Beyond Retention: National Health Service Corps Participation and Subsequent Practice Locations of a Cohort of Rural Family Physicians

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Background: **This report addresses the long-term career paths and retrospective impressions of a cohort of family physicians who served in rural National Health Service Corps (NHSC) sites in return for having received medical school scholarships during the early 1980s.**

Methods: **We surveyed all physicians who graduated from medical school between 1980 and 1983, received NHSC scholarships, completed family medicine residencies, and served in rural areas. Two hundred fifty-eight physicians responded to our survey with complete information, 76 percent of the members of the cohort who could be located and met the study criteria.**

Results: **In 1994 one quarter of the respondents were still practicing in the county to which they had been assigned by the NHSC, an average of 6.1 years after the end of their obligation. Another 27 percent were still in rural practice. Of the entire group, less than 40 percent were in traditional urban private or managed care settings.**

Conclusions: **Although only one quarter of NHSC assignees remain long term in their original assignment counties, they provide a large (and growing) amount of nonobligated service to those areas. Of those who leave, many remain in rural practice or work in community-oriented urban practices. (J Am Board Fam Pract 1996; 9:23–30.)**

The National Health Service Corps (NHSC) represents the largest and most direct attempt by the United States government to deploy physicians to communities with physician shortages. Passed by a unanimous vote of Congress in 1970, the program has placed more than 15,000 physicians in the subsequent 24 years, at a cost of more than $2 billion.[1] NHSC assignees have worked in more than 5000 different communities and in settings ranging from federal prisons to migrant labor camps to solo private practices.

As might be expected of a social program of such size and scope, questions have arisen about whether the program has met its goals. The objectives of the program and the techniques it has used to reach those objectives have evolved for two decades, affected by changes in legislation, community needs, and the shape of the American health care system. The NHSC is really many programs under a single administrative roof, separated into distinct historical eras by the different laws and regulations under which it has been authorized. Perhaps the strongest thread that runs through the entire program is the placement of physicians in rural health professional shortage areas, the goal that provided broad-based political support for the program at its inception and that remains a central goal.[2,3]

One of the most controversial aspects of the NHSC program has been how to evaluate the success or failure of the program. Although the original legislative objective of the NHSC was to improve delivery of health services in underserved areas, the NHSC has consistently been held to higher standards. The most persistently used measure of success has been long-term retention of NHSC physicians in the communities to which they were assigned.[4-7]

When measured against that criterion, the NHSC has had mixed results. The most extensive study of long-term retention to date was performed as part of a comprehensive national evalu-

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ation of subsidized rural primary health care organizations.[4,8-10] In 1990, Pathman and colleagues[4] surveyed a group of rural providers who had started working in a subsidized rural practice between 1979 and 1981, including a subset of NHSC practitioners. The investigators found that 14.7 percent of the NHSC physicians were still active in the practice to which they had originally been assigned, with an additional 8.2 percent still in or near their original communities but not in their original practice. Physicians who were employed by other agencies, such as community health centers, were much more likely to be retained than those discharging scholarship obligations as part of their NHSC service. The study is potentially limited by the relatively small number of NHSC assignees studied (93), most of whom had trained in internal medicine and pediatrics.

We sought to explore further the career experiences of NHSC assignees—and refine estimates of long-term retention—by studying a group that reflects the most common assignment made by the NHSC—family practice-trained scholarship recipients who were assigned to a nonmetropolitan county. We attempted to locate and survey all physicians who received NHSC scholarships to attend medical school, graduated from a US medical school between 1980 and 1983, were assigned to rural family practices by the NHSC, and completed their residency training before the end of their NHSC obligation. In addition to providing a precise estimate of the proportion of corps assignees who have remained in or near their original practices for an extended period after discharging their obligation, we also determined the percentage of physicians who did not remain in their county of original assignment but are still practicing in remote rural areas or with public programs in urban areas.

Methods

Study Population and Response Rates

We obtained a list from the Public Health Service (PHS) of all physicians who received NHSC scholarships and graduated from American medical schools between 1980 and 1983, inclusive. From this list we selected the 469 students who were listed as having been assigned to a rural area in general or family practice. Using the 1993 version of the American Medical Association (AMA) Masterfile, we were able to locate usable addresses for 383 physicians. These physicians received up to three copies of the study questionnaire during 1994, as well as a telephone call encouraging response after the second nonreturned mailing.

Primary and Secondary Data Sources

The questionnaire was designed to collect information unavailable from any other source. This information included the location and duration of every practice for each respondent since medical school, including all practices in which the respondent was affiliated with the NHSC. All residency training experiences were recorded, including specialty, location, duration, and whether the residency was completed. We also obtained information about the current practice specialty of the physicians and the setting in which they were practicing during the summer of 1994.

As noted above, we used the rural-urban continuum codes devised by the Department of Agriculture to determine the rural nature of the respondents' initial and current practices.[11] In this classification scheme rural counties that are not adjacent to a metropolitan area are separately classified. In the analyses that follow, these counties are termed remote rural counties.

We supplemented primary data collected by the questionnaire with two sources of secondary data: the PHS data from which we constructed the study sample, and the 1994 version of the Area Resource File. PHS data allowed us to determine the location and timing of original and subsequent NHSC assignments, as well as the length of service obligation of each assignee. The Area Resource File provided extensive information about the social, economic, and health characteristics of the counties where the respondents were originally assigned.

Results

Characteristics of Assignees and Sites

The survey respondents are a fairly homogeneous group. As seen in Table 1, 85 percent were white and 77 percent were male. The largest minority group was African-American, which comprised 6.2 percent of the sample. The average NHSC assignee during this era received 3 years of scholarship support and spent 3 years in the community as an NHSC assignee; the time spent working in the original assignment community ranged from 6 to 118 months.

Table 1. Characteristics of National Health Service Corps (NHSC) Study Population (n = 258), 1994.

Characteristics	Number	Percent
Sex		
Men	198	76.7
Women	60	23.3
Total	258	100.0
Race and Ethnicity		
White*	218	84.5
African-American*	16	6.2
American Indian, Eskimo, Aleut	8	3.1
Asian or Pacific Islander	4	1.6
Other or missing	12	4.7
Total	258	100.0

*Within the white and African-American subgroups, 10 (3.9%) were of Hispanic origin.

The counties to which NHSC scholarship recipients were assigned have several characteristics that tend to distinguish them from rural counties generally, as seen in Table 2. The population is more likely to be African-American or Native American, per capita incomes are somewhat lower, and a slightly greater proportion of the population lives below the poverty line. There are few immediately obvious differences in the availability of physicians or hospital beds, however, at least at the county level. Although there is a slight preponderance of NHSC sites in the southeastern states, the practice locations are scattered throughout the rural United States.

Retention and Service: A Multidimensional End Point

Long-term retention can be thought of as encompassing a spectrum of possible end points, from remaining within the practice to which the physician was originally assigned to providing care to underserved populations in an urban setting. For the purposes of this study, we examined five different mutually exclusive categories of retention, as shown in Figure 1.

There is an implicit hierarchy in this range of outcomes; remaining in a site long beyond the discharge of the obligation is unambiguously related to the initial NHSC assignment, whereas the decision to work in an urban migrant or community health center is more tenuously linked to the original NHSC service. By the broadest definition—ie, anyone not currently in traditional private practice or a health maintenance organization in an urban area—60.1 percent of the respondents were currently practicing in a location that was in some way at least relatively underserved.

Of the respondents, 20.9 percent were still in their initial NHSC setting, and an additional 4.6 percent were practicing in the same county to which they were originally assigned. These figures are quite similar to those reported by Pathman and colleagues,[4] who found that 14.7 percent and 22.9 percent of their sample of NHSC assignees remained in their practices and communities, respectively, with higher proportions among those who had completed residency training in family medicine. Sex of the physician does not seem to have had much effect on career trajectories, with women and men practicing in a similar spectrum of practice types and locations when surveyed. Although the numbers are very small, more than one third of African-American assignees were still in their original county of assignment when surveyed, as compared with 26 percent of the whites and 17 percent of members of other racial groups.

Table 2. Characteristics of Counties in Which National Health Service Corps (NHSC) Assignees Began Practice, Compared With All Other US Nonmetropolitan Counties.*

Characteristics	NHSC Counties	Other Nonmetropolitan Counties	*P* Value
Total population, 1985 (mean no.)	33,593	22,866	< 0.000
Per capita income, 1985 (mean $)	9,980	10,730	< 0.000
Population below poverty level, 1989 (mean %)	19.6	18.0	0.006
Percent nonwhite, 1990 (mean %)	16.3	11.7	0.0001
Infant mortality rate, 1984–88	10.5	10.0	0.17
Active nonfederal physicians per 10,000 population, 1985	7.2	7.1	0.84
Total general hospital beds per 10,000 population, 1985	40.8	44.3	0.26

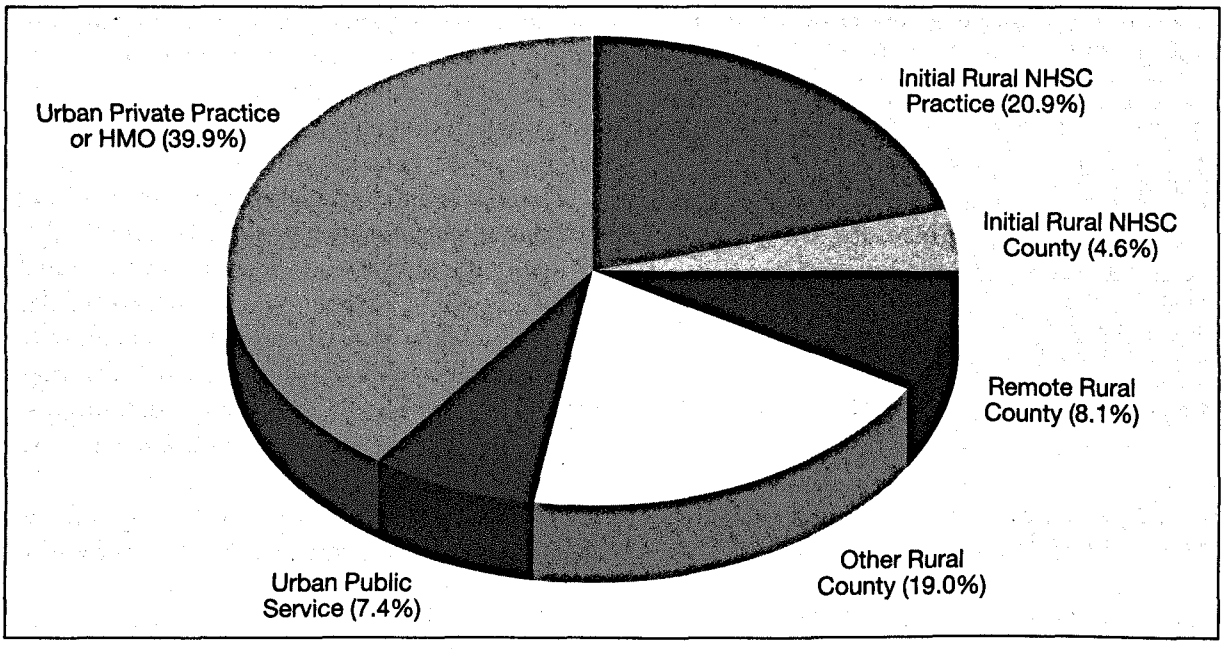

Figure 1. Current locations of National Health Service Corps (NHSC) scholarship family physician rural assignees; 1980–1983 medical school graduation cohort (n = 258).

HMO = health maintenance organization.

As Cullen et al[12] have shown in an earlier study, the likelihood of remaining in or close to the original practice assignment is affected by the length of the original obligation. During the time of this study, medical students could receive 2- to 4-year scholarships, thus incurring pay-back obligations of 2 to 4 years. Figure 2 disentangles the differences in the subsequent career moves of those with varying lengths of obligation. (We excluded 20 assignees who for one reason or another did not finish their entire NHSC obligation in the site where they were first assigned and the 23 assignees who had not accumulated at least 7.5 years of practice experience since beginning their NHSC assignments.)

As seen in Figure 2, most assignees who left their assignment counties did so within months of the conclusion of their obligations; 56 percent of those with 2-year obligations, 52 percent of those with 3-year obligations, and 49 percent of those with 4-year obligations were no longer in those counties 6 months after discharging their obligations. After this initial falloff, the rate of attrition varies significantly, depending upon the length of the original assignment. While only 23 percent of those with 2-year assignments were still in their original counties 3.5 years after finishing their obligations, almost one half of those with 4-year obligations were still practicing in or near their original communities. Clearly, longer assignments are correlated with higher retention.

Even though about one half of the assignees pack their bags a short time after finishing their obligations, the service that NHSC members provide beyond their original obligations is quite important. Figure 3 graphically illustrates the amount of obligated and voluntary service provided to the assignment counties by the 238 respondents who completed their assignments in their original practice locations. This group provided 699 person-years of service to the counties where they were assigned as part of their initial obligations to the NHSC. In addition, this same group provided an additional 501 person-years of nonobligated service by the time they were surveyed in 1994, an amount that will increase with time. Most of this additional service occurs because the average assignee still practicing in his county of assignment had been in the community for more than 9 years in 1994, only one third of which time constituted payback for the original NHSC scholarship.

Qualitative Impressions of NHSC Service

In addition to gathering information about the professional trajectories of our sample, we asked

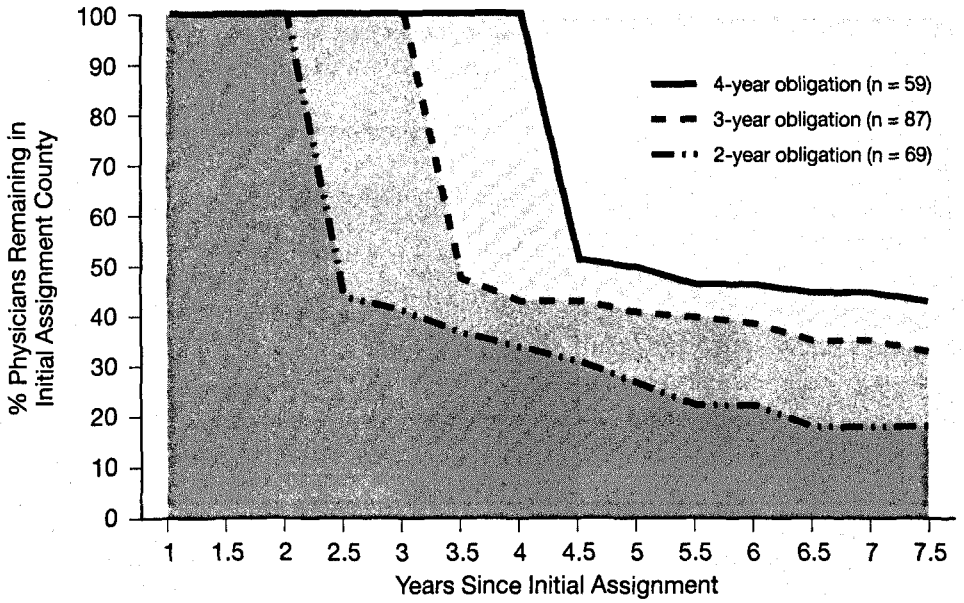

Figure 2. Practice retention rates for National Health Service Corps (NHSC) scholarship family physicians by obligation length; 1980–1983 medical school graduation cohort (n = 215). Excluded were 20 assignees who did not complete NHSC obligations at the first assigned site and 23 who had not accumulated 7.5 years' practice experience since beginning the NHSC assignment.

them to comment on their experience with the NHSC. Seventy-one percent proffered opinions—strong opinions—often rendered at length. (The record was five pages, handwritten and single-spaced.) The common denominator of these responses was their intensity.

To characterize the responses, the comments were transcribed, the names of the respondents were removed, and content analysis was performed by an independent investigator not involved with the study design. The analyst was asked to characterize the responses as indicating a favorable, neutral, negative, or mixed appraisal of the NHSC experience. A plurality of the comments (41 percent) were either mixed or ambivalent; 33 percent were positive; 20 percent were negative; and 6 percent were neutral. Interestingly, there are no major differences in the pattern of responses between those who remained and those who left their assignment county.

Table 3 presents typical comments to give a qualitative flavor of the opinions rendered. The most common sentiment offered was that the NHSC placement had been a satisfying and valuable experience that resulted in an appreciation for rural life and culture. The second most common comment revolved around displeasure with some aspect of the organization or administration of the NHSC and the process of matching with and being placed at a community, echoing the findings of Pathman et al.[5] Even though most physicians found that serving in the NHSC was a formative and worthwhile experience, it is clear that working in an underserved area under the auspices of a governmental program in return for an educational scholarship was not an unalloyed pleasure for many who took that path. By the same token, many of them would have done it again, despite the frustrations inherent in the experience.

Discussion

The NHSC has been a controversial program since its inception, generating enormous hostility and intense loyalty at both the state and national level.[13,14] The controversy has been engendered by two sets of issues: philosophical disputes about government involvement in the direct provision of health care, and concerns about administrative mismanagement of an expensive and cumbersome program.[15] The waters have been further roiled because the NHSC has mutated continuously since inception, adding new programmatic elements, such as the scholarship and loan repayment programs, experiencing major fluctuations in funding level and field strength, and being buffeted organizationally by

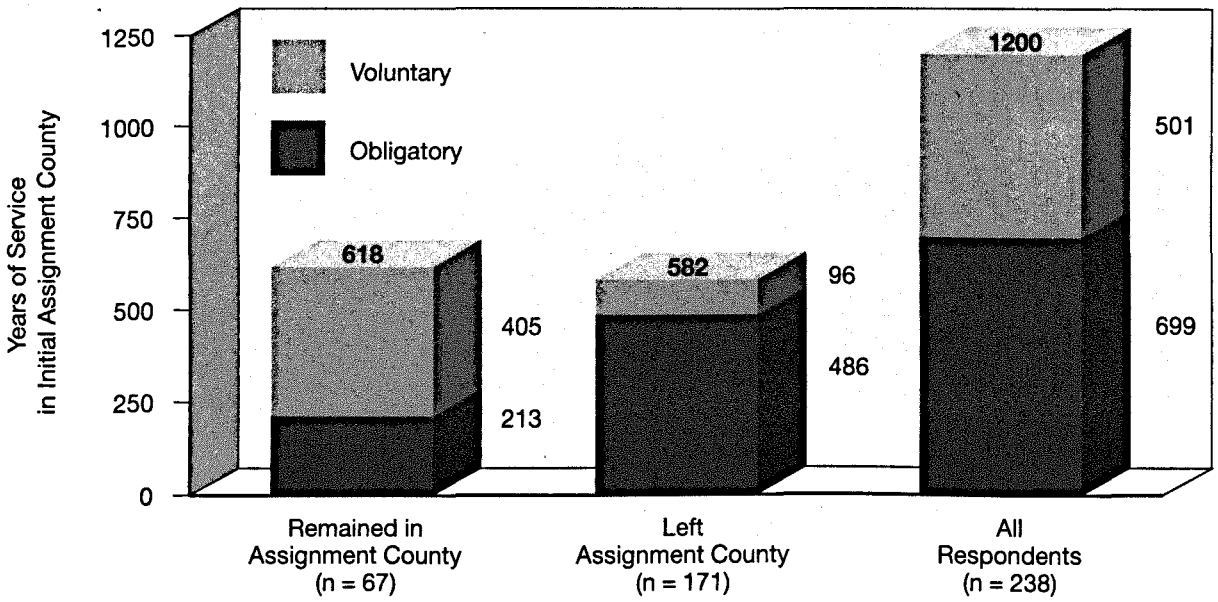

Figure 3. Obligated and voluntary family practice service in initial National Health Service Corps (NHSC) scholarship assignment counties by current practice location; 1980–1983 medical school graduation cohort (n = 238). Excluded were 20 assignees who did not complete NHSC obligations at first assigned site.

both Congress and the executive branch. The very existence of the program for more than two decades is a testimony to the persistence of large numbers of underserved areas in the United States and to the importance of the NHSC as a mechanism to staff a wide range of practices from migrant health centers to prisons to traditional country solo practices.[16]

Throughout this period there has been controversy about whether or not the NHSC has been effective, and the most common measure of effectiveness has been the retention of physicians in the communities where they have been assigned.[1,4,5,7,15,17,18] Defining retention as continued practice in the original NHSC site beyond the original obligation is almost certainly too limited a definition. It is possible that physicians who served in the corps left their original practice but continued to provide medical care to underserved populations, thus fulfilling the original objectives of the program. For example, physicians who remain near their original practices or who move to other remote rural counties have, in some sense, been retained in locations where their services are needed by underserved populations. In addition, physicians moving to urban areas but working for public programs, such as community or migrant health centers, are continuing to serve a function not too dissimilar from their original NHSC assignment.

This study examined a spectrum of possible outcomes that might logically be affected by service in the NHSC. By surveying every locatable graduate from a US medical school between 1980 and 1983 who ultimately entered into a rural NHSC practice in repayment of a scholarship, we captured the experience of an entire cohort of physicians during the height of the program. The picture that emerges is clear: one half of all scholarship recipients leave their NHSC assignments almost immediately after discharging their obligation, but one quarter remain long-term in the area where they were assigned. Rural NHSC assignees who have completed a residency in family medicine either pack their bags once their assignment has ended or are likely to settle in for the long term, particularly if their initial obligation length was 4 years.

Both those who leave and those who stay look back upon their NHSC experience as one of the most formative of their life, for better or for worse. While some of the stories of bureaucratic snafus and hostile community receptions are the stuff of which television shows are (and have been) made, the more typical assignees look back with affection and appreciation, tempered with a fairly critical appraisal of the organizational structures that conspired to get them to and support

Table 3. Representative Comments on National Health Service Corps (NHSC) Experience by Respondents, Selected by Type of Response.

Typical Positive Comments

NHSC was one of the most, if not the most, rewarding and enjoyable experiences in my medical career.

I have continued to practice and thrive in the same practice as my NHSC site.

Wonderful time and excellent experience in small-town Montana. I'd do it again.

Exposure to the "subculture" of underprivileged people is an experience I will never forget. The satisfaction of caring for such people is not easily replaced.

The NHSC was not only my ticket to medical school, but also offered me an opportunity to practice the type of medicine I wanted to practice in an area with tremendous need for medical care.

NHSC was a huge advantage for me. I was able to finish school without a mountain of debt...and stay on and provide services. I wouldn't have come to this area otherwise.

One of the high points of my life. A period of professional challenge and meaningful work to serve as a yardstick to measure the rest of your professional life by!

Typical Negative Comments

It was very lonely as a single New Yorker in South Dakota—it was very difficult—it helped me realize that family practice was not the right specialty for me.

The experience was horrible.... We were treated like indentured servants.

I was treated horridly and rued the day I ever heard of NHSC scholarships. It almost made me want to quit practicing medicine altogether. The personnel at NHSC were incompetent idiots who didn't know how to do their jobs and couldn't have cared less.

I'm not sure NHSC is the answer to rural manpower needs. To sign up 7 years before serving, a lot can change. My wife refused to come; we were divorced over other issues, but it shows how things can change.

The lesson that the NHSC clearly taught me is that government has no role in the delivery of any type of health care.

I was very disappointed in the lack of support and the administrative bureaucracy of [the] NHSC.

Typical Mixed Responses

The medical experience was very good, but the politics were awful, and I had no leverage.

IHS was a great place for an enthusiastic MD to practice. I think that [continued] work in that context would be frustrating, both in terms of patient noncompliance and bureaucracy....

I felt privileged to serve in rural America—the need is great. I left after my service due to inability to recruit further partners.

I enjoyed my experience.... My wife and I still have very fond memories of our work in the NHSC. The treatment by the NHSC was terrible. If it wasn't for the government involvement and the regulation, it would be a great program.

I enjoyed the Hispanic population I cared for, but the government bureaucracy and paperwork in the NHSC were intolerable.

I stayed 1 year beyond my 3-year commitment and seriously considered staying. Left because of poor schools and lack of educational options for kids.

them in the NHSC site. Although it is impossible to quantify the independent effect of NHSC service on future career choices, most of the respondents were practicing in areas or programs that share similarities with the communities that the NHSC was designed to assist. More of the NHSC alumni are in rural areas than those who graduated with them from medical school, and a substantial fraction of those who returned to urban sites are working in public settings, serving underserved population groups.

How do these data compare with other recent studies of the NHSC and its success and failures? Although our physician cohort began practice 4 years later than those studied by Pathman et al, the results are quite similar. Clearly, a minority of assignees stay in their original communities, and the odds can be improved by making sure that physicians are well-trained for the settings where they will be deployed. For rural areas this preparation generally means ensuring completion of a family practice residency before assignment, if at all possible.

It is also clear that more attention to the selection, matching, nurturing, and support of assignees will lead to a more satisfied group. The tension that has always existed within the program is whether NHSC service should be fairly onerous repayment for generous governmental educational assistance or a mechanism for nurturing and augmenting the altruistic impulses existing among a talented group of future physicians. Even during an era when attention to physician happiness was of lesser importance, the NHSC managed to provide large numbers of health professionals to areas of need, and many of them stayed on and continued to provide service even when they were under no obligation to remain. From that standpoint at least, it is clear that the NHSC has the ability to achieve the objective of improving local health care services. Whether it has the opportunity to continue to meet that objective is more of a political than a managerial question.

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