

5-2004

The Safety Net: Academic Nurse-Managed Centers' Role

Joanne M. Pohl

University of Michigan - Ann Arbor, jpohl@umich.edu

Susan C. Vonderheid

University of Illinois at Chicago

Violet H. Barkauskas

University of Michigan - Ann Arbor

Jean Nagelkerk

Grand Valley State University, nagelkej@gvsu.edu

Follow this and additional works at: https://scholarworks.gvsu.edu/vphealth_articles

ScholarWorks Citation

Pohl, Joanne M.; Vonderheid, Susan C.; Barkauskas, Violet H.; and Nagelkerk, Jean, "The Safety Net: Academic Nurse-Managed Centers' Role" (2004). *Peer Reviewed Articles*. 1.

https://scholarworks.gvsu.edu/vphealth_articles/1

This Article is brought to you for free and open access by the Office of the Vice Provost for Health at ScholarWorks@GVSU. It has been accepted for inclusion in Peer Reviewed Articles by an authorized administrator of ScholarWorks@GVSU. For more information, please contact scholarworks@gvsu.edu.

The Safety Net: Academic Nurse-Managed Centers' Role

Joanne M. Pohl, PhD, APRN-BC, FAAN
Susan C. Vonderheid, PhD, RN
Violet H. Barkauskas, PhD, MPH, RN, FAAN
Jean Nagelkerk, PhD, RN, APRN-BC

There is increasing evidence that many nurse-managed centers (NMCs) provide critical services as safety net providers in today's health care arena, yet they are often invisible in their overall contributions. In many ways, nurse-managed centers (NMCs) date back to community health visionaries, such as Lillian Wald, at the turn of the 20th century (Glass, 1989). More recently, over the past 3 to 4 decades, the notions of community-based health services for underserved and other vulnerable populations have resurfaced. In addition, many NMCs are associated with schools of nursing (SONs), and their mission includes providing clinical sites for education, practice, and research as well as addressing the health needs of communities (Barger, 1986; Tanner, Pohl, Ward, & Dontje, 2003).

The Institute of Medicine (IOM) reported that in the "absence of universal comprehensive coverage, the health care safety net has served as the default system for caring for many of the nation's uninsured and vulnerable populations" (Lewin &

Authors' Note: This project was funded by W. K. Kellogg Foundation. All correspondence regarding this article should be directed to Joanne M. Pohl PhD, APRN, BC, FAAN, University of Michigan, School of Nursing, 400 North Ingalls, Rm. 1343, Ann Arbor, MI 48109-0482; phone: 734-936-3631; fax: 734-936-3644; e-mail: jpohl@umich.edu.

Policy, Politics, & Nursing Practice
Vol. 5 No. 2, May 2004, 84-94
DOI: 10.1177/1527154404263892
© 2004 Sage Publications

This article reports on a study conducted in 2001 that examined the role of four schools of nursing (SONs) in Michigan and their challenges in serving the safety net population through primary care nurse-managed centers (NMCs). The NMCs are described and compared to community health centers (CHCs) in terms of patient mix, funding sources, and contributions SONs make as a substitute resource for federal funding to the NMCs. NMCs are frequently invisible providers in the health system, yet they serve high-need populations. Similarities and differences between NMCs and CHCs are discussed as well as the unique challenges faced by NMCs and their SONs as the result of policies that sometimes limit NMCs ability to serve safety net populations.

Keywords: *nurse-managed centers; safety net providers; nurse practitioner; primary care*

Altman, 2000, p. 2). Safety net providers listed in the IOM's report include public hospitals, federal, state and locally supported community health centers (CHCs), including Federally Qualified Health Centers (FQHCs), and local health departments. Nurse-managed centers are not identified in this report as safety net providers. Yet many NMCs fit the IOM definition of the health care safety net—that is, “those providers that organize and deliver a significant level of health care and other related services to uninsured, Medicaid, and other vulnerable patients” (p. 3). In a more recent report on the financial underpinnings of the safety net, Hegner (2001) included NMCs as one of the safety net providers, “providing health care to persons regardless of their ability to pay” (p. 2).

Although there is increased documentation of the effect of NMCs on the health of populations (Barkauskas, Pohl, Benkert, & Wells, 2004; Matas, Brown, & Holman, 1996), little is known about the current role of SONs in sustaining academic NMCs—those affiliated with SONs—to remain part of the safety net. Given the importance of a strong safety net, the contribution of SONs in sustaining NMCs needs to be better understood. The purpose of this article is to describe the issues and challenges facing NMCs and their schools of nursing as safety net providers; to compare academic NMCs' patient mix with that of other safety net providers, specifically Community Health Centers (CHCs); and to report the financial contributions of SONs to their centers. Financial data from six NMCs that are part of the Michigan Academic Consortium (MAC) were used.

THE SAFETY NET AND NURSE-MANAGED CENTERS

In 1999, NMCs were identified as one resource in addressing the safety net needs of vulnerable populations (Mezey, Baisch, Kinsey, Torrisi, & Huether, 1999). Mezey and colleagues identified issues related to NMCs that were unique compared to other safety net providers, such as CHCs. First, NMCs are relatively new and challenged by moving from being subsidized to becoming self-sustaining entities. Although CHCs have similar challenges, they have a longer history in many cases and a guaranteed level of support from the federal government, particularly the Bureau of

Primary Health Care (BPHC). In addition, the issues related to nurse practitioners (NPs), including state-by-state scope of practice and reimbursement regulations, are not only challenges but often major barriers for NMCs (Mezey et al., 1999, p. 2). Again, CHCs may have some of these challenges, as many include nurse practitioners and midwives on their staffs; however, they generally have physicians on staff and physician medical directors and are not solely administered by nursing.

Safety net providers are often the providers of last resort (Gusmano, Fairbrother, & Park, 2002). NPs and NMCs have established an excellent track record serving vulnerable patients in terms of patient satisfaction and health outcomes (Barkauskas et al., 2004; Benkert, Buchholz, & Poole, 2001; Munding et al., 2000), even though vulnerable populations tend to be complex and often compounded by psychosocial problems. Interestingly, when the nurse practitioner role was initiated 35 years ago, it was conceived as addressing primarily healthy populations with minor health problems. In reality, the patients accessible to NPs and NMCs were those with limited or no resources—the vulnerable, the underserved, and the uninsured. Despite that reality, over the years, NPs and NMCs have demonstrated a very high rate of success with these high-need and often complex populations. Hegner (2001) described the situation well when discussing safety net providers in general, saying, “Quite literally, this is a patient load like that faced by no other set of providers” (p. 2).

With the number of uninsured at 43 million and rising (Gusmano et al., 2002; Hegner, 2001; Lewin & Altman, 2000; Meyer, Legnini, Waldman, Wicks, & Hinman, 1999), there is no question that safety net providers will continue to be of major importance. Although such health care is not only challenging but also expensive, NMCs, including academic NMCs, have not consistently been included in much of the federal and state funding support for safety net providers. In addition, NPs are often denied reimbursement by Medicaid, especially Medicaid managed care, and this can lead to financial disaster in NMCs where the care is delivered by NPs. Some managed care organizations (MCOs) continue to refuse to credential NPs as primary care providers. In Michigan, only 6 out of 18 MCOs that serve Medicaid beneficia-

ries credential NPs as primary care providers (Michigan Academic Consortium, 2002). Other states report similar information, including centers closing for lack of revenues and Medicaid patients being reassigned (Peters, 1999).

Similar to the IOM report that found the safety net intact but fragile, others reporting on the safety net between 1996 and 2001 found it had expanded and become more financially viable (Felland, Lesser, Benoit, Katz, & Lichiello, 2003). However, the categories used to describe local safety nets were limited; sites were categorized as having "strong" or "weak" capacity. A strong safety net had an extensive, financially healthy network, including hospitals and outpatient providers relative to the demand for "charity" care. A "weak" safety net was described as having an inadequate network (Felland et al., 2003, p. 492). Over the 5-year study, two strategies were described to strengthen financial viability. One obvious strategy was to improve operational efficiencies to decrease costs and increase revenues. Another strategy was to change patient mix so that it included more insured patients to generate revenues. This would help to cross-subsidize service to the uninsured. Three conditions were found to bolster the safety nets—community support for the uninsured, strong policy and organizational leadership, and adequate funding (Felland et al., 2003, p. 499).

EFFECT OF MEDICAID MANAGED CARE ON THE SAFETY NET

Substantial changes in the health care system have presented major challenges for all safety net providers. For example, the shift to Medicaid managed care and its rapid expansion have had an adverse effect on safety net providers with an increase in competition for Medicaid patients over that past few years (Felland et al., 2003; Hegner, 2001; Lewin & Altman, 2000; Meyer et al., 1999). In the movement to managed care arrangements, Medicaid patients may move to private providers, thus shifting revenues from the public to the private sectors. In addition, provider changes may represent shifts of care from providers who actually have substantial experience with the complex needs of Medicaid patients to others not prepared to address complex health and

psychosocial needs. Movement of funds from public facilities to private facilities has presented enormous challenges for the traditional safety net providers.

Meyer and colleagues (1999) identified another concern with Medicaid managed care—specifically, traditional safety net providers, such as CHCs, may be distracted by the Medicaid managed care population and not serve the uninsured, which was their original mission. Results of a study that examined the effect of managed care involvement on vulnerable populations served by CHCs suggested that an increase in Medicaid managed care patients leads to a decrease in capacity to care for the uninsured (Shi, Politzer, Regan, Lewis-Idema, & Falik, 2001).

FINANCIAL SUSTAINABILITY OF SAFETY NET PROVIDERS

According to the previously cited IOM report (Lewin & Altman, 2000), the financial sustainability of all safety net providers, including academic NMCs, is at risk for the following reasons: (a) the rising number of uninsured, (b) the full effect of mandated Medicaid managed care in a more competitive health care marketplace, and (c) the erosion and uncertainty of major direct and indirect subsidies that have helped support safety net functions. Because many academic NMCs have limited or no access to many of the direct and indirect subsidies that support the safety net functions, it is important to examine academic NMCs' contributions to the current safety net and compare their patient mix and funding sources to traditional safety net providers, namely, CHCs.

Since their beginning, academic NMCs, like CHCs, have used a patchwork of public and private funds to sustain their mission of serving the underserved (Barger & Bridges, 1990; Barger & Rosenfeld, 1993). This support has often meant a reliance on SONs' and universities' budgets for the academic NMCs and federal funding for the CHCs. Over a 10-year period (1990-2000), academic NMCs have reduced their reliance on university (including SON) funding from an average of 53% in 1990 (Barger & Bridges, 1990) to 13% currently (Vonderheid, Pohl, Barkauskas, Gift, & Hughes-Cromwick, 2003). CHCs have had a simi-

TABLE 1: Patient Mix in Community Health Centers (CHCs), 1994-2001

Year	% Uninsured	% Medicaid	% Medicare	% Private/ Commercial
1994 ^a	25.7	39.7	10.6	21.2
1996 ^b	39.4	30.5	9.5	17.2
1999 ^b	40.6	28.8	8.6	18.5
2001 ^c	38.9	35.5	7.2	18.3

a. Forrest and Whelan (2000).

b. McAlearney (2002).

c. Uniform Data System (2003).

lar experience. Over the same time period, CHCs decreased their dependency on federal dollars (Section 330) from 40% to 25% (Bailey, Legaspi, Bloom, Campbell, & Regan, 2003; Uniform Data System [UDS] 2003). In addition, over the same decade, CHCs increased their Medicaid revenues from 20% to a high of almost 40% in 1994 (Forrest & Whelan, 2000) and leveled out around 30% the later half of the decade (McAlearney, 2002). This plateau occurred because of Medicaid managed care and related increased competition for patients. Previous work also suggested that the patient mix at NMCs and CHCs has been similar. A national study conducted in 1990 found the following patient mix for NMCs: out of pocket (private pay) 30%, uncompensated care 20%, Medicaid 14%, Medicare 10%, private insurance 13%, and other 11% (Barger & Rosenfeld, 1993). See Table 1 for the CHC patient mix for the years 1994 to 2001. The competition between mission and financial margin is clearly an issue for all safety net providers, and academic NMCs are no exception.

Because NMCs in general and academic NMCs specifically have historically had a strong commitment to vulnerable populations, understanding survival strategies is critical. Little is known about the level of financial investment in academic NMCs by SONs and universities. It is imperative to understand the role of SONs and universities in supporting the nation's safety net. This study begins to address that gap in the literature.

STUDY OBJECTIVES

This study proposes to do the following:

1. describe the percent of the population served by the academic NMCs that is considered a safety net population and compare the patient mix of academic NMCs with that of CHCs,
2. compare funding sources of academic NMCs to those of CHCs, and
3. describe the SON's contribution to the safety net in terms of its level of funding for academic NMCs—specifically, the percent of the NMC costs funded by SONs and the relationship of NMC reimbursement to levels of support by SONs.

METHOD

A descriptive, retrospective study describing the safety net population was conducted from the perspective of the SONs. This viewpoint was employed to determine the prospects for self-sustainability of the academic NMCs. Concern with long-term sustainability requires calculation of all relevant center costs, including opportunity costs incurred by donors (Creese & Parker, 1994). In this study, all donors were included—SONs, universities, medical centers, private corporations, and individuals.

Setting

Six academic NMCs contributed data for this study (see Table 2) and represent diverse populations from a broad geographic range in Michigan. Three primary care centers were operating before MAC was established, one center was converted from a screening center to a primary care center with grant funding, and two primary care centers were developed in conjunction with grant funding. Centers provided a range of 1,677 to 6,943 encounters in 2001 and served a varied patient mix.

Data Collection

Data for calendar year 2001 were collected. A data collection form with instructions was developed to systematically collect detailed information about services, funding, revenue, and cost categories (Pohl, Vonderheid, Barkauskas, & Nagelkerk, in press). Whereas revenue data were provided by five academic NMCs, revenue data from Center F was not available from the associated medical center's accounting system. University representatives collected the data from each

TABLE 2: Consortium Nurse-Managed Centers (NMCs): Year Established, Setting and Clients

<i>University</i>	<i>Center</i>	<i>Year Established</i>	<i>Setting</i>	<i>Clients</i>	<i>Insurance Plans</i>
University #1	Center A	1999	Residential, campus-based	Faculty, staff, and students	Commercial
	Center B	1999	Urban, public housing unit	Underserved, low income	Public, uninsured
University #2	Center C	1999	Urban, medical center out-patient facility	Veterans, low income	Public
University #3	Center D ^a	1997	Urban, residential	Low to middle income	Commercial, public, uninsured
	Center E ^b	1991	Urban, campus-based family housing unit	Students, faculty, staff	Commercial, public uninsured
University #4	Center F	1979	Urban, medical center out-patient facility	Low income	Commercial, public, uninsured

a. Outreach clinic serves residence in a public-housing development.

b. Outreach clinic in a shelter that serves women and children that are victims of domestic violence.

NMC. Data editing interviews were conducted with university representatives and key NMC personnel to clarify responses, minimize reporting errors, resolve inconsistencies, and obtain missing data. Site visits were conducted where appropriate to obtain a better understanding of the centers' operations. The result was data that facilitated comparisons across centers.

Analysis

To enable comparison of academic NMC and CHC patient-mix data, three broad categories of payers were created: private, public, and uninsured (see Table 3). Private included commercial insurance plans and private contracts. Public included Medicaid, Medicare, Veterans Administration (VA), and Women Infant's and Children's (WIC) program. One center was unique in that nearly 73% of all patients were the result of a capitated contract with the VA. Center E was unique in that it provided WIC services. Uninsured, the third broad category, included patients receiving services reimbursed by Title XV, county health plans, and patients without health insurance. Title XV, not a health insurance plan, is a federally funded Breast and Cervical Cancer Control Program that provides free breast and cervical cancer screening to women who are between the ages of 40 and 64 and who meet financial and

insurance criteria (Title XV, 2003). Patients served by the county plan are low-income, uninsured individuals that do not meet eligibility criteria for federal health plans. In Michigan, county health plans are unique to each county and are a modified, capitated plan for primary care. Before county health plans were initiated, persons currently covered by these plans were uninsured. Three centers (C, D, and E; see Table 3) served patients from county health plans. A conceptual decision was made to include Title XV and county patients in the uninsured category rather than government plan, as the CHC data did not have a comparable payer category.

Direct and indirect costs, accounting costs (actual expenditures), and opportunity costs (monetary value) of donated resources were included. Direct costs included resources required to deliver patient care (e.g., salaries and benefits for NPs providing services, care supplies), and indirect costs represented business overhead not explicitly related to patient care. Expenses reported for durable equipment, computer hardware, and computer software were annualized using an estimated 5 years of useful life and the federal discount rate of 3% for 2001 (Creese & Parker, 1994; United States Federal Reserve System, 2002).

Opportunity costs account for the "cost of using resources that could have been productively used elsewhere" (Creese & Parker, 1994, p. 53) and

TABLE 3: Patient and Encounter Volume and Patient Mix Based on Revenue Sources: Calendar Year 2001

Center	Patients/Encounters ^b	Patient Mix (%)							
		Private ^e	Public				Uninsured ^a		
			Medicaid	Medicare	VA ^d	WIC	Title XV	County ^e	Other Uninsured
A	2959/6943	99	0.8	0.2	0	0	0	0	0
B	347/1677	14.6	13.6	12.3	0	0	0	0	59.5
C	1969/4764	0	0	0	72.5	0	0	27.5	0
D	717/3006	42.0	20.7	3.8	0	0	5.3	9.2	19.0
E	1052/4458	59.2	7.4	0.4	0	26.0	2.4	2.0	2.7
F ^f	2010/5025	16.6	19.8	37.1	0.3	0	5.8	0	20.4
CHC(2001) ^g		18.3	35.5	7.2	n/a	0	0	0	38.9

NOTE: VA = Veterans Administration; WIC = Women Infant's and Children's program; CHC = Community Health Centers.

a. To enable comparison with data for CHCs, the broader category of "Uninsured" includes persons receiving services paid for by Title XV and county health plans.

b. *Encounter* refers to the total number of patient visits for services of any type that warrant payment, with the following exception: the encounter total for Center C includes only visits that required services of advanced practices nurses. For example, visits where services were performed by a registered nurse solely for the purpose of blood pressure checks or immunization administration were not included.

c. Includes commercial insurance plans and private payer contracts.

d. This category refers to veterans enrolled in the Veterans Administration Health Care System or the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS), which serves veterans and dependents of active-duty and retired and deceased military.

e. County data is based on the number of covered lives.

f. Figures are estimated based on reports available from the associated medical center's data system.

g. These data are based on Uniform Data System (UDS) 2001 data for CHCs (UDS, 2003)

were estimated based on the fair market value. Opportunity costs incurred by the SONs were donated labor, such as administrative personnel and faculty practice time of NPs. To more accurately estimate the full costs of self-sustainability, opportunity costs incurred by organizations outside SONs (universities, medical centers, and a housing corporation) were included for key goods and services; costs included donated facilities for four centers and donated personnel for one center. Data on CHCs were from the Uniform Data System (UDS) using data from 2001, which is compiled from the Bureau of Primary Health Care (BPHC) grantee reports (UDS, 2003).

RESULTS

Population Served by Academic NMCs Compared to CHCs: Patient and Encounter Volume, and Patient Mix

Numbers of patients seen across academic NMCs ranged from 347 to 2,959 and numbers of encounters ranged from 1,677 to 6,943 in calendar year 2001 (see Table 3). Patient mix varied across

academic NMCs. Patients were enrolled in private/commercial plans, Medicaid, Medicare, and other public plans (e.g., Veterans Administration and county health plans), and they were uninsured. The percentage of private/commercial patients served by the centers varied widely, with an average of 38.6% and a range from 0% (Center C) to 99% (Center A). The majority of patients at Centers A and E were enrolled in private/commercial plans. The average percentage of patients enrolled in public plans was 35.8% and ranged from 1% (Center A) to 72.5% (Center C). Center E was unique in that 26% of its patient mix was comprised of women receiving the nonprimary care services of WIC. Based on the broad category of uninsured (consistent with the definition of uninsured described in the methods section), an average of 25.6% of academic NMC patients were uninsured. Four centers served a substantial proportion of uninsured patients (B: 59.5%, C: 27.5%, D: 33.5%, and F: 26.4%), whereas Center E served 7.1% uninsured. When health coverage afforded by Title XV and county plans in 2001 was taken into account, the average percentage of patients

TABLE 4: Funding Sources: Percentage of Total Funding (Cash and In-Kind Donations): Calendar Year 2001

<i>Center</i>	<i>University/SON Contributions (Cash/In-Kind)</i>	<i>Grants</i>	<i>External Contributions^a (Cash/In-Kind)</i>	<i>Patient and Third-Party Reimbursement^b</i>
A	7.8 (0/7.8)	31.1	0	61.1
B	10.1 (0/10.1)	67.6	0	22.3
C	3.3 (0/3.3)	8.0	3.7	85.0
D	39.3 (22.2/17.1)	30.0	3.1	27.7
E	30.2 (14.1/16.2)	22.5	1.5	45.8
	<i>BPHC</i>	<i>Other Grants^c</i>	<i>Indigent Care Programs, Other</i>	
CHC	22.4	16.6	6.4	54.7

SON = schools of nursing; CHC = Community Health Centers; BPHC = Bureau of Primary Health Care.

a. *External* refers to sources outside of the school of nursing and university.

b. This includes contracts.

c. This includes other federal grants (2.9%) and state, local, and foundation/private grants and contracts (13.7%). Data are taken from "Total Revenue Received by BPHC Grantees: National Summary for 2001" (Uniform Data System, 2003).

Revenue data from Center F were not available from the associated medical center's accounting system.

who were uninsured at academic NMCs was 16.9%, with a range of 0% to 59.5%. Three academic NMCs (Centers B, D, and F) served a substantial percentage of uninsured patients, ranging from 19% to 59.5%.

Compared to the CHC patient mix in 2001, academic NMCs served more patients enrolled in private/commercial plans (NMC average of 38.6% vs. 18.3%), fewer Medicaid patients (NMC average of 10.4% vs. 35.5%), fewer uninsured patients (NMC average of 25.6% vs. 38.9%), and a similar percentage of Medicare patients (NMC average 9.0% vs. 7.2%). One NMC (Center B) served a higher percentage of uninsured than CHCs, whereas Center A served no uninsured patients. When Center A was removed from the uninsured analysis, the average percentage of uninsured patients in the five remaining centers was 30%, lower than CHCs average of 38.9%. Two centers (D and F) served a larger Medicaid population than the other centers; however, this was still lower than CHCs average (35.5%).

Funding Sources of Academic NMCs Compared to CHCs

Funding sources for NMCs included third-party reimbursement ($M = 48.4\%$, range = 22.3%-85%), grants ($M = 31.8\%$, range = 8%-67.6%),

SON/university cash and in-kind contributions ($M = 18.4\%$, range = 3.3%-39.3%), and other in-kind contributions and donations ($M = 1.7\%$, range = 0%-3.7%), in that order. For CHCs, the sources were very similar to NMCs, with minor differences in the ranking of the sources. As with NMCs, the majority of funding was from patient reimbursement (54.7%). The next highest level of funding for the CHCs was from the BPHC funds (22.4%). Other grants (16.6%), and other indigent care programs (6.4%) made up the last two categories of funding for CHCs. For three NMCs (Centers A, B, and C), all university contributions were in-kind—primarily donated goods and services—whereas two Centers D and E received cash and in-kind contributions. The smallest amount of funding for NMCs was from external in-kind and cash contributions. Center C received rent as external in-kind contribution, whereas Centers D and E received external cash contributions (see Table 4 for a summary of funding sources).

Compared to the amount of funding CHCs received from the BPHC (22.4%), academic NMCs received similar funding from SONs and their universities (18.4%). On average, academic NMCs received almost twice as much funding from grants as did CHCs (31.8% vs. 16.6%).

TABLE 5: Cost Categories and School of Nursing (SON) Contributions for Each Cost Category: Calendar Year 2001 (in percentage of costs)

<i>Center</i>	<i>Space and Occupancy/ SON Contributions</i>	<i>Other General Operating/ SON Contributions</i>	<i>Personnel/ SON Contributions</i>	<i>Total Costs/ Total SON Contributions</i>
A	3.8/100	18.8/9.0	77.4/5.0	100/9.3
B	3.8/0	15.6/15.9	80.6/7.1	100/8.2
C	6.0/0 ^a	17.5/0	76.6/5.9	100/1.2
D	7.0/0	13.2/13.9	79.8/11.7	100/11.1
E	5.2/100	21.0/8.12	73.9/8.6	100/8.0
F	14.5/0 ^a	0	78.3/11.9	100/9.3

a. All (100%) of the space/occupancy costs are donated from the medical center in which the academic nurse-managed center is located.

Cost Categories and School of Nursing Contributions

To better understand SON/university contributions to the academic NMCs, individual cost categories within those contributions were examined. Costs categories included space and occupancy, general operating, and personnel costs. Personnel costs were highest, followed by general operating expenses. Space and occupancy costs were an average of 6.7% of the total costs and ranged from 3.8% to 14.5%. SONs/universities contributed 100% of the space and occupancy costs for Centers A and E. All the space and occupancy costs were contributed by external donors at two academic NMCs (Centers C and F). General operating costs were an average of 15.6% of the total costs at academic NMCs and ranged from 7.2% to 21%. SONs/universities' contributions to general operating costs were an average of 7.8% and ranged from 0% to 15.9%. Personnel costs were an average of 77.8% of the total costs and ranged from 73.9% to 80.6%. SONs/universities' contributions to personnel costs were an average of 8.4% and ranged from 5% to 11.9%. Overall, SONs/universities contributed 7.9% of the total costs (not the funding) of academic NMCs including operating costs and personnel (see Table 5).

Reimbursement, Grant Funding and Level of SONs' Support

The majority of patient revenue at four academic NMCs (A: 100%, B: 100%, D: 93.5%, and E: 70.4%) was generated through fee-for-service (FFS) plans (see Table 3). Three centers also re-

ceived reimbursement through capitated (CAP) plans (C: 100%, D: 6.5%, and E: 27.6%). The relationship between model of reimbursement (FFS or CAP) and level of SON/university support varied because of differences in business practices that affected revenue generation. For example, centers with lower reimbursement levels and lower collection rates received more support from SONs/universities to help sustain operations. Among centers that were reimbursed predominately through FFS, Center A required less support from their SON (7.8%) than other centers (see Table 4). Center A did not serve uninsured patients; it served predominately a privately insured population and had the highest collection rate among centers that were reimbursed mostly by FFS (Vonderheid et al., 2003; Vonderheid et al., in press). Center C, operating under a fully capitated payment system, served an underserved population, yet it received the smallest amount of funding support from SON/university (3.3%) and grants (see Tables 3 and 4). Center B had the highest amount of grant funding (67.6% of total funding) and served a large uninsured population, yet the SON/university contribution remained fairly small (10.1%) compared to other centers (Tables 3 and 4). Centers D and E received the most support from their SON/university—39.3% and 30.2%, respectively. Both centers had low reimbursement levels. Center D also served a large uninsured population and the largest Medicaid population compared to other centers and that contributed to low reimbursement levels. Centers D and E were also the only centers with outreach services to public housing and a shelter, both of which took added resources with

hidden administrative costs that were not reimbursable.

In sum, having a steady stream of revenue through capitated plans that cover costs of delivering services to vulnerable populations with typically higher resource use and receiving reimbursement from private payers appeared to be associated with lower levels of SON/university support. Higher levels of support from SONs/universities were associated with lower reimbursement rates, lower collection rates, provision of services to the uninsured, and outreach services to the community. The latter profile is characteristic of services rendered to safety net populations.

DISCUSSION

This study is the first to compare academic NMCs to CHCs in terms of patient mix and funding. It has been argued that academic NMCs provide an important role as safety net providers, yet they are often invisible in the current health care system. Findings from this study indicate that there are similarities as well as differences between academic NMCs and CHCs. Both are important safety net providers for the underserved and both are using a patchwork of public and private funds to support their mission of serving the underserved. When funding sources were examined, it appeared that SONs/universities have been providing similar and sometimes more support to the academic NMCs than the BPHC to the CHCs. In other words, some SONs/universities are serving as the substitute for federal support, making significant contributions to the sustainability of academic NMCs and to the overall safety net.

It is noteworthy that the percentage of Medicaid patients in these academic NMCs is lower than that for CHCs. Although CHCs have experienced their own challenges with Medicaid as it has moved to managed care (Hegner, 2001), the challenges for academic NMCs and NPs are heightened as the result of reimbursement issues. When NPs in NMCs are denied credentialing as primary care providers by MCOs, access to high-quality care, any willing provider, and choice of provider is denied. Thus, patients who might want to choose an NMC model of care are unable to access it. This has critical policy implications.

The financial sustainability of all safety net providers is at risk because of the rising number of uninsured (Lewin & Altman, 2000). The academic NMCs in this study were generally serving slightly lower levels of uninsured patients than CHCs and, in one center, a higher level. These academic NMCs experienced the financial strain of the uninsured and the majority of academic NMCs were relying heavily on grants and support from their universities/SONs to survive. Center C served a significant underserved population, including an uninsured population, but it relied least on grants and university contributions; it was the only fully capitated center, and a special county capitation program covered their uninsured population. Centers B, D, and E relied most heavily on grants and/or university contributions, and they were serving a higher number of uninsured and nonveteran, public-funded patients (e.g., Medicaid and WIC). To some extent, academic NMCs may be developmentally at a stage that CHCs were at some years ago. CHCs have had to address stronger business practices and increase their revenues from sources other than public funds over the years to be sustainable, and academic NMCs are learning that same lesson (McIntosh et al., 2003; Vonderheid et al., 2003; Vonderheid et al., in press).

In addition to the rising numbers of uninsured, the effect of mandated Medicaid managed care and the competition it brought was identified as a risk factor for safety net providers (Lewin & Altman, 2000). Most of the revenue for all of the centers except one was generated through commercial FFS plans. Although capitation has been pursued by the centers, there continues to be barriers for NPs and academic NMCs in terms of managed care plans and actual exclusion from those plans. The fact that the one center that was most financially viable was also fully capitated and serving a very high-need population is a strong statement in this era of increasing uninsured and high-need populations. Unless academic NMCs and NPs are included in the multiple funding streams of care, including managed care, access to high-quality care will continue to be denied vulnerable populations.

Besides the rising uninsured and issues of managed care, Lewin and Altman (2000) identified a third factor around financial sustainability and

safety net providers—that is, the uncertainty of major direct and indirect subsidies that assist in supporting these programs. The centers in this study all (except one) relied heavily on direct and in-kind contributions from their universities and grants from other sources. Contributions such as faculty practice models, rent-free space, and cash contributions from the SON/university (because of the high volume of student clinical placements and experiences) were all identified by these centers. Based on Felland et al.'s (2003) description, academic NMCs may often have a “weak” capacity resulting from system and policy issues that limit networking with the formal health system. On the other hand, the academic NMCs in this study had made enormous strides in strengthening their financial viability through creative networks and business strategies and relationships with their communities (Vonderheid et al., in press).

There are several limitations of this study. First, comparison of funding sources between CHCs and NMC centers is not exact because of the aggregated numbers available from the BPHC. Whereas BPHC data included contracts under a nonfederal grant category, NMC centers included contracts in their patient and third-party revenue. Additionally, categorizing the county plan for the uninsured as uninsured versus government funding may present some questions. As more and more states develop these “gap” plans, it is likely that CHCs will also need to report more detailed categories that include these categories of “insurance” or health programs. However, the main point of interest was the substantial contribution of universities and their SONs to academic NMCs, contributions that are comparable to those of the BPHC to CHCs.

CONCLUSION

The conclusion of the IOM report on the safety net acknowledged that

the safety net system is a distinct delivery system, however imperfect, that addresses the needs of the nation's most vulnerable populations. In the absence of universal insurance coverage, it seems likely that the nation will continue to rely on safety net providers to care for its most vulner-

able and disadvantaged populations. (Lewin & Altman, 2000, p. 15)

Findings from this study demonstrate that academic NMCs represent one important group of providers that play a significant role among the many safety net providers. There is a need for more data from the national level on academic NMCs, including the role that academia is playing in serving the safety net population as well as a need to inform policymakers of the substantial contribution of NMCs.

REFERENCES

- Bailey, B. E., Legaspi, M. M., Bloom, A., Campbell, N., & Regan, J. L. (2000). *Experts with experience*. Retrieved January 12, 2004, from ftp://ftp.hrsa.gov/bphc/pdf/chc/tenyear_report.pdf
- Barger, S. E. (1986). Personnel issues in academic nurse-managed centers: The pitfalls and the potential. *Nurse Educator*, 11(3), 29-33.
- Barger, S. E., & Bridges, W. C. (1990). An assessment of academic nursing centers. *Nurse Educator*, 15(2), 31-36.
- Barger, S. E., & Rosenfeld, P. (1993). Models in community health care: Findings from a national study of community nursing centers. *Nursing & Health Care*, 14(8), 426-431.
- Barkauskas, V. H., Pohl, J., Benkert, R., & Wells, M. (2004). Measuring quality in nurse-managed centers using the HEDIS. *Journal for Healthcare Quality*.
- Barkauskas, V. H., Pohl, J., Breer, L., Tanner, C., Bostrom, A., Benkert, R., et al. (2004). Academic nurse-managed centers: Approaches to evaluation. *Outcomes Management*, 8(1), 57-66.
- Benkert, R., Buchholz, S., & Poole, M. (2001). Hypertension outcomes in an urban nurse managed center. *Journal of the American Academy of Nurse Practitioners*, 13(2), 84-89.
- Creese, A., & Parker, D. (1994). *Cost analysis in primary health care: A training manual for programme managers*. Geneva, Switzerland: World Health Organization.
- Felland, L. E., Lesser, C. S., Benoit, S., A, Katz, A., & Lichiello, P. (2003). The resilience of the health care safety net, 1996-2001. *Health Services Research*, 38(1), 489-502.
- Forrest, C. B., & Whelan, E. M. (2000). Primary care safety-net delivery sites in the United States: A comparison of community health centers, hospital outpatient departments, and physicians' offices. *Journal of the American Medical Association*, 284(16), 2077-2083.
- Glass, L. K. (1989). The historic origins of nursing centers. In *Nursing centers: Meeting the demand for quality health care* (pp. 21-34). New York: National League for Nursing.
- Gusmano, K. K., Fairbrother, G., & Park, H. (2002). Exploring the limits of the safety net: Community health centers and care for the uninsured. *Health Affairs*, 21(6), 188-193.
- Hegner, R. (2001). *The health care safety net in a time of fiscal pressures* (Issue Brief). Washington DC: National Health Policy Forum Issue Brief.
- Lewin, M. E., & Altman, S. (2000). *America's health care safety net: Intact but endangered* (Executive Summary). Washington DC: National Science Foundation, Institute of Medicine.

- Matas, K. E., Brown, N. C., & Holman, E. J. (1996). Measuring outcome in nursing centers: Otitis media as a sample case. *Nurse Practitioner*, 21(6), 116-118,120,122.
- McAlearney, J. S. (2002). The financial performance of community health centers, 1996-1999. *Health Affairs*, 21(2), 219-225.
- McIntosh, E., Nagelkerk, J., Vonderheid, S., Poole, M., Dontje, K., & Pohl, J. (2003). Financially viable nurse-managed centers. *The Nurse Practitioner*, 28(3), 40,46, 48 passim.
- Meyer, J. A., Legnini, M. W., Waldman, E. K., Wicks, E. K., & Hinman, L. M. (1999). *The health care safety net in four communities*. Washington DC: Economic and Social Research Institute.
- Mezey, M., Baisch, J. J., Kinsey, K. K., Torrisi, D. L., & Huether, S. E. (1999). *The nursing center in concept and practice: Delivery and financing issues in serving vulnerable people* (Forum Brief No. 746). Washington, DC: National Health Policy Forum Brief.
- Michigan Academic Consortium. (2002). *Annual report*. Unpublished report.
- Munding, M. O., Kane, R., Lenz, E. R., Totten, A. M., Tsai, W.-Y., Cleary, P. D., et al. (2000). Primary care outcomes in patients treated by nurse practitioners or physicians. *Journal of the American Medical Association*, 283(1), 59-68.
- Peters, S. (1999). Next APN mission: Medicaid. *ADVANCE for Nurse Practitioners*, 287(3), 25.
- Pohl, J., Vonderheid, S., Barkauskas, V. H., & Nagelkerk, J. (in press). *Critical elements for tracking financial data in academic nurse-managed centers* (NONPF Monograph).
- Shi, L., Politzer, R. M., Regan, J., Lewis-Idema, D., & Falik, M. (2001). The impact of managed care on the mix of vulnerable populations served by community health centers. *Journal of Ambulatory Care Management*, 24(1), 51-66.
- Tanner, C., Pohl, J., Ward, S., & Dontje, K. (2003). Education of nurse practitioners in academic nurse managed centers: Student perspectives. *Journal of Professional Nursing*, 19(6), 354-363.
- Title XV. (2003). *Breast and Cervical Cancer Control Program*. Washtenaw County. Retrieved September 16, 2003, from http://www.ewashtenaw.org/government/departments/publichealth/ph_hlt15.html
- Uniform Data System (UDS). (2003). *Congressional justification*. Washington, DC: Bureau of Primary Health Care.
- United States Federal Reserve System. (2002). *Federal reserve statistical release selected interest rates*. Retrieved January 12, 2004, from <http://www.federalreserve.gov/Releases/h15/data/a/dwb.txt>
- Vonderheid, S., Pohl, J., Barkauskas, V. H., Gift, D., & Hughes-Cromwick, P. (2003). Financial performance of academic nurse-managed primary care centers. *Nursing Economics*, 21(4), 167-175.
- Vonderheid, S., Pohl, J., Schaffer, P., Forrest, K., Poole, M., & Barkauskas, V. H. (in press). Using FTE and RVU performance measures to assess the financial viability of academic nurse-managed primary care centers. *Nursing Economics*.
- Joanne M. Pohl, PhD, APRN-BC, FAAN, is the associate dean of the Office for Community Partnerships and an associate professor in the School of Nursing at the University of Michigan. She served as the project director of the Michigan Academic Consortium, which is funded by the W. K. Kellogg Foundation. She has broad teaching and clinical experience in nurse practitioner programs and nurse-managed centers. Her research centers on outcomes of care and cost of care in nurse-managed centers as well as smoking cessation. She maintains a practice in one of the School of Nursing's nurse-managed centers.
- Susan C. Vonderheid, PhD, RN, conducts research regarding the organization, quality, and costs of health services; nurse-managed primary care centers; disparities in maternal child health; and health policy. She recently joined the faculty at the University of Illinois, Chicago, as a research assistant professor following a postdoctoral fellowship at the University of Michigan. She was also a postdoctoral fellow at the World Health Organization in Geneva, Switzerland, supported by the University of Illinois.
- Violet H. Barkauskas, PhD, MPH, RN, FAAN, is an associate professor of community health nursing in the School of Nursing at the University of Michigan. She has extensive experience in all areas of community health, including education, practice, and administrative positions in the United States and abroad. Her current research interests are in the areas of program evaluation and health services research.
- Jean Nagelkerk, PhD, RN, ARPN-BC, is a professor of nursing at the Kirkhof School of Nursing at Grand Valley State University. She practices as a family nurse practitioner in a rural community. Her research program is focused on working with adult patients diagnosed with Type 2 diabetes. She has authored a text titled *Diagnostic Reasoning: Case Analysis in Primary Care* and has published several articles.