>6</td>
<td>Mixed members⁶</td>
<td>Study of community health needs</td>
</tr>
<tr>
<td>7</td>
<td>Public health departments or service providers</td>
<td>Service delivery coordination</td>
</tr>
<tr>
<td>8</td>
<td>Professional associations</td>
<td>Advocate government policy changes</td>
</tr>
</tbody>
</table>

**Number of IOR types:** The number of types of collaborations taking place has been used in previous research to predict access to care (Hendryx, 2001). In this case, the number of IOR member/IOR activity combination types was used and ranged from zero to eight types (see Table 4-1).

**IOR types:** A dichotomous variable was developed for each of the eight IOR member/activity types. Each variable was coded “1” if the CHC had an IOR with the member/activity type and coded “0” if it did not.

**Covariates**

The covariates selected for this study include total CHC overhead costs, the number of employees (full-time equivalents [FTEs]), the number of CHC sites, BPHC CHC-type funding,

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⁴ Includes private commercial firms, religious organizations, senior centers, transportation agencies, and volunteer service organizations.
⁵ Includes behavioral health providers, inpatient facilities, local community health providers.
⁶ Includes all of the listed IOR members and social service organizations.
and urban/rural location. CHC size is a potential confounder with any predictor that reflects scale. Size is important because it is associated with an organization's capacity to offer more services and see more patients (Shortell, Morrison, Hughes, Friedman, & Vitek, 1987). Three measures were used to control for the differences in CHC size:

**Total CHC overhead costs (log):** This measure includes the 2001 CHC administration and facility costs, which tend to be higher with larger sized facilities. Overhead costs varied greatly across CHCs, ranging from $14,624 to $19,431,788. The log transformation was taken to correct for the skewness and kurtosis of the data, which was reduced from 3.3 to .51 for skewness and from 16.3 to 1.1 for the kurtosis. This adjustment resulted in a distribution that did not differ significantly from normality (the Kolmogorov-Smirnov Z-value was .037, p = .173).

**Total FTEs (log):** This measure includes all clinical and administrative staff. Staff were included if they provided services on behalf of the CHC on a regularly scheduled basis under any of the following arrangements: salaried full-time or part-time, hourly wage, National Health Service Corps assignees, under contract, under capitation, block time, fee-for-service arrangements, or donated time (BPHC, 2001a). The number of total FTEs ranged from 2 to 689. The log transformation was taken to correct for the skewness and kurtosis of the data, which was reduced from 2.9 to -.30 for skewness and from 12.9 to .06 for the kurtosis. This adjustment resulted in a distribution that did not differ significantly from normality (the Kolmogorov-Smirnov Z-value was .039, p = .138).

**Number of CHC sites:** A dichotomous variable was used to distinguish between CHCs that had a greater number of sites and CHCs that had a lesser number of sites. The variable was coded “1” if the CHC had a number of sites above the average CHC (i.e., mean = 5.64 sites) and
coded "0" if the CHC had a number of sites equal to or less than the average CHC. The number of CHC sites in 2001 ranged from 0 to 76.

The BPHC offers CHCs funding for five different areas: CHC operation, migrant farmworker program, homeless, homeless children, and public housing. Forty-three of the sample CHCs did not receive the basic CHC funding and the majority of these received migrant farmworker funding. Since some migrant farmworker programs do not maintain clinical operations but distribute patient vouchers and sub-contract delivery of care, it is likely that these applicants would vary from the rest of the sample. Therefore, a control variable was used to represent the receipt of BPHC CHC-type funding.

**CHC-type funding:** A dichotomous variable was used to account for the differences in the type of BPHC funding received by the grant applicant. The variable was coded "1" if CHC funding was received in 2001 and "0" if CHC funding was not received.

Rural CHCs are likely to differ from urban CHCs in many ways that may influence patients' access and use of CHC services, such as in travel distance to obtain care. Rural locations have smaller populations and fewer available providers than urban areas. These factors would influence the number of patients and providers available to rural CHCs.

**Urban location:** A dichotomous variable was used to account for the differences in CHC location. The variable was coded "1" if the CHC was located in an urban area and "0" if located in a rural area.
Dependent variables

Access to care has frequently been assessed by utilizing individual level data, such as the number of physician contacts or number of outpatient visits an individual has had within the past year (Carlson et al., 2001; Cunningham, 1999a; Cunningham & Hadley, 2004; Hendryx, 2001; Hendryx et al., 2002; Rosenheck et al., 1998; Stein, Andersen, Koegel, & Gelberg, 2000; Weinick, Zuvekas, & Cohen, 2000). In order to assess CHC IORs’ influence on patient access to the CHC, at the organizational level, a slightly different approach was required. Two types of access to care measures were used, one to reflect actual patient access to the CHC (i.e., number of CHC users) and the other to demonstrate patient access to specific types of care (i.e., provider FTEs). The following dependent variables were used in separate models:

Number of users: A count variable was used to reflect the total number of users who accessed the CHC in the year 2001. A user was defined as an individual who had at least one patient encounter during the year. Each user was counted only one time and the number of CHC users ranged from 725 to 106,034 users.

Specialty provider FTEs: The measure of specialty providers included those providers listed in the UDS under the following categories: obstetrician/gynecologists, other specialist physicians, other professional personnel (e.g., physical therapists, podiatrist, and optometrists), behavioral health providers (i.e., psychiatrists and other mental health specialists, such as clinical psychologists, social workers and substance abuse specialists), dentists and dental hygienists. The primary care providers excluded from this category were family practitioners, general practitioners, internists, and pediatricians.

CHC providers were considered staff and were included in the above FTEs if they provided services on behalf of the grantee (i.e., the CHC) on a regularly scheduled basis under
any of the following arrangements: salaried full-time or part-time, hourly wage, National Health Service Corps assignees, under contract, under capitation, block time, fee-for-service arrangements, or donated time (BPHC, 2001a). The number of specialty provider FTEs ranged from 0 to 100.

Results

Tables 4-2 and 4-3 provide descriptive statistics and correlation matrix for the variables used in this study. The average CHC participated in only two out of the eight IOR types. Of the 424 CHCs, 75 percent participated in IORs involving service delivery coordination with medical providers. Approximately one-third of the CHCs collaborated with academia as clinical training sites, with managed care organizations in some form of managed care activity, and with public health organizations for service delivery coordination. A quarter of the CHCs were involved with academia and/or community groups in education and outreach activities and with other CHCs in resource sharing activities. Very few CHCs pursued collaborative efforts to study local health care needs or to advocate for governmental policy changes.

Ninety percent of the CHCs received BPHC CHC-type funding and there was almost an equal split between the number of rural and urban CHCs present in the sample. The CHCs' ranged considerably in size. On average, the CHCs had overhead costs of $1.9 million with a standard deviation of $2.1 million, 83 total FTEs with a standard deviation of 86, 5.8 specialty provider FTEs with a standard deviation of 10.7 FTEs, and 5.6 sites with a standard deviation of 6.7 sites.
Table 4-2: Descriptive Statistics on Variables Examined in Multivariate Analysis (N=424)

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of IOR types</td>
<td>2.37</td>
<td>1.37</td>
</tr>
<tr>
<td>Academia &amp; Clinical Training</td>
<td>0.36</td>
<td>0.48</td>
</tr>
<tr>
<td>Academia and/or Community Group &amp; Education/Outreach</td>
<td>0.25</td>
<td>0.43</td>
</tr>
<tr>
<td>CHCs &amp; Resource sharing</td>
<td>0.25</td>
<td>0.44</td>
</tr>
<tr>
<td>Managed care organization &amp; Managed care activity</td>
<td>0.33</td>
<td>0.47</td>
</tr>
<tr>
<td>Medical Provider &amp; Service Delivery</td>
<td>0.75</td>
<td>0.43</td>
</tr>
<tr>
<td>Mixed members &amp; Study of health needs</td>
<td>0.00</td>
<td>0.07</td>
</tr>
<tr>
<td>Public health &amp; Service Delivery</td>
<td>0.29</td>
<td>0.46</td>
</tr>
<tr>
<td>Professional Organizations &amp; Advocate Policy</td>
<td>0.12</td>
<td>0.33</td>
</tr>
<tr>
<td>Total overhead costs (log of 10)</td>
<td>6.09</td>
<td>0.45</td>
</tr>
<tr>
<td>Total FTEs (log of 10)</td>
<td>1.73</td>
<td>0.02</td>
</tr>
<tr>
<td>Number of CHC sites</td>
<td>0.34</td>
<td>0.48</td>
</tr>
<tr>
<td>CHC-type funding</td>
<td>0.90</td>
<td>0.30</td>
</tr>
<tr>
<td>Urban location</td>
<td>0.49</td>
<td>0.50</td>
</tr>
<tr>
<td>Number of CHC users</td>
<td>13,696</td>
<td>12,963</td>
</tr>
<tr>
<td>Specialty provider FTEs</td>
<td>5.84</td>
<td>10.72</td>
</tr>
</tbody>
</table>

As shown in Table 4-3, the correlations between the independent variables are, for the most part, low. However, the correlation between total FTEs (covariate) and the number of CHC users (dependent variable) was very high (.76). To further examine the potential collinearity among the variables, the inverse of the variance inflation factor, called the tolerance, was calculated. The tolerance indicates how much of the variance in X is independent of other predictor variables. The tolerance for each of the predictor variables greatly exceeded .01 (i.e.,
Table 4-3: Correlation Statistics on Variables Examined in Multivariate Analysis (N=424)

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of IOR types</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>2. Academia &amp; Clinical Training</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>3. Academia and/or Community Group &amp; Ed. / Outreach</td>
<td>NA</td>
<td>0.14**</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>4. CHCs &amp; Resource sharing</td>
<td>NA</td>
<td>0.05</td>
<td>0.09</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>5. Managed care Org. &amp; Managed care activity</td>
<td>NA</td>
<td>0.13**</td>
<td>-0.01</td>
<td>0.02</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>6. Medical Provider &amp; Service Delivery</td>
<td>NA</td>
<td>0.04</td>
<td>0.09</td>
<td>0.11*</td>
<td>0.09</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>7. Mixed &amp; Study of health needs</td>
<td>NA</td>
<td>0.02</td>
<td>-0.04</td>
<td>0.11*</td>
<td>-0.05</td>
<td>-0.04</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>8. Public health &amp; Service Delivery</td>
<td>NA</td>
<td>0.11*</td>
<td>0.14**</td>
<td>0.05</td>
<td>-0.01</td>
<td>0.18**</td>
<td>0.03</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>9. Professional Org. &amp; Advocate Policy</td>
<td>NA</td>
<td>-0.01</td>
<td>0.10*</td>
<td>0.05</td>
<td>0.01</td>
<td>-0.02</td>
<td>-0.03</td>
<td>0.06</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>10. Total overhead costs (log of 10)</td>
<td>0.11*</td>
<td>0.05</td>
<td>0.11**</td>
<td>-0.02</td>
<td>0.22***</td>
<td>0.01</td>
<td>-0.10*</td>
<td>0.00</td>
<td>-0.04</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>11. Total FTEs (log)</td>
<td>0.09</td>
<td>0.04</td>
<td>0.10*</td>
<td>-0.01</td>
<td>0.19**</td>
<td>-0.02</td>
<td>-0.09</td>
<td>-0.01</td>
<td>-0.04</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>12. Number of CHC sites</td>
<td>0.10*</td>
<td>0.05</td>
<td>0.07</td>
<td>-0.00</td>
<td>0.08</td>
<td>0.04</td>
<td>-0.05</td>
<td>0.09</td>
<td>-0.01</td>
<td>0.42**</td>
<td>0.47**</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>13. CHC-type funding</td>
<td>0.05</td>
<td>0.02</td>
<td>0.03</td>
<td>-0.00</td>
<td>0.07</td>
<td>-0.03</td>
<td>-0.09</td>
<td>0.06</td>
<td>-0.02</td>
<td>0.47**</td>
<td>0.43**</td>
<td>-0.07</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>14. Urban location</td>
<td>0.05</td>
<td>-0.50</td>
<td>0.04</td>
<td>0.01</td>
<td>0.16**</td>
<td>0.07</td>
<td>0.00</td>
<td>-0.08</td>
<td>0.00</td>
<td>0.21**</td>
<td>0.22**</td>
<td>0.06</td>
<td>-0.17**</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>15. Number of CHC users</td>
<td>0.08</td>
<td>0.04</td>
<td>0.04</td>
<td>-0.05</td>
<td>0.16**</td>
<td>0.03</td>
<td>-0.05</td>
<td>0.06</td>
<td>-0.06</td>
<td>0.73**</td>
<td>0.76**</td>
<td>0.50**</td>
<td>0.22**</td>
<td>0.11</td>
<td>NA</td>
</tr>
<tr>
<td>16. Specialty provider FTEs</td>
<td>0.12*</td>
<td>0.06</td>
<td>0.09</td>
<td>0.04</td>
<td>0.13**</td>
<td>0.05</td>
<td>-0.03</td>
<td>0.02</td>
<td>-0.04</td>
<td>0.51**</td>
<td>0.53**</td>
<td>0.35**</td>
<td>0.05</td>
<td>0.23**</td>
<td>0.57**</td>
</tr>
</tbody>
</table>

a. Pearson Product Moment Correlations Based on Two-Tailed Tests  * p ≤ .05; ** p ≤ .01
the smallest tolerance value was .472), suggesting there was no problem with collinearity (Affifi & Clark, 1997).

A lagged multiple linear regression (Ordinary Least Squares (OLS)) analysis was performed utilizing SPSS for Windows, version 11.0.1. Linear regression is suitable when the dependent variable is a quantitative measure of some condition or behavior (Quigley, 2003). Regression techniques are useful for assessing the relationship between a dependent variable and several independent variables when the independent variables are correlated with one another and with the dependent variable to varying degrees (Tabachnick & Fidell, 2001). Additionally, regression techniques are flexible and permit the use of both continuous and dichotomous independent variables. The OLS estimator was chosen because, in the classical linear regression model, the OLS estimator is considered the optimal estimator (Kennedy, 2001).

Normal probability plots and residual plots were used to assess if the data fit a normal distribution. The results indicated the presence of heteroscedasticity. In the presence of heteroscedasticity, OLS estimates are unbiased, but the tests of significance are generally inappropriate and could lead to incorrect inferences (Long & Ervin, 2000). The heteroscedasticity was attributable to a predictor variable controlling for size, overhead dollars (log), indicating that the variance increased as the size of the CHC increased. The heteroscedasticity-consistent standard error (HCSE) estimator of OLS parameter estimates (also known as the White-corrected standard errors) was used to produce revised tests of significance.\(^7\) Tests based on a heteroscedasticity-consistent covariance matrix are consistent even in the

\(^7\) Since the current version of SPSS does not offer the HCSE estimator tool, a SPSS macro that was developed and tested by Andrew Hayes was used for this analysis (Hayes & Cai, 2004).
presence of heteroscedasticity of an unknown form (Hayes & Cai, 2004; Long & Ervin, 2000; White, 1980).

Since the time frame between IORs and their effects is unknown, a reasonable and feasible lag time of one year was selected to account for the delay usually experienced by IORs to realize benefits. Tables 4-4 and 4-5 show the results of the OLS regression analyses. Five models were estimated and all models were significant predictors of the outcomes of interest.

Model 1 is the baseline model for exploring the effects of IORs on the number of CHC users and it includes only the control variables. Model 2 adds to the control variables a count of the number of IOR types in which CHCs participate. Model 3 refines model 2 by adding to the control variables the set of dichotomous variables representing each of the IOR member/activity types. Model 4 is the baseline model for assessing the effects of IORs on the number of CHC specialty provider FTEs. Model 5 adds to the control variables the set of dichotomous variables representing each of the IOR member/activity types.
Table 4-4: Effects of [IVS] IORs on [DV] Community Health Center Number of Users (Hypotheses 1 and 2)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-22,422*** (2,633)</td>
<td>-22,503*** (2,738)</td>
<td>-23,211*** (2,866)</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total FTEs (log)</td>
<td>3,145*** (2,143)</td>
<td>23,144*** (2,145)</td>
<td>23,473*** (2,174)</td>
</tr>
<tr>
<td>Number of sites (1= &gt; average #; 0 = ≤ average)</td>
<td>3,827*** (955)</td>
<td>3,815*** (968)</td>
<td>3,537*** (1,022)</td>
</tr>
<tr>
<td>CHC-type funding (1 = yes; 0 = no)</td>
<td>-4,684*** (1,713)</td>
<td>-4,696*** (1,728)</td>
<td>-5,008*** (1,733)</td>
</tr>
<tr>
<td>CHC location (1 = urban; 0 = rural)</td>
<td>-2,151*** (796)</td>
<td>-2,157*** (799)</td>
<td>-2,168*** (784)</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of IOR Member/Activity Types</td>
<td>-42 (242)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IOR Member/Activity Types: (C= Complement to CHC; S = Similar to CHC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academia/Clinical training site (C)</td>
<td>-129 (933)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academia and/or Community groups/Education and outreach (C)</td>
<td>-1,319 (945)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community health centers/Resource sharing (S)</td>
<td>-1,315 (824)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managed care organizations/Managed care contracting (C)</td>
<td>-507 (900)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical providers/Service delivery coordination (C)</td>
<td>963 (833)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed members/Study of community health needs (C)</td>
<td>2,924 (5,207)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public health providers/Service delivery coordination (S)</td>
<td>1,879 (994)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional associations/Advocate government policy changes (C)</td>
<td>-1,042 (1,021)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model Statistics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-squared/ Change in r-squared</td>
<td>0.6132***</td>
<td>0.6132*** / .0000</td>
<td>0.6232*** / .01</td>
</tr>
<tr>
<td>Degrees of freedom / N</td>
<td>4 / 424</td>
<td>5 / 424</td>
<td>12 / 424</td>
</tr>
<tr>
<td>F-Statistic</td>
<td>56</td>
<td>45</td>
<td>22</td>
</tr>
</tbody>
</table>

*a White Heteroscedasticity-Consistent Standard Errors & Covariance  Two-Tailed Tests: * p ≤ .05; ** p ≤ .01; *** p ≤ .001
Table 4-5: Effects of [IVS] IORs on [DV] Number of Specialty Provider Full-time Equivalents (FTEs) (Hypothesis 3)

<table>
<thead>
<tr>
<th></th>
<th>Model 4: 2001 Specialty Provider FTEs [H3] (Standard Errors&lt;sup&gt;a&lt;/sup&gt;)</th>
<th>Model 5: 2001 Specialty Provider FTEs [H3]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-68.59** (9.69)</td>
<td>-69.41** (10.10)</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overhead dollars (log)</td>
<td>12.90** (1.85)</td>
<td>12.90** (1.84)</td>
</tr>
<tr>
<td>Number of sites (1 = &gt; average #; 0 = ≤ average)</td>
<td>2.41** (0.91)</td>
<td>2.30** (0.87)</td>
</tr>
<tr>
<td>CHC-type funding (1 = yes; 0 = no)</td>
<td>- 6.48** (2.16)</td>
<td>- 6.54** (2.17)</td>
</tr>
<tr>
<td>CHC location (1 = urban; 0 = rural)</td>
<td>1.69 (0.83)</td>
<td>1.72 (0.94)</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IOR Member/Activity Types:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(C = Complement to CHC; S = Similar to CHC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academia/Clinical training site (C)</td>
<td>0.72 (1.06)</td>
<td></td>
</tr>
<tr>
<td>Academia and/or Community groups/Education and outreach (C)</td>
<td>0.47 (1.16)</td>
<td></td>
</tr>
<tr>
<td>Community health centers/Resource sharing (S)</td>
<td>1.19 (1.15)</td>
<td></td>
</tr>
<tr>
<td>Managed care organizations/Managed care contracting (C)</td>
<td>- 0.04 (1.06)</td>
<td></td>
</tr>
<tr>
<td>Medical providers/Service delivery coordination (C)</td>
<td>0.31 (0.75)</td>
<td></td>
</tr>
<tr>
<td>Mixed members/Study of community health needs (C)</td>
<td>0.62 (2.59)</td>
<td></td>
</tr>
<tr>
<td>Public health departments or service providers/Service delivery coordination (S)</td>
<td>0.40 (1.01)</td>
<td></td>
</tr>
<tr>
<td>Professional associations/Advocate government policy (C)</td>
<td>- 0.74 (1.35)</td>
<td></td>
</tr>
<tr>
<td><strong>Model Statistics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-squared / Change in r-squared</td>
<td>0.3229***</td>
<td>0.3285*** / .0056</td>
</tr>
<tr>
<td>Degrees of freedom / N</td>
<td>4 / 424</td>
<td>12 / 424</td>
</tr>
<tr>
<td>F-Statistic</td>
<td>17</td>
<td>7</td>
</tr>
</tbody>
</table>

<sup>a</sup> White Heteroscedasticity-Consistent Standard Errors & Covariance
Two-Tailed Tests: * p ≤ .05; ** p ≤ .01; *** p ≤ .001
Hypothesis 1 states that CHC participation with more types of IORs has a positive impact on the number of patients the CHC serves. As shown in model 2 on Table 4-4, the coefficient of the number of IOR types is not significant. Hence, hypothesis 1 cannot be supported.

Eq. 4.1 **Hypothesis 1:**

\[
\text{Total Users}_{2001} = \text{Total FTEs (log)}_{2001} + \text{Number of Sites}_{2001} + \text{CHC-type funding}_{2001} + \text{Urban}_{2001} + \text{Number of IOR Types}_{2000} 
\]

Hypothesis 2 states that CHCs involved in IORs with complementary organizations serve more patients than CHCs involved in IORs with similar organizations. As shown in Model 3 on Table 4-4, none of the complementary IORs, or the similar IORs, is significant. Therefore, hypothesis 2 is also not supported.

Eq. 4.2 **Hypothesis 2:**

\[
\text{Total Users}_{2001} = \text{Total FTEs (log)}_{2001} + \text{Number of Sites}_{2001} + \text{CHC-type funding}_{2001} + \text{Urban}_{2001} + \text{Academia/Clinical Training Site}_{2000} + \text{Academia or Community Groups/Education & Outreach}_{2000} - \text{CHCs/Resource Sharing}_{2000} + \text{Managed Care Organizations/Managed Care Contracting}_{2000} + \text{Medical Providers/Service Delivery Coordination}_{2000} + \text{Mixed Members/Study of Community Health Needs}_{2000} - \text{Public Health Departments/Service Delivery Coordination}_{2000} + \text{Professional Associations/Advocate Government Policy}_{2000} 
\]

Hypothesis 3 states that CHCs involved in IORs with complementary organizations have a greater number of specialty, dental, and behavioral health provider staff than CHCs involved in IORs with similar organizations. As shown in model 5 on Table 4-5, none of the complementary IORs, or the similar IORs, is significant. Hence, hypothesis 3 is not supported.
Eq. 4.3 Hypothesis 3:

Specialty Provider FTEs\textsubscript{2001} = Overhead dollars (log)\textsubscript{2001} + Number of Sites\textsubscript{2001} + CHC-type funding\textsubscript{2001} + Urban\textsubscript{2001} + Academia/Clinical Training Site\textsubscript{2000} + Academia or Community Groups/Education & Outreach\textsubscript{2000} - CHCs/Resource Sharing\textsubscript{2000} + Managed Care Organizations/Managed Care Contracting\textsubscript{2000} + Medical Providers/Service Delivery Coordination\textsubscript{2000} + Mixed Members/Study of Community Health Needs\textsubscript{2000} - Public Health Departments/Service Delivery Coordination\textsubscript{2000} + Professional Associations/Advocate Government Policy\textsubscript{2000}

*Covariate Results*

As expected, the number of CHC users and specialty provider FTEs increased with the size of the CHC, as measured by number of sites, total FTEs, and cost of facility overhead expenses. Receipt of BPHC CHC-type funding was found to be significant as well, but in the opposite direction from expected. This may be attributable to the fact that the CHC-type funding variable reflected the presence, or not, of only one type of BPHC funding, and it did not account for CHC total revenues or total grant funding. Since CHCs receive grant funding or earn income from other sources (i.e., patient revenues, state and local grants, and donations), it is possible that some of the centers that received no CHC funding had other sources of revenues, thereby minimizing the impact of not having BPHC CHC-type funding on their ability to serve a greater number of users or to employ more providers. Further analyses demonstrated that CHC funding is a positive predictor of CHC users ($p<.001$) and of specialty provider FTEs ($p<.05$)

\footnote{Grant funding was found to be highly correlated CHC overhead dollars ($r = .85$), therefore it was excluded from the models.}
when the covariate for size, FTEs or overhead dollars, is omitted. This suggests that the bivariate correlation between CHC funding and number of users \( (r = .22) \) and CHC funding and specialty provider FTEs \( (r = .05) \) actually reflect the fact that bigger CHCs receive more funding (note: the bivariate correlation between CHC funding and overhead dollars was .47 and between CHC funding and total FTEs was .43). Therefore, it appears that the unique effect of CHC funding, holding size constant, is not significantly associated with the number of users or specialty provider FTEs.

A similar situation existed with the findings relative to **CHC location**. CHC location is statistically significant \( (p<.01) \) for models 1 through 3, but in the opposite direction of what was expected, indicating that CHCs in urban locations have fewer users than CHCs located in rural areas. Further analyses once again demonstrated that when total FTEs or overhead dollars is omitted from the model, urban location is found to positively predict the number of CHC users \( (p<.01) \) and positively predict the number of specialty provider FTEs \( (p<.001) \). It appears that the size covariates (i.e., total FTEs or overhead dollars) and urban location have substantial overlap in the explained variance of the number of users and specialty provider FTEs, reflecting size as the significant predictor (i.e., supported by the fact that the bivariate correlation between urban location and overhead dollars was .21 at \( p<.01 \) and between urban location and total FTEs was .22). This is consistent with the fact that urban facilities tend to be larger in order to meet the greater demand of a larger population. Thus, the unique effect of urban location in these models, holding size constant, was not, on average, significant to the number of CHC users or specialty provider FTEs.
Discussion

The study findings do not provide support for any of the three hypotheses. The first hypothesis sought to address the first research question of this study (i.e., Do CHC IORs increase access to CHC services?) by determining whether or not CHC involvement with a greater number of IOR types results in CHCs seeing a greater number of patients. The second hypothesis was intended to delve even further into discerning what specific types of IOR members/activities contributed the most to CHCs seeing a greater number of patients, thereby addressing the second research question. Results for these hypotheses could not provide support for the theorized relationship that CHC IORs improve patient access to CHCs. The third hypothesis addressed the third research question: Do CHC IORs improve access to specialty, dental, and mental/substance abuse treatment by providing CHCs with access to a greater number of providers. Again, the evidence does not indicate IORs improve access to specialty types of care. The lack of support for these predictions is not consistent with existing case studies and qualitative research, which tend to indicate IORs do improve access to health and human services.

It is possible that the lack of significant findings from this study may be a result of failure to capture the phenomena of interest, namely the complete scope of IOR involvement. The independent variables included only the types of IOR members and IOR activities and did not reflect the extent of each CHC’s IOR involvement, such as the quality of the CHC relationships, the number of CHC IORs for each IOR type, and the maturity of the CHC IOR involvement. Despite these limitations, the data were meticulously derived from CHC grant applications that clearly and richly described CHC IOR involvement. Additionally, the appropriate analyses were
conducted, leading to the conclusion that it is feasible that IORs do not directly improve access to care. An alternative approach may be that IORs improve access to care, but do so indirectly through improvements in financial outcomes, such as creating greater efficiency or by adding financial resources, that in turn enable CHCs to see more patients.

**Conclusion**

**Study Limitations**

This study has several limitations. First, partnership activities only reflect the presence of CHC involvement in collaborative activities and do not account for the degree of IOR participation, the effectiveness of IOR functioning, nor the number of IORs in which a CHC is involved. Therefore, the models may have lacked sufficient information to demonstrate the true effects of IORs on access to care outcomes.

Second, considering the self-reporting nature of the grant application data and its use for determining funding allocation decisions, the data are susceptible to a socially desirable response bias and may tend to describe optimal performance and involvement in IORs. This response bias may have contributed to the inability to glean any IOR effects on outcomes.

Third, another reporting bias is related to the uniformity of the reported data. CHCs with less experience in grant writing may not reflect an accurate depiction of their existing IORs in their grant applications. This bias should be minimized by the fact that the BPHC requires grant submissions follow established guidelines that indicate the specific types of information desired about IOR involvement.
Policy and Research Implications

The Bureau of Primary Health Care, within the Health Resources and Services Administration of the U.S. Department of Health and Human Services, provides funds to CHCs and their safety net partners to promote greater coordination of health care delivery services (BPHC, 2004). As grant funds from this program and other state and local initiatives recede, collaborative efforts are likely to dissolve if they are unable to demonstrate quantifiable benefits to the participating organizations and the communities they support. Despite the proliferation of CHC IORs (98% of CHCs are involved in at least one IOR), there has been relatively little research that has objectively assessed health care IORs' ability to improve access to health and human services. The findings of this study, however, suggest that CHC IORs do not directly improve access to CHC services as measured by the number of CHC users and CHC provider FTEs. Instead, it might be possible that IORs improve access to care through other venues, such as greater access to outside referral sources, or indirectly through gaining financial benefits that enhance a center's ability to serve more patients.

Future research should investigate other types of organizational outcomes relative to CHC IORs, such as the financial benefits of such relationships. Existing studies do suggest that IORs have the ability to reduce costs for enrolled populations (Andruslis & Gusmano, 2000), increase access to diverse payment sources, particularly private-pay patients, and other financial resources (e.g., local and state grants and capital) (Gabow et al., 2003; GAO, 2000; Gurewich, 2002; Lambrew, Ricketts, & Morrissey, 1993; Lipson & Naierman, 1996; Wells & Weiner, 2005), and improve organizational efficiency (Baxter, Levin, Legaspi, Bailey, & Brown, 2002;
Wells & Weiner, 2005). Future studies should also incorporate additional information about the number of IORs and the extent of IOR involvement.

Establishing an association between IOR participation and specific outcome measures is still of critical importance. The BPHC provides approximately $1 billion annually in grants to federally qualified health centers with a portion of that funding linked to the establishment of specific types of network activity (BPHC, 2001). An additional $124 million was allocated in 2002 to finance expansion of CHC sites (McAlearney, 2002). Further research into IOR outcomes would be beneficial and may lend support for the realignment of a greater portion of governmental funding to the establishment of access to care and efficiency enhancing IORs. Additionally, if quantifiable IOR outcomes continue to remain elusive, existing networks will become vulnerable and will likely dissolve if federal funds recede.

Finally, CHC managers could benefit from strategies that would enable them to expand their services to a greater number of the uninsured population (CHCs reached only 9.7% of the nation's uninsured in 2000), to increase operational efficiency, and to gain access to additional grant revenues (Mills, 2002; UDS, 2001). This is particularly the case at a time when CHCs’ ability to meet their missions have been challenged by a growing uninsured population that has climbed to 45 million people, increased competition for Medicaid patients, and changes in legislation that have restricted reimbursement rates (BPHC, 2001; DeNavas-Walt, Proctor, Mills, & U.S. Census Bureau, 2004; GAO, 2000; Rosenbaum & Shin, 2003).
References


insurance by community health centers. *Journal of Ambulatory Care Management, 24*(2), 47-59.


Administration and Policy in Mental Health, 28(3), 205-218.


Chapter 5

Conclusion

In this dissertation, the author presented an overview of the medical safety net in the U.S. (Chapter 2) and conducted two studies that provided greater insight on safety net collaboration and outcomes through the lens of one type of safety net member, the community health center (CHC). The first study (Chapter 3) took an exploratory approach to discover the types of CHC inter-organizational relationships (IORs) and the predictors and outcomes of those IORs. The second study (Chapter 4) tested for access to care outcomes of CHC IORs using the CHC IOR typology developed in the first study.

The first section of this chapter addresses the policy and practice implications of the research findings, which did not find support for IORs improving access to care. The second section offers direction for future research in the area of IOR outcomes, focusing on the need to identify quantitative and objective measures for IOR outcome predictors and IOR outcomes.

Implications for Policy and Practice

The findings of this research have important implications for policy and practice. First, this research indicates that IORs are commonly entered directly for the purposes of improving access to care, however these IORs do not appear to lead to the desired improvements in access. This suggests that safety net providers may be pursuing the wrong types of IORs given their objectives to expand access. Alternatively, it is possible that IORs do improve access to care,
but do so indirectly through improvements in financial outcomes, such as creating greater efficiency or by adding financial resources, that in turn enable CHCs to see more patients. Prior to embarking on collaborative ventures, safety net providers should carefully and clearly identify the IOR outcomes they desire to achieve and establish a plan as to how they will measure their progress towards those goals.

Second, this research was also unable to provide grant generating and partnering organizations with the evidence needed to continue future collaborative endeavors. Networks are likely to dissolve if the participating organizations do not readily see the benefits of their investment in the collaboration. Also, the potential risk of future losses, such as in IORs for managed care endeavors, may sway potential IOR partners away from participation unless they are able to clearly quantify the benefits. Network partners are not the only ones concerned with a return on investment. Organizations that provide grant funding for the promotion of collaborative efforts, such as the BPHC, are likely to discontinue supporting strategies that do not have proven positive outcomes. CHCs, which are extremely reliant on grant funding, may find their collaborative efforts dissolving as the funding recedes. In a system as fragmented and decentralized as that of the U.S. healthcare system, patients may be the ones to suffer because of our inability to concretely measure the benefits actually achieved from these collaborative efforts, particularly if it results in the elimination of productive networks.

**Future Research**

Given the importance of the need to demonstrate measurable IOR outcomes, future research needs to continue to explore this topic. There does appear to be a gap between research
that qualitatively evaluates IOR outcomes and research that attempts to quantitatively and objectively test for IOR outcomes. Qualitative research has for the most part indicated that IORs improve access, whereas quantitative research results have been mixed. This suggests there is still much work to do in isolating the best measures of both IOR outcomes and the predictors of IOR outcomes. The challenge is to capture the effects of IORs in broadly applicable and objective type measures, especially given the diversity and uniqueness of most collaborative efforts.

Future research should investigate other measures of patient access to care. This research has focused on access to CHC in-house services as measured by the number of CHC users and specialty provider FTEs. It is possible that IORs improve CHC patients’ access to other services outside of the CHC, such as specialty care through local community providers or inpatient facilities. In this case the number of patient referrals would be an appropriate measure of access.

In order to more fully capture the outcome differences between IORs, future studies should also incorporate additional information about IORs, such as the number of IORs, the extent of IOR involvement, and the IOR objectives. Also, a measure should be included to represent the duration of the collaboration since newly formed IORs are likely to require more time to produce measurable outcomes than long-standing IORs. Given varying IOR objectives and the IOR duration, it is possible that the one-year lag period used in this study was not sufficient to capture IOR outcomes. Therefore, future research may need to span several years of outcome measures to identify changes as a result of IOR involvement.

Finally, researchers should also investigate other types of organizational outcomes relative to IORs, such as the financial benefits of such relationships. It is quite possible that access to care is improved indirectly by IORs through the financial benefits gained.
The bottom line is that quantitative testing with objective measures is needed to render credible evidence of IOR effectiveness. Therefore, future research efforts need to primarily focus on quantitatively analyzing IOR effectiveness. Future studies will require the detailed insight on collaborative efforts that is usually gained through qualitative research, but this insight will need to be quantified and incorporated into the analyses. Future research may also need to be extended to different levels of analysis. This current study was conducted at the organizational level. However, future studies may benefit from a more granular approach, studying the effects of specific types of IORs on specific patient and cost outcomes. Backing up the level of analysis to the community level may demonstrate the effects of public investments on public health for specific target populations, a primary concern of many grant funders.

In conclusion, the importance of concretely measuring and identifying the types of collaborative efforts that lead to specific kinds of outcomes cannot be stressed enough. SNPs have the special mission of caring for our Nation’s medically vulnerable populations, while being financially vulnerable themselves. This means that SNPs have very little slack for allocating precious resources to ineffective strategies. This research has provided insight into the safety net and its collaborative efforts, and has brought us a step forward in the understanding of IOR access to care outcomes.
Appendix A

Codebook for Community Health Center Inter-Organizational Relationships: Based on CHC Grant Applications for Year 2000

All (and only) codes are bolded.

The structure of the outline:

1. **Code** (label in bold) (sub-categories in *italics*)
   
   a. Definition of what characteristic or issue constitutes theme
   
   b. Cite(s) from source (theoretical or empirical) where appropriate
   
   c. What is included (criteria and examples)
   
   d. What is excluded (criteria and examples)

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Primary Codes

I. **Membership of inter-organizational relationship (IOR)**:

   a. This section identifies organizations that are currently involved in an IOR with a CHC. Only one code was assigned to each IOR member. If an organization appeared to belong to more than one category (e.g., a university with a religious affiliation), it was coded for its primary function (in this example, it would have been coded as educational institution). Note that clinics that are owned by the CHC as listed in the grant application under the delivery site listing are not considered an IOR but part of the CHC. The exception to this is partners listed in the site listing that are not owned by the CHC. Since the BPHC requires CHCs to list sites that meet the following requirements, many partners may be listed in this section as well (examples: detention centers, prisons, homeless shelters, schools, hospitals). Since ownership is not indicated, only the obvious organizations that
would not be owned by a CHC are to be considered as partners. In those cases, the partners were coded according to the partners’ primary function.

i. “A site is defined as a permanent unit providing services to a defined geographic service area or population.
   1. Locations where individual patients may be visited by providers but where the grantee has not established a permanent unit (e.g., private homes, hospitals and nursing homes) are NOT sites.
   2. Locations where the grantee has established a permanent unit are sites (e.g., a hospital OPD, homeless shelter or nursing home where the grantee has established and staffed a clinic).
   3. Mobile vans providing health care services are sites; the service area is the area the van(s) cover”. (BPHC, 2000)

b. The following IOR member codes were derived from the data by grouping like organizations together and assigning a label to each group. These groups are very similar to Lasker’s breakdown of partner structural foundations (my codes are in bold): medical practices and community-based clinics (CHCs, community healthcare providers), laboratories and pharmacies (community healthcare providers), hospitals and health systems (inpatient facilities), managed care organization (managed care organization), health department and other government agencies (public health for direct care; social services for non-direct care); academic institutions (educational institutions), professional associations (special interest groups), voluntary health organizations (volunteer groups irrespective of health care affiliation), community groups, such as businesses, labor org, schools, and religious org (private firms, religious, educational). (Lasker & Health, 1997 p.52)

c. Community health centers
   i. Outpatient, ambulatory clinics that are referred to by the applicant as CHCs, whether or not it is confirmed that the center is FQHC or a look-alike. Intent is to categorize those centers that are similar to the applicant as CHCs.
   ii. Includes: CHCs and CHC look-alikes, CHC networks or alliances (however, note that some predominantly CHC networks may have non-CHC members, which should also be coded).
   iii. Excludes: all other outpatient clinics; CHC associations (these fall under special interest groups); does not include CHC associations as these are special interest groups.

d. Community health care providers
   i. Local providers of outpatient health, dental or ancillary (laboratory, radiology, or pharmacy services) care.
ii. Includes: Primary or specialty care in an outpatient setting. Examples are community clinics (if not specified as a CHC), professional therapists, AIDS center or other AIDS organizations where their direct care role is specified (such as Comprehensive AIDS Program (GAP)), general references to health care providers or community providers, adult day health centers, specialty providers, Center for Elders Independence (a nonprofit, private health care provider), local service provider (another generic reference), private practices, individual private providers, group medical offices, Planned Parenthood and hospice, laboratories, pharmacy, and pharmacy management company.

iii. Excludes: CHCs, public health clinics, and mental health clinics

e. Inpatient facilities
   i. Facilities that provide 24-hour medical inpatient coverage to admitted patients.
   ii. Includes: hospitals, rehabilitative facilities, nursing homes, long-term care facilities.
   iii. Excludes: inpatient mental health or substance abuse facilities, VA or military inpatient facilities (falls under public health providers)

f. Public health or service providers
   i. Any public (specifically identified as such) agency or provider that directly provides medical health services, outpatient services only except for VA and military facilities.
   ii. Includes: county health agency, county health department, public health clinics, Public Health Department (if related to providing direct care; direct care tends to be at county or local level, not state), Department of Health and Human Services (if related to providing direct care); Indian Health clinics, Veterans Affairs; military health; U.S. Public Health Services; Farmworker Health Service (provides direct care but falls under Department of Health and Human Services).
   iii. Excludes: behavioral health services, social service organizations, and government agencies that support health and human programs but don’t actually provide direct care (falls under social service organizations).

g. Behavioral health agencies or service providers
   i. Any agency or provider (public or private) that coordinates or directly provides mental health or substance abuse services, either inpatient or outpatient
   ii. Includes: county mental health, Mental Health Services Administration, mental facility, mental hospital, and substance abuse facility.
h. Managed care organizations

i. Organizations that offer managed health care plans that generally have at least two common elements: some type of authorization requirement and some level of restriction on a member’s choice of providers. The managed care organization (MCO) may bear some, none or all of the risk for its enrollees. Additionally, CHCs may be paid either a capitated or fee-for-service rate under these managed care health plans.

ii. (BPHC, 2000; Kongstvedt, 2004)

iii. Includes organizations that offer the following types of health benefit plans, in which a CHC may participate as a provider:

1. Preferred Provider Organizations (PPO) — consists of a panel of providers that take discounts for services rendered. Precertification, case management and mandatory second opinion programs are often components of PPOs. Benefits are typically reduced for patients who seek care outside of the PPO.

2. Health Maintenance Organization (HMO) — HMOs are similar in benefit design to PPOs, except HMOs tend to manage utilization and quality to a greater extent than PPOs. Members are restricted for the most part to services provided by the HMO’s providers.

HMOs can involve either closed (physicians confine their practice to the HMO enrollees) or open (private physicians and other professional providers are independent contractors who see HMO enrollees in their own offices along with their other patients) panels.

3. Point-of-service plans (POS) — Plans in which members may choose which system to use at the point they obtain the service (differences in deductibles and coinsurance between coverage for in-network services and out-of-network services).

iv. Examples: The typical examples are ones where the MCO is an HMO and/or an insurance company (e.g., Kaiser, Blue Cross/Blue Shield). The key words that trigger the need to identify a MCO within the text (but not always) are: enrollees, capitation, providing health insurance or health plans, and managed care. A specific example is On Lok, which is a PACE MCO in CA that offers a capitation plan and direct care services at eight clinic sites and has the appearance of a closed panel HMO.

v. Excludes:

1. In most cases, managed care tends to include four parties and a health plan product: the patient (end user), the provider of care (end provider), the purchaser of care (usually a private employer, an individual, or the government), and the insuring organization that provides the health benefit plan (establishes contracts with the providers to deliver the care to a specified population). A fifth party that is appearing with some frequency in the grant applications is a provider intermediary organization (e.g., CHC
alliances), which negotiates with MCO on behalf of its member organizations (the CHCs). All but the insuring organization that provides the health benefits plan are excluded from the MCO category.

a. It should be noted that many government health plans are offered through contracted MCOs. However, only the MCO is coded in this case. An example: Florida Healthy Kids is a state insurance coverage for children, similar to Medicaid. The state is the payer, but the coverage is provided through managed care organizations, under which CHCs form contracts. Therefore the managed care organization is coded, but the plan (Florida Health Kids) and the state (the payer) are not coded.

2. The government (federal (CMS), state and local) is a primary purchaser of health care services under the Medicaid, SCHIP, Medicare, and PACE programs. The government or its activities for these health care insurance products are not coded. The exception is if the purchaser is also the one offering a managed care product (i.e., the health plan) such as government agencies or employers (under the Employee Retirement Income Security Act) that self-fund their own health benefits plans, in which case, the purchaser/insurer would be coded, not as a managed care organization, but under the appropriate category code for that organization (most likely the segment would also be coded for managed care contracting as it would apply).

a. Example: In California, Hillsborough County Department of Health and Social Services created the Hillsborough County Health Plan and then contracted directly with the CHC to empanel and manage the care of a group of uninsured individuals in the CHC's location. This is coded as "social service agency" and "contracting (managed care)."

3. The following integrated delivery systems are usually formed to make it easier for member organizations to work together in a managed care environment: Independent Practice Association (IPA), Physician-Hospital Organization (PHO), Management Service Organization (MSO), Provider-Sponsored Organization (PSO), Physician Practice Management Company (PPMC) (Kongstvedt, 2004). IDSs contract with MCOs, frequently negotiating capitation rates on behalf of its members. IDS memberships are coded based upon the categories of the members involved and not as a managed care entity.
i. **Social service agencies**
   i. Any organization that provides for the social welfare of its recipients, does not provide direct health or dental care and does not fall into any of the other member categories. These organizations tend to be non-profit and some may have multiple layers, where at a lower level direct health/dental care is provided.
   
   ii. Includes: support service facility, department of public social services, Department of Health and Social Services (if not related to direct care; tends to be at state level here; is responsible for Healthy Families Health Plan), AIDS organizations that provide only social services (and its function is delineated; excludes advocacy groups) initiatives such as violence prevention and domestic violence when the text indicates the initiative is actually an organization and not just a program within the CHC, foster care agencies, community helping agencies, WIC agency (not CHC providers that certified as WIC providers), fire department, and community service organizations.
   
   iii. Excludes: direct health/dental care services, volunteer/charitable organizations.

j. **Housing service agencies/housing projects**
   i. Any agency or organization involved in the provision of housing, may coordinating housing services or actually being a housing site.
   
   ii. Includes: subsidized housing project sites, group homes, Corporation for Supportive Housing, Department of Housing, homeless shelters, senior citizen homes, assisted living centers, and homeless shelters (places to sleep) provided by the Salvation Army or Catholic Charities (do not code as volunteer/charity organization).
   
   iii. Excludes: Live-in facilities that are related to the provision of direct health care, such as rehabilitative nursing homes or nursing homes.

k. **Senior centers**
   i. Organizations that provide daytime services (non-medical) to the elderly.
   
   ii. Includes: elderly day care facilities, activity centers.
   
   iii. Excludes: live-in facilities and facilities that provide direct medical care.

l. **Transportation agencies/businesses**
   i. Organizations whose primary focus is to provide transportation services, either medical or non-medical.
   
   ii. Includes: ambulance providers, taxis, buses.
m. Law enforcement agencies
   i. Any organization that provides for the enforcement of the law and/or
      confines violators of the law.
   ii. Includes: police department, courts, and detention facilities.

n. Academia (Educational institutions)
   i. Any organization involved in the provision of education.
   ii. Includes: elementary, middle and high schools, universities,
       technical/vocational centers, day care (for children), Head Start, Healthy
       Start (educational program for pre-school children); if applicant has
       school-based health center then has IOR with educational activity (this
       will be validated through triangulation with the UDS 2000 location code
       for type of site).
   iii. Excludes: none.

o. Religious organizations
   i. Any organization whose primary role is to provide religious guidance and
      services to its attendees and provide for their welfare.
   ii. Includes: churches, synagogues

p. Volunteer/Charitable organizations
   i. Organizations that provide volunteer workers or are typically considered a
      charity organization (collect donations to redistribute to the needy).
   ii. Includes: AmeriCorp (non-profit, private, non-health organization that
       provides staff to work at health facilities)(also known as Health Corps
       workers), Red Cross, United Way, National Health Service Corps
       (providers are sent to remote locations under a loan repayment program),
       Catholic Charities (caution: also has homeless shelters), the Salvation
       Army (caution: also has homeless shelters) and food and/or clothing
       shelters
   iii. Excludes: homeless shelters that provide places to sleep.

q. Professional Associations (Special interest/advocacy groups)
   i. Local, state or national trade organizations that form to represent a
      segment of the population, geography, type of organization, or particular
      health problem. The purpose of these organizations is primarily to lobby
      and effect change on behalf of its members or constituents.
   ii. Includes: special interest groups usually representing a segment of the
       population (e.g., Latino Association), associations representing a
       particular industry or type of organization and/or locality when advocacy
       role is apparent in text or otherwise well-known (e.g., American Hospital
Association, National Association of CHCs, Rural Health Association) or associations targeting a particular disease (e.g., National Diabetes Collaborative); other examples are Health Insurance Counseling and Advocacy Program, California Health Advocates and professional organizations (e.g., American Medical Association, American College of Healthcare Executives)

iii. Excludes: Associations or networks that do not specifically advocate for individual groups but are more likely to fall under another category by providing health care services (e.g., some AIDS Networks actually provide health services to AIDS patients but do not advocate for government policy changes), university student groups (e.g., university Latino Association representing the student body but not lobbying for policy change outside of the university).

r. Political leaders
   i. Public non-health related political leaders or government bodies.
   ii. Includes: Typically general references to political leaders, politicians, city, city council, mayor, governor, general reference to “government”, and county commission,
   iii. Excludes: social service agencies or health care related agencies that fall under other categories

s. Private commercial entities/firms
   i. Private sector businesses that are not related to the health care industry.
   ii. Includes: General references to commercial establishments or commercial sector (generic references are more common), legal offices, and labor camps.
   iii. Excludes: private health care businesses that actually provide direct health/dental/ancillary or mental health services, which fall under another category.

II. Activities/services of IORs: (note: activities are mutually exclusive; where overlap appears, the primary focus of the activity is coded; however, it is possible for a single IOR to participate in more than one activity)

a. Study of community health needs
   i. Activity tends to take place between organizations on behalf of the communities’ welfare.
   ii. Actions taken to identify and evaluate community health needs (Bazzoli et al., 1997) or to plan and develop policies for improving health status and access to care (Mays, Halverson, & Kaluzny, 1998)
iii. Includes: community needs assessments, community action plans, strategizing to improve integration efforts, combined research efforts, and planning/studying of a community health issue.

b. Education and outreach activities
   i. Activity tends to take place between organization and patient, with coordination occurring due to IOR. These activities include disseminating information/educational materials and/or providing outreach to encourage participation in health programs or social services, mostly to be obtained from the CHC site, but not always.
   ii. (Mays et al., 1998)
   iii. Includes the following: health fairs, health prevention, community events, insurance enrollment, outreach, health education classes (examples: TB control program, smoking cessation, cancer prevention).
   iv. Exclude: Any of the above activities where the CHC is simply a participant and the event is not a result of an active IOR effort. Does not include charity drives since the focus is not health care, but usually fund raising.

c. Service delivery coordination:
   i. Activity tends to take place between the organizations on behalf of individual patients to coordinate or to improve patients' access to services. These activities enable patients to get the services they need largely at other places.
   ii. (Baxter & Mechanic, 1997; Mays et al., 1998).
   iii. The patient tends to move between the various organizations involved in the IORs and includes the following types of services/arrangements:
      1. Case management. Includes case management, discharge planning, provider hospital privileges
      2. Integrated services. Coordination of health care delivery through vertically integrated networks, integrated delivery systems, horizontal integrated networks, and sliding fee discounts (making payment arrangements with IOR members for patients), which do not involve managed care contracting activities (empanelment).
      3. Telemedicine. Includes telemedicine and telehealth
      4. Referrals. Must demonstrate active coordination; another provider just seeing CHC’s patients is not enough (e.g., we work together to...).
      5. Services taken to patients' location (proximate location)
         a. Due to the IOR, health services are provided by the CHC at the patients' non-medical location, such as housing sites, schools (school-based programs), and homeless shelters.
b. Also includes mobile medical units (vans) that take services to the patient in collaboration with other partners.

iv. The services that are being coordinated Include the following:

1. hospital services: inpatient care
2. emergency/urgent care services
3. primary health care services: pregnancy testing, OB/GYN, immunizations, pediatric, family practice
4. behavioral health services: mental health and substance abuse services
5. specialty care
6. dental services
7. ancillary services: pharmaceuticals, mammography, radiology, laboratory, environmental health, occupational health, vocational therapy
8. home health: home visits and home health
9. nutritional services: meals delivery services and WIC
10. interpretive services (facilitates delivery of services)
11. transportation services: taxi-voucher program, ambulance services, taxis, buses
12. Social services: housing referrals/counseling, employment referrals/counseling
13. Adult daycare (more clinical than educational)

v. Excludes: Managed care activities even though those activities may also lead to service delivery coordination.

d. Managed care contracting

i. Activities tend to take place between organizations on behalf of a group of enrolled patients to which the CHC provides health care services and is reimbursed under either a capitated (pre-paid) plan or a fee-for-service plan.

ii. (BPHC, 2000)

iii. Includes: Application text must describe at least some detail about the “contract with the MCO” in order for it to be coded as encompassing managed care contracting activity. For instance, it should mention enrollment, a managed care payment arrangement, or describe some other managed care feature (e.g., utilization review, gatekeeper, audits). It is also possible to indicate “managed care contracting” activity without the text delineating who the IOR member is (sometimes this detail is missing in the applications), since the provision of managed care services would most likely have to be coordinated with a third party.

iv. The coded data (for FL and CA CHCs) will be triangulated against data taken from the UDS, 2000, table 9C, line 4, column (e): “Total Managed Care Revenue.” A zero indicates that no managed care activity exists,
greater than zero indicates that managed care activity exists. The coded
data and the UDS data will be compared for each CHC to validate the
coding. The UDS data will be used for this variable for the other states.

v. Excludes:
   1. Activities that fall under “service delivery coordination”.
   2. Primary Care Case Management Programs, which are
      arrangements whereby the grantee receives a case management fee
      and is expected to serve as gatekeeper for the enrollee, providing
      referrals to more specialized services (BPHC, 2000). PCCM is
      almost always a contract between the primary care provider and
      the state (not a managed care org.), involves neither risk nor
      incentives, and generally has no penalties if utilization is
      excessive. PCCM rarely involves payment of capitation for
      primary care services. (Excluded by BPHC).
   3. Dental managed care contracting (excluded by BPHC).

**e. Sharing of resources**

i. Activities tend to take place between organizations and primarily are done
   to reduce redundancy and increase efficiency in health delivery. Sharing
   may be reciprocal but does not have to be. While patient access may be
   indirectly impacted from the sharing of resources (e.g., joint establishment
   of a clinic or sharing of providers across organizations leads to greater
   access), this code is distinguished from the “service delivery coordination”
   code in that service delivery coordination tends to directly bring services
   to the patient and usually services are provided at other locations, not at
   the grant applicant’s location.

ii. (Bazzoli et al., 1997)

iii. Activities tend to fall into one of the following categories:

   1. **Joint ventures:** are more formal in arrangement
      a. Examples: joint purchasing arrangements (such as IT,
         medical equipment), establishment of joint projects (such
         as starting a new clinic)
      b. Excludes joint ventures when one party only provides the
         funding (in cash or in-kind); must demonstrate active IOR
         coordination/activity beyond financing.

   2. **Consolidation of selected services and/or administrative functions
      between partner organizations:** Includes:
      a. Partner services co-located with CHC on site or a CHC
         service is rendered at the partner’s site
      b. Mergers of services or administrative functions, while the
         partner organizations maintain their autonomy
      c. Excludes mergers of whole organization (beyond scope of
         this study)
3. Shared resources or ideas: Less formal arrangements in which IOR sharing activity occurs and is not already included in the above categories
   a. Examples: sharing of staff, ideas, expertise, training, equipment, or sharing of hospital call coverage
   iv. Excludes managed care contracting activities and service delivery coordination activities

f. Clinical training site
   i. Includes clinical students from educational institutions working on-site at the CHC for experience, while providing needed services for the CHC.
   ii. (Lasker & Health, 1997 p.73)
   iii. Excludes volunteers that are not from educational institutions such as Red Cross workers, AmeriCorp, or Health Corps workers as they are already fully trained and fall under a separate category for volunteers.

g. Advocate government policy
   i. Activity undertaken to solicit governmental support and/or policy changes relative to providing community health services
   ii. (Lasker & Health, 1997)
   iii. Includes: advocating for a particular health issue (AIDS), population (minorities), or organization (CHCs).

h. Excludes: References to the following types of IORs were excluded from being coded unless the membership of each referenced group was delineated at least once in the grant application (exception: CA and FL grant applications – internet searches were conducted in an attempt to identify membership where possible): councils, federations, working groups, and networks.

III. Outcomes of IOR
a. Gained financial benefits
   i. Outcomes associated with financial benefits.
   ii. Includes: statements that specifically identify IOR outcomes such as cost-savings, increased purchasing power, or general statement of financial benefits. Also, includes comments relative to maximizing resources, minimizing costs, gaining efficiencies.

b. Improved access to services
   i. Outcomes associated with expanding access to services (health or social services) or expanding the scope of available services.
ii. Includes: statements that specifically identify IOR outcomes such as increased access to care/services or increased access to personnel.

c. **Reduced ER/acute care visits**
   i. Outcomes associated with a decrease in ER or acute care visits.
   ii. Includes: statements that specifically identify IOR outcomes such as reduced or decreased ER/acute care usage.

d. **Strengthened networks**
   i. Outcomes that reference strengthened networks
   ii. Includes: statements that specifically identify IOR outcomes as improved or strengthened networks, relationships, partnerships, alliances, coordination, or collaboration.

e. **Expanded expertise**
   i. Outcomes that indicate an increase in knowledge or expertise.
   ii. Includes: statements that specifically indicate the CHC gained expertise or an increase in knowledge in any area as a result of IOR participation.

f. **Gained permanent staff**
   i. Outcomes that indicate a CHC gained permanent staff as a result of participation in an IOR.

g. **Improved quality**
   i. Outcomes that indicate a CHC’s quality of care improved as a result of IOR participation.
   ii. Examples include references to increased continuity of care, enhanced services, or improved quality.

h. **Improved health/well-being**
   i. Outcomes that indicate the CHC’s patient population experienced an improvement in health status or well-being as a result of IOR participation.

i. **Improved patient satisfaction**
   i. Outcomes that indicate the CHC has improved patient satisfaction as a result of IOR participation.
j. **Negative outcomes**
   i. Any comment made that indicates a negative outcome as a result of IOR participation.

IV. **Environmental motivations for entering IORs (only include for original intent of formation, not for continuation of partnership)**
   a. **Response to number of uninsured**
      i. Strategy undertaken in response to the number of uninsured
      ii. Any statement that indicates motivation to form IOR was in response to environmental factor: increasing number of uninsured.
      iii. Excluded: none to note

   b. **Response to lack of local health/social service support/availability**
      i. Strategy undertaken in response to the limited or lack of available health resources or social service support in the CHC’s community
      ii. Bazzoli, 1997 (health market resources); Mays, 1998 (community and market characteristics); Zinn, 1997 (munificence: abundance of resources)
      iii. Any statement that indicates the motivation to form IOR was in response to the unavailability of local health care resources, public health services, or supporting social services. (Example: nearest hospital/ER was 2 hours away, so entered IOR to establish ambulance services and urgent care clinic for community)
      iv. Excluded: reference to funding issues.

   c. **Response to managed care**
      i. Strategy specifically undertaken in response to environmental pressure from managed care or Medicaid managed care
      ii. Any statement that indicates the motivation to form IOR was to: position itself for managed care, in preparation for managed care, or in response to Medicaid managed care
      iii. Exclude: none to note

V. **Stated objectives for entering IORs (can broadly infer from the text usually when state “we work together to....”)**
   a. **To be competitive**
      i. Strategy undertaken in order to become more competitive
      ii. Any statement that broadly indicates reason to form IOR was to become more competitive but does not address a more specific reason such as those listed above.
      iii. Excluded: other motivation categories, since many of these could also be considered as promoting competitiveness.
b. **To survive**
   i. Strategy undertaken in order to remain operational
   ii. Example: to maintain long-term survivability

c. **To maximize resources**
   i. Strategy undertaken to improve CHCs position within the market and/or generate revenues; maximize resources at the organizational level not the community
   ii. Oliver, 1990 (efficiency argument); Williamson, 1975 (transaction cost theory)
   iii. Any statement that indicates the motivation to form IOR was for: to increase number of insured patients, to increase patient base, to increase utilization, to maximize revenues
   iv. Excluded: not to note

d. **To minimize costs/efficiency**
   i. Strategy undertaken to reduce organizational costs or gain efficiencies.
   ii. Any statement that indicates the motivation to form IOR was for: cost containment, to gain economies of scale, to share resources

e. **To gain experience**
   i. Strategy undertaken to learn from another member and gain experience in a particular area or field
   ii. Any statement that indicated motivation was “to learn” or “gain experience” (Example: gain experience in managed care)
   iii. Excluded: none to note

f. **To improve access**
   i. Strategy undertaken to improve target population’s access to health care services
   ii. Any statement that includes motivation was to: increase coordination, maximize access, reduce fragmentation, enhance services, improve long-term care services, improve urgent and emergent care access
   iii. Excluded: none to note

g. **To address racial and economic health disparities**
   i. Strategy undertaken in order to improve the health status of target populations within the community
   ii. (Lynn, 2002)
   iii. Any statement that indicates the motivation to form IOR was specifically to improve the health status of a specific target population.
iv. Excludes: access to care motivations even though this is similar

h. To improve quality of care
   i. Strategy undertaken to improve the quality of care given to the target population
   ii. any statement that includes motivation was to: improve quality of care or to establish quality improvement standards (example: to establish clinical protocols across participating providers that improves patient care quality…note: haven’t see this much detail in “reasons to motivate IOR”)
   iii. Excluded: references to individual organizational quality improvement efforts, such as TQI; focus is more on health care quality related to IOR efforts.

i. To improve health
   i. Strategy undertaken to improve the health of a center’s patients or the community population.
### Primary Codes

<table>
<thead>
<tr>
<th>Activities/services of IORs</th>
<th>Includes</th>
<th>Excludes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study of community health needs</td>
<td>assessments relative to specific populations &amp; action plans, strategizing to improve integration; combined research; planning &amp; studying; planning/developing a new clinic (but not implemented)</td>
<td></td>
</tr>
<tr>
<td>Education and outreach activities</td>
<td>health fairs, community events, charity drives, staff education, health education, insurance enrollment outreach, Healthy Start, Head Start, daycare for children (educational) (must see active coordination for these, not just attendance at events)</td>
<td>Training provided for clinical staff</td>
</tr>
<tr>
<td>Service delivery coordination</td>
<td>case management, integrated services, services co-located with CHC (unless part of a joint venture), svcs taken to patient’s proximate location, telemedicine, referrals (active coordination), acceptance of sliding scale fees, negotiated hospital per diem rates, hospital privileges, coordination of patient services to include medical, preventive medicine, dental, mental, home health, nutrition, interpretation, transportation, social services, adult daycare</td>
<td>Gov’t workers out-posted at CHC</td>
</tr>
<tr>
<td>Contracting (managed care)</td>
<td>Providing managed care</td>
<td>Enrollment in a</td>
</tr>
<tr>
<td>Activities/services of IORs</td>
<td>Includes</td>
<td>Excludes</td>
</tr>
<tr>
<td>-----------------------------</td>
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</tr>
<tr>
<td></td>
<td>products, contracted direct care</td>
<td>state program (CHIP) alone doesn’t suffice; CHC contracts with providers not involved in managed care</td>
</tr>
<tr>
<td>Sharing of resources</td>
<td>joint ventures, mergers (of functions not org.), shared resources, ideas, education/training for staff</td>
<td></td>
</tr>
<tr>
<td>Clinical training site</td>
<td>clinical students from educational institutions; excludes non-student volunteers</td>
<td>Volunteers that are not from educational institutions</td>
</tr>
<tr>
<td>Advocate government policy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Membership of IORs</td>
<td>1) Do not double-code these, select primary function. 2) Exclude: consortiums, councils, federations, working groups, civic groups, general networks where memberships are not specified; however do code IOR activity if identified for these groups. 3) Do not code general categories such as &quot;churches&quot; if not actively discussing a particular IOR, but making a general statement about having IORs with several stated categories.</td>
<td></td>
</tr>
<tr>
<td>Community health centers</td>
<td>CHCs, CHC alliances, look-alikes; it text calls it a CHC then code as CHC</td>
<td>CHC Associations</td>
</tr>
<tr>
<td>Community health care providers</td>
<td>Community clinics (not specified as CHC in text) Therapists, AIDS center/network that provides direct care (such as AIDS Comprehensive Program (GAP), general ref to providers (other providers), private or indiv practices, hospice, Center for Elders Indep., planned parenthood, home health agency, RCMA,</td>
<td>CHCs, public health clinics, mental health clinics; “community partners” since too vague</td>
</tr>
<tr>
<td>Activities/services of IORs</td>
<td>Includes</td>
<td>Excludes</td>
</tr>
<tr>
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<td>--------------------------------------------------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Inpatient facilities</td>
<td>hospitals, rehab, nursing homes, medical center, long-term care facilities; hospital systems</td>
<td>Inpt mental health or substance abuse</td>
</tr>
<tr>
<td>Public health departments or</td>
<td>County health agency, public health clinic, Indian health clinics, Dept of Health Svc (if direct care specified, usually at the local or county level), VA, military (non-inpatient); U.S. Public Health Svc, Public Health Dept.; Farmworker Health Service</td>
<td>behavioral health, social svc agencies</td>
</tr>
<tr>
<td>service providers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral health agencies or</td>
<td>county mental health, substance abuse, inpt or outpt, administrative offices</td>
<td></td>
</tr>
<tr>
<td>service providers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managed care organizations</td>
<td>Look for refs. to enrollees/capitation; Florida Healthy Kids, KidCare, Healthy Families, PACE, OnLok</td>
<td></td>
</tr>
<tr>
<td>Social service agencies</td>
<td>Dept. of Social Svc, violence prevention, foster care, community helping agencies, WIC agencies, support svc facilities, State Office of Family Planning, , community service org., Dept of Health and Human Services (if focus is non-direct care), AIDS organizations (non-direct care), Women’s Resource Center, Healthy Families (under Dept Health &amp; Human Svc); Native American Affairs Office, AA, Alanon, Big Brothers/Big Sisters</td>
<td>direct health care services; CHC staff members who are WIC certified</td>
</tr>
<tr>
<td>Housing service agencies/housing</td>
<td>Homeless shelters, agencies</td>
<td>Exclude rehab,</td>
</tr>
<tr>
<td>Activities/services of IORs</td>
<td>Includes</td>
<td>Excludes</td>
</tr>
<tr>
<td>---------------------------</td>
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</tr>
<tr>
<td>projects</td>
<td>that coordinate housing, assisted living centers, group homes, Corporation for Supportive Housing, Department of housing; Indian Reservation</td>
<td>nursing homes direct health care services</td>
</tr>
<tr>
<td>Senior centers</td>
<td>Elderly day care</td>
<td>live-in facilities, health care</td>
</tr>
<tr>
<td>Transportation agencies/businesses</td>
<td>taxi, bus</td>
<td></td>
</tr>
<tr>
<td>Law enforcement agencies</td>
<td>Police, courts, detention facilities</td>
<td></td>
</tr>
<tr>
<td>Academia (Educational institutions)</td>
<td>Grade schools, universities, technical schools, child day care, Head Start, Healthy Start, teen centers; YMCA, Boys/Girls Club of America</td>
<td>Adult day care</td>
</tr>
<tr>
<td>Religious organizations</td>
<td>Any religious affiliation, Catholic Charities</td>
<td></td>
</tr>
<tr>
<td>Volunteer services</td>
<td>Volunteer/charity org: AmeriCorps, Red Cross, Health Corps, United Way, Salvation Army, PACT,</td>
<td></td>
</tr>
<tr>
<td>Professional Associations (Special interest/advocacy groups)</td>
<td>Latino, AHA, National Assoc. of CHCs, Rural Health, National Diabetes Collaborative (when advocacy roles are apparent).</td>
<td>AIDS networks unless specifically states advocacy role; university student bodies</td>
</tr>
<tr>
<td>Political leaders</td>
<td>Politicians, city council, mayor, governor, county commission</td>
<td>social service or health care that fall under other cat.</td>
</tr>
<tr>
<td>Private commercial entities/firms</td>
<td>“commercial sector”; non-medical businesses; farmworkers</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcomes of IORs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gained financial benefits</td>
<td>Cost savings, purchasing power, efficiency</td>
</tr>
<tr>
<td>Improved access to services</td>
<td>Continuity of care, enhanced services, access to personnel/care or services</td>
</tr>
<tr>
<td>Reduced ER/acute care visits</td>
<td></td>
</tr>
<tr>
<td>Strengthened networks</td>
<td></td>
</tr>
<tr>
<td>Expanded expertise</td>
<td></td>
</tr>
<tr>
<td>Activities/services of IORs</td>
<td>Includes</td>
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<tr>
<td>-------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Gained permanent staffing</td>
<td></td>
</tr>
<tr>
<td>Improved quality</td>
<td></td>
</tr>
<tr>
<td>Improved health/well-being</td>
<td></td>
</tr>
<tr>
<td>Improved patient satisfaction</td>
<td></td>
</tr>
<tr>
<td>Negative outcomes</td>
<td></td>
</tr>
</tbody>
</table>
References


Appendix B

Construct Definition Matrix and Abbreviation List
### Table B-1: Construct Definitions

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Categories</th>
<th>Operational Definition</th>
<th>Chapter</th>
<th>Hypothesis/Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Strategic Objectives to pursue IORs</td>
<td>Social Responsibility</td>
<td>Objectives stemming from aspirations to address community issues or public concerns and includes CHC objectives to improve quality of care, health, access, and address racial and economic health disparities</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Operational Efficiency</td>
<td>Objective is to improve productivity relative to the available resources in service delivery and/or continuing operations. CHC objectives are to achieve economies of scale, reduce costs, and improve utilization of resources</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Resource Interdependence</td>
<td>Objective is to gain greater access to necessary resources and includes CHC objectives to maximize resources and/or to gain experience</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Strategic Enhancement</td>
<td>Objective is to gain a market advantage and strengthen capacity for service delivery. CHC objectives are to be competitive and/or to survive.</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td>Environmental Predictors of IORs</td>
<td>Underlying Health Needs</td>
<td>A community’s or population’s specific health care needs that motivate action to be taken to meet those needs. CHCs pursue organizational objectives in response to and for the purpose of providing the necessary services to meet the health care needs of their patient population.</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Health Market Resource Scarcity</td>
<td>The lack of health care resources, such as providers, hospitals, and technology, in a community that motivate action to be taken to provide the missing services. CHCs pursue organizational objectives in response to shortages of particular health care resources within their communities.</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Competitive Pressures</td>
<td>Actions taken by outside organizations that threaten another organization’s market position or continued viability, motivating a response in return. CHCs pursue organizational objectives in response to competitive threats, primarily from pressures exerted by managed care.</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td>IOR Members</td>
<td>Academia</td>
<td>All institutions with the primary mission of teaching, including grade schools, universities, and vocational schools</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Community Groups</td>
<td>Includes religious organizations, senior centers, transportation agencies/businesses, volunteer services, and all other private non-health care businesses</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Community Health Centers</td>
<td>Outpatient, ambulatory clinics that are referred to by the applicant as CHCs, and may be either a Federally-Qualified Health Center or a look-alike.</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Managed Care Organizations</td>
<td>Organizations that offer managed health care plans that generally have at least two common elements: some type of authorization requirement and some level of restriction on a member’s choice of providers. The managed care organization may bear some, none or all of the risk for its enrollees.</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td>Constructs</td>
<td>Categories</td>
<td>Operational Definition</td>
<td>Chapter</td>
<td>Hypothesis/Measure</td>
</tr>
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</tr>
<tr>
<td>IOR Members</td>
<td>Medical Providers</td>
<td>Includes local community health care providers care (i.e., local providers of outpatient health, dental or ancillary services), behavioral health agencies, and inpatient facilities.</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Public Health Providers</td>
<td>Any public (specifically identified as such) agency or provider that directly provides medical health services (i.e., outpatient services only)</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Professional Associations</td>
<td>Organizations with a primary mission of advocating for a particular group, organization, or special goal/interest, such as the National Association for CHCs.</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Social Service Organizations</td>
<td>Any organization that provides for the social welfare of its recipients, does not provide direct health or dental care and does not fall into any of the other member categories. Includes housing service agencies/housing projects, law enforcement agencies, political leaders, and non-medical social service agencies.</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td>IOR Activities</td>
<td>Advocate Government Policy Changes</td>
<td>Actions taken to affect change in governmental policies.</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Clinical Training Site</td>
<td>Actions taken to train university residents (students).</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Education and Outreach</td>
<td>Actions taken between an organization and patients to disseminate health care information and/or to provide outreach efforts that encourage participation in health programs or social services.</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Managed Care Contracting</td>
<td>Actions taken between organizations on behalf of a group of enrolled patients in order to provide services.</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Service Delivery Coordination</td>
<td>Actions taken between organizations that enable patients to get the health care services they need from other sources.</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Resource Sharing</td>
<td>Actions taken between organizations to obtain resources or to use resource efficiently.</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Study of Community Health Needs</td>
<td>Actions taken to identify and evaluate community health needs.</td>
<td>3, 4</td>
<td>NA</td>
</tr>
<tr>
<td>IOR Outcomes</td>
<td>Service Access</td>
<td>Outcomes that result in increased access to health care services or that shift access to more appropriate services (e.g., reduce ER/acute care visits)</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Cost</td>
<td>Outcomes that result in financial benefits, such as financial benefits gained through cost-savings, increased purchasing power, maximizing resources,</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td>Constructs</td>
<td>Categories</td>
<td>Operational Definition</td>
<td>Chapter</td>
<td>Hypothesis/Measure</td>
</tr>
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<td>--------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------</td>
<td>---------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Client Outcomes</td>
<td>Outcomes that directly affect the health or perceived health of the patients, including CHC outcomes that result in improved quality of care, health status, well-being, or patient satisfaction.</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Resource Acquisition</td>
<td>Outcomes that result in necessary resources being obtained, such as CHC outcomes that expand the organization's or staff's expertise or lead to additional, permanent staffing or any other type of resource being gained.</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Legitimacy</td>
<td>Outcomes that result in an organization's status or standing within the community or with its stakeholders to improve, including strengthening relationships with other IOR members within the networks.</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td>CHC IOR Typology</td>
<td>Academia/Clinical Residency Training Site Activities</td>
<td>Same as separate categories above.</td>
<td>3, 4</td>
<td>Hypothesis 2 &amp; 3 Coded &quot;1&quot; if combination was present in grant application; coded “0” if not.</td>
</tr>
<tr>
<td>(or IOR Types)</td>
<td>Academia and/or Community Groups &amp; Education and Outreach Activities</td>
<td>Same as separate categories above.</td>
<td>3, 4</td>
<td>Hypothesis 2 &amp; 3 Coded “1” if combination was present in grant application; coded “0” if not.</td>
</tr>
<tr>
<td></td>
<td>Managed Care Organization &amp; Managed Care Contracting Activities</td>
<td>Same as separate categories above.</td>
<td>3, 4</td>
<td>Hypothesis 2 &amp; 3 Coded “1” if combination was present in grant application; coded “0” if not.</td>
</tr>
<tr>
<td></td>
<td>Medical Providers &amp; Service Delivery Coordination</td>
<td>Same as separate categories above.</td>
<td>3, 4</td>
<td>Hypothesis 2 &amp; 3 Coded “1” if combination was present in grant application; coded “0” if not.</td>
</tr>
<tr>
<td></td>
<td>Mixed Members &amp; Study of Community Health</td>
<td>Mixed members include at least one or more of all 8 IOR member categories participating in a study of community health needs.</td>
<td>3, 4</td>
<td>Hypothesis 2 &amp; 3 Coded “1” if combination was present in grant application; coded “0” if not.</td>
</tr>
<tr>
<td>Constructs</td>
<td>Categories</td>
<td>Operational Definition</td>
<td>Chapter</td>
<td>Hypothesis/Measure</td>
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<td>----------------------------------</td>
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<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Needs</td>
<td></td>
<td></td>
<td></td>
<td>present in grant application; coded “0” if not.</td>
</tr>
<tr>
<td>Public Health Providers &amp; Service Delivery Coordination&lt;sup&gt;9&lt;/sup&gt;</td>
<td>Same as separate categories above.</td>
<td></td>
<td></td>
<td>Hypothesis 2 &amp; 3 Coded “1” if combination was present in grant application; coded “0” if not.</td>
</tr>
<tr>
<td>Professional Associations &amp; Advocate Government Policy Changes</td>
<td>Same as separate categories above.</td>
<td></td>
<td></td>
<td>Hypothesis 2 &amp; 3 Coded “1” if combination was present in grant application; coded “0” if not.</td>
</tr>
<tr>
<td>Complement IORs</td>
<td>NA</td>
<td>CHC IOR type was classified as a complement if the IOR member organization provided services primarily different from those services offered by the majority of CHCs. IOR members classified as complements are academia, community groups, managed care organizations, medical providers, mixed members, and professional associations.</td>
<td></td>
<td>Hypothesis 2 &amp; 3 No separate measure used.</td>
</tr>
<tr>
<td>Similar IORs</td>
<td>NA</td>
<td>CHC IOR type was classified as being similar to CHCs if the IOR member organization provided services that were primarily the same as those services offered by the majority of CHCs. IOR members classified as similar are public health providers and other CHCs.</td>
<td></td>
<td>Hypothesis 2 &amp; 3 No separate measure used.</td>
</tr>
<tr>
<td>Number of IOR Types</td>
<td>NA</td>
<td>Independent variable: The number of IOR member/activity types (as described under CHC IOR Typology) a CHC had in 2001</td>
<td></td>
<td>Hypothesis 1 Count variable ranging from 0 to 8.</td>
</tr>
<tr>
<td>CHC Size</td>
<td>Total CHC Overhead Costs (log)</td>
<td>Covariate: Total CHC administration and facility dollar costs for 2001 transformed to the log of 10.</td>
<td></td>
<td>Hypotheses 1-3 Continuous variable</td>
</tr>
<tr>
<td>CHC Size</td>
<td>Number of CHC Sites</td>
<td>Covariate: Represents the number of clinic locations a CHC had in 2001. The mean number of sites was 5.64.</td>
<td></td>
<td>Hypothesis 1-3 Coded “1” if above the</td>
</tr>
</tbody>
</table>

<sup>9</sup> Public health/service delivery coordination type is combined with the Medical providers/service delivery coordination type in Chapter 3, but was separated out for analysis purposes in Chapter 4.
<table>
<thead>
<tr>
<th>Constructs</th>
<th>Categories</th>
<th>Operational Definition</th>
<th>Chapter</th>
<th>Hypothesis/Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHC-Type Funding</td>
<td>NA</td>
<td>Covariate: Indicates whether or not the CHC received BPHC CHC-type funding for the year 2001.</td>
<td>4</td>
<td>Hypotheses 1-3 Coded “1” if received CHC-type funds and “0” if did not receive.</td>
</tr>
<tr>
<td>CHC Location</td>
<td>Urban location</td>
<td>Covariate: Indicates if the CHC was located in a rural or urban setting in 2001.</td>
<td>4</td>
<td>Hypotheses 1-3 Coded “1” if located in urban setting and coded “0” if located in a rural setting.</td>
</tr>
<tr>
<td>Number of CHC Users</td>
<td>NA</td>
<td>Dependent Variable: Used to reflect the total number of users who accessed the CHC in the year 2001. A user was defined as an individual who had at least one patient encounter during the year.</td>
<td>4</td>
<td>Hypothesis 1 &amp; 2 A count variable ranging from 725 to 106,034 users.</td>
</tr>
<tr>
<td>Specialty Provider FTEs</td>
<td>NA</td>
<td>Dependent Variable: A variable used to measure the total FTEs for specialty providers, which include obstetrician/gynecologists, other specialist physicians, other professional personnel (e.g., physical therapists, podiatrist, and optometrists), behavioral health providers (i.e., psychiatrists and other mental health specialists, such as clinical psychologists, social workers and substance abuse specialists), dentists and dental hygienists.</td>
<td>4</td>
<td>Hypothesis 3 Continuous variable ranging from 0 to 100 FTEs.</td>
</tr>
</tbody>
</table>
Table B-2: Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIPA</td>
<td>Benefits Improvement and Protection Act</td>
</tr>
<tr>
<td>BPHC</td>
<td>Bureau of Primary Health Care</td>
</tr>
<tr>
<td>CHC</td>
<td>Community health center</td>
</tr>
<tr>
<td>DSH</td>
<td>Disproportionate share hospital</td>
</tr>
<tr>
<td>FQHC</td>
<td>Federally qualified health center</td>
</tr>
<tr>
<td>FTE</td>
<td>Full-time equivalent</td>
</tr>
<tr>
<td>HCSE</td>
<td>Heteroscedasticity-consistent standard errors</td>
</tr>
<tr>
<td>IOR</td>
<td>Inter-organizational relationship</td>
</tr>
<tr>
<td>LHD</td>
<td>Local health department</td>
</tr>
<tr>
<td>MMC</td>
<td>Medicaid managed care</td>
</tr>
<tr>
<td>NAPH</td>
<td>National Association of Public Hospitals and Health Systems</td>
</tr>
<tr>
<td>OLS</td>
<td>Ordinary least squares</td>
</tr>
<tr>
<td>OBRA</td>
<td>Omnibus Budget Reconciliation Act</td>
</tr>
<tr>
<td>SCHIP</td>
<td>State Children’s Health Insurance Program</td>
</tr>
<tr>
<td>SNP</td>
<td>Safety net provider</td>
</tr>
<tr>
<td>UDS</td>
<td>Uniform Data System</td>
</tr>
</tbody>
</table>
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