The Thomas Jefferson Program in Public Policy
The College of William and Mary

Nelson County Rural Health Outreach Program Evaluation

Prepared for:
The Virginia Health Care Foundation

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December 1996

ACKNOWLEDGMENTS

We would like to thank Peggy Whitehead, Paul Longo and Julie Luterzo of the Nelson County Rural Health Outreach Program and Beth Bortz at the Virginia Health Care Foundation for their assistance on this project. We would also like to thank Maria for her personal contributions. At the College of William and Mary, we recognize Professors David Finifter and Desmond Saunders-Newton and Michael Vaughan for their helpful comments and suggestions.

This report does not necessarily reflect the views of The College of William and Mary or the Virginia Health Care Foundation, and any errors or omissions are the responsibility of the authors.

EXECUTIVE SUMMARY

This study of the Nelson County Rural Health Outreach Program (RHOP) for the Virginia Health Care Foundation includes a literature review, identification of potential and actual health outcome measures, an analysis of the cost-per-patient encounter, and concludes with a model for future evaluation.

The literature review focuses on programs that have addressed health issues and target populations similar to RHOP. The four health outcomes measures that have been identified are deaths attributable to heart disease, incidence of sexually transmitted diseases, low-weight births, and natural fetal terminations for teens. Given that some health measures have improved and others worsened, it is difficult to say how the overall health status of residents of Nelson County has changed and whether or not those changes are a result of RHOP.

The analysis of cost-per-patient encounter in an attempt to measure the efficiency with which RHOP is performing its services. The results of this measure are ambiguous. The study concludes with the presentation of a model for evaluating programs similar to Nelson County RHOP under ideal conditions. This section of the study sets forth potential data sources, health outcome measures, and recommendations for successful future evaluations.

The Virginia Health Care Foundation is in a position to guide the Commonwealth in the investment of scarce public resources in the health care field. As such, the primary goal of the grants awarded should not be limited to the provision of innovative services. Grants should include a viable mechanism to evaluate programs in order to determine if replication is warranted even though it clearly costs more to fund grants that provide for a structured evaluation. In times of shrinking budgets, there is a temptation to focus on the services offered. This is understandable, but in the long run, fewer grants with better program evaluation will provide the Commonwealth and its citizens with more complete information when making decisions about the provision of health care.

INTRODUCTION

This study of the Nelson County Rural Health Outreach Program (RHOP) for the Virginia Health Care Foundation (VHCF) includes a literature review, an analysis of the cost-per-patient encounter, identification of potential and actual health outcome measures, and concludes with a model for future evaluation.

Reviewing the relevant literature is an important place to begin any program evaluation. It is important to determine how others have addressed similar challenges to the delivery of health care and to take note of where other programs have succeeded and where they have failed. Due to the fact that the Virginia Health Care Foundation places a strong emphasis on the innovative nature of the projects that it funds, it is not surprising that a review of the literature did not reveal any projects that addressed access to health care in rural areas in the same manner as RHOP. Therefore, the literature review focuses on programs that addressed similar health issues and similar target populations. The target populations that are at the center of the literature review are children, migrant farmworkers and their families, and the elderly.

Second, we have determined the cost-per-patient encounter for the Nelson County Rural Health Outreach Program. The result provides a measure against which the project can grade its future progress. One might expect the figure to be high as a program initiates its operation as a result of up-front costs. Over time, the cost-per-patient encounter is expected to decline to a varying degree. A project may become more cost-efficient as it becomes practiced at the services provided; however, the nature of the services provided can potentially be cost-intensive. In sum, the cost-per-patient encounter is relevant because it has the potential to be an important indicator of efficiency.

Third, both ideal and practical health outcome measures, given data and time constraints, have been identified. Several outcome measures that could be used in a study such as this one have been presented. In an ideal situation, conclusions made from outcome measures used would be directly attributable to the program analyzed. This is not the case with this study. The measures that we have been identified can only loosely be attributed to the success of the Nelson County RHOP. There are too many other inputs to health status of the residents of Nelson County for which we were unable to control to definitively assess the impact of RHOP. We have, however, been able to identify and examine certain measures available before and after the implementation of RHOP in Nelson County and we have taken note of any changes in those measures. The detailed results are presented below.

In the final section of this study, we present a model for evaluating programs similar to Nelson County RHOP under ideal conditions. This section of the study sets forth potential data sources, health outcome measures, and recommendations for successful future evaluations.

Background

The goal of VHCF is to review the Nelson County RHOP to determine if it is improving the health status of Nelson County and to determine if it is cost-effective in terms of its stated goals. The information gathered by this study is intended to benefit VHCF, RHOP, the General Assembly, and the Governor as well as any current and future private funders of VHCF projects.

RHOP was created to increase access to affordable, comprehensive and trusted primary care for the uninsured and underinsured residents of Nelson County. The programs offered by RHOP include the Health Depots, the Medication Assistance Program, the Migrant Outreach Program, the Transportation Program, the Community Care Network, the School-Based Health Care Program, and the Prepaid Health Care Program. The two programs that have been included for cost-per-patient encounter evaluation are the Health Depots (separated into community clinics and home visits) and the Transportation Program (see Appendix 1).

The Thomas Jefferson Program in Public Policy offers a master's degree program designed to meet the growing demand for public policy-analysts. One of the ways in which the Program attempts to meet this goal is through providing its students with professional experience. It is in this vein that the authors of this study were asked to evaluate the Nelson County Rural Health Outreach Program and its impact on the residents of Nelson County.

LITERATURE REVIEW

The results of the literature review are organized according to target populations. The information is presented according to those programs that address first children, then migrant workers, and finally the elderly as their target populations. Presented in the literature review are the outcome measures that these programs used to measure their success. In addition, any lessons learned from these programs in the process of delivering health care are provided. A summary of the programs, their target populations, and outcome measures are presented in Appendix 2.

Target Population: Children

Children's health programs are essential to ensure good health for any community. Children are particularly vulnerable because they are not able to be responsible for their own care. The measures most frequently used in projects that targeted children are immunization rates, mortality rates, the number of inappropriate

visits to the emergency room (ER), and whether the children had achieved age appropriate height and weight levels.

The *Linn County Mobile Rural Health Project* in Albany, Oregon was initiated in 1993 to fill the gaps in health care services created by a severe shortage of primary health care providers. The intervention used was a mobile clinic that visited six communities on a rotating basis. Clinic sites were selected on the basis of where people naturally congregated. The services provided ranged from primary care to physical examinations, well child checks, immunizations, and vision and hearing screenings. Since the clinic began receiving patients, 1,727 clients have made 4,093 visits. Thirty-four percent of these patients had had no prior contact with the county health department and more than half of the patients had no health insurance. The Office of Rural Health Policy, the sponsoring agency, stated that one of the most important accomplishments of the project was increasing the county's immunization rate for two year-olds by 77 percent. The project further increased by 61 percent the number of Women, Infants, and Children (WIC) clients receiving integrated health services.[1]

The *Watch Me Grow* project run by the Easter Seals Society of Michigan in Marquette, was established to identify infants at risk for developmental delays. The premise of the program is that if these children are reached early enough the need for special education can be prevented. As of May 1995, the program had 360 clients registered. Of these infants, about 15 percent showed signs of developmental delay and nearly 50 percent had not previously received services for their condition.[2]

Children represent a significant portion of the target population of the *Tri-County Community Health Center* in North Carolina. This project was created to serve the 20,000 migrant and seasonal farmworkers in Johnston, Harnet, and Sampson counties. The services provided to children include well child checks, nutrition and WIC services and immunizations. Children of migrant farmworkers are frequently either over- or under-immunized because immunization data are often not available at migrant health centers. The project succeeded in raising immunization rates from 41 percent in 1985 to more than 60 percent by 1987. One outcome measure used that was not mentioned in other programs targeting children was the number of children who had iron deficiency anemia. This impact was measured by the fact that those children who visited two or more years were more likely to have a normal hemocrit level.[3]

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[1] Randall, Teri, The Outreach Sourcebook - Volume 2: Rural Health Demonstration Projects 1992 - 1995, Health Resources and Services Administration, January 1996, p. 35.

[2] Ibid, p. 25.

[3] Watkins, Elizabeth, "A Model Program for Providing Services for Migrant Farmworker Women and Children," Public Health Reports, Nov. - Dec. 1991, No. 6, pp. 567-575.

The health clinic in *St. Lucie County, Florida* serves a county where, in 1990, 29 percent of the children lived below the poverty level. The services that were offered by the clinic included preventive, ambulatory, and hospital care for indigent migrant women and children. Success was measured in a number of different ways. First, the number of Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) examinations increased from an average of 1,284 per year between 1986 and 1988 to 5,722 in 1991. Second, ER visits for children decreased from 15,955 in 1988 to 8,427 in 1991. Finally, there were 48 deaths reported for children in 1988, dropping to only 32 in 1991.[4]

Target Population: Migrant Farmworkers and Their Families

The delivery of health care services to migrant farmworkers and their families has always been particularly problematic because by definition they are people who rarely stay in one location long enough to benefit from continuous health care. The 1989 Health Interview Survey found 34 percent of migrant workers rated their health as "fair" or "poor" compared to 9 percent of the population as a whole. The survey further found that 20 percent of migrant workers had never received a routine physical examination, 25 percent had never had a dental check-up, and 43 percent had never had an eye examination. The three most common chronic illnesses cited were hypertension, diabetes, and obesity. Migrant workers are less likely than other poverty groups to seek out preventive medical care because the opportunity cost of forgoing an hour of pay for every hour that they are away from the fields is too high. Put simply, health care is a luxury that migrant workers frequently cannot afford.[5] *The Nelson County Migrant Outreach Program* has successfully circumvented this problem by offering health care services at migrant camps in the evenings after the work day has concluded.

Two of the clinics, the *Tri-County Community Health Center* and the health clinic in *St. Lucie County, Florida*, mentioned in the section above not only targeted children, but also migrant families as a whole. These programs were particularly successful in targeting the health status of pregnant women. With the use of a multi-lingual staff, the *Tri-County Community Health Center* found that they were better equipped to affect the health status of their target population. They discovered a significant positive correlation between maternal age and low birthweight births. Success of the program was measured by an observed decrease in low birthweight infants once the outreach was initiated. The project was also able to observe an increase in the number of women receiving prenatal

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[4] Carcillo, Joseph A., "Improved Maternal and Child Health Care Access in a Rural Community," Journal of Health Care for the Poor and Underserved, Vol. 6, No. 1, 1995, p. 23-40.

[5] Slesinger, Doris P., "Health Status and Needs of Migrant Farm Workers in the United States, A Literature Review," Journal of Rural Health, Vol.8, No. 3, Summer 1992, pp. 227-234.

care during the first trimester of their pregnancy as well as an increase in the number of women making nine or more prenatal visits before giving birth.[6]

The community health center in *St. Lucie County, Florida* found that with the introduction of an additional obstetrician from the National Health Service Corps, they were able to positively impact the health of pregnant women and their children. The percentage of women delivering in the community hospital without prenatal care decreased twofold from 1989 to 1991. Further, the incidence of low birthweight and premature births fell significantly during the same period.[7]

The *Immokalee Companeros Project* was established to serve the 20,000 migrant and seasonal workers of Collier County, Florida. For a variety of reasons, most of the workers never sought out health care services unless they were so ill that they could not work or they were prevented from working by the illness of a family member. The purpose of the project was to bring to these workers health screening and health education through home visits. A community health nurse and a companion visited the homes of the migrant farmworkers and assessed the health needs of the entire family. Between January of 1993 and May of 1995, the project served 507 families for a total of 2,365 individuals.[8]

The *Rural Health Outreach Project* serves the migrant and seasonal farmworkers of Whatcom and Skagit Counties in rural northwestern Washington. Among the obstacles to care that exist for the workers in these counties are the shortage of health care providers, lack of transportation, and language barriers. The Seattle-based Sea Mar Community Health Centers established a variety of programs covering medical, dental, mental health, and social services assistance. The program has found collaboration and coordination among social services and area health care providers to be invaluable. As of May 1995, the project had provided health care services to over 900 children and 200 adults as well as dental services to more than 1,000 adults. In order to reach its target population, the project brought health care providers to the migrant farmworker camps. Free clothes, shampoo, toothbrushes, blankets, and food were distributed in an effort to initiate contact and to build trust.[9]

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[6] Watkins, Elizabeth, "A Model Program for Providing Services for Migrant Farmworker Women and Children," Public Health Reports, Nov. - Dec. 1991, No. 6, pp. 567-575.

[7] Carcillo, Joseph A., "Improved Maternal and Child Health Care Access in a Rural Community," Journal of Health Care for the Poor and Underserved, Vol. 6, No. 1, 1995, p. 23-40.

[8] Randall, Teri, The Outreach Sourcebook - Volume 2: Rural Health Demonstration Projects 1992 - 1995, Health Resources and Services Administration, January 1996, p. 13.

[9] *Ibid*, p. 44.

Target Population: The Elderly

The elderly are a particularly vulnerable population in rural areas because they frequently suffer from complex health care problems and are isolated with limited means of transportation. Interestingly, the review of the literature did not reveal programs that specifically addressed the issue of the provision of prescription medications even though the elderly are more likely to have complex health needs requiring medication.

The *Rural Elder Outreach Program* is a partnership that was formed by the University of Virginia, the Jefferson Area Board for the Aging, and the Region Ten Community Services Board to address health care concerns for the elderly. This program is run right in the backyard of the Nelson County RHOP. Its primary goal is to link formal and informal community resources with volunteer efforts and academic resources. In an effort to break through the reluctance of the elderly to use formal health care resources, the program relies primarily on nurses rather than social workers as case managers. Unfortunately, the only indication of the success of the program that was offered by the evaluators of the program was the anecdotal outcome of one elderly woman for whom links to many social resources were established.[10]

The *Rural Elder Promotion Program (RHPP)* was a Medicare-funded preventive health demonstration program which were offered the elderly health screening and disease risk factor interventions. The program targeted individuals between the ages of 65 and 79 in a five county rural area in northwestern Pennsylvania. The only variable that was consistently found to influence participation in the preventive health care program was education. Individuals with post-high school education were more likely to participate than those with less education. Participation rates were the highest for health screening programs. Across the remaining programs, participation ranged from 17 percent for the smoking cessation program to 58 percent for the immunization program. Interestingly enough there was no marked improvement in cholesterol levels or hospitalization rates for pneumonia, stroke, or myocardial infarction after the educational programs.[11]

The *Alternative Health Care Project* was created to address the problems, such as poverty, lack of transportation, and a shortage of physicians who accept Medicare and Medicaid, that plague the elderly in rural northeast Oklahoma. The project links the region's elderly services together and adds some stop-gap services to meet crises. For $35 per person per day an adult day care center provides skilled nursing care, two meals with a third sent home, immunizations, and recreation. With the additional transportation

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[10] Abraham, Ivo L. And Jane Bryant Neese, "Outreach to the Elderly and Their Families: Focus on the Rural South," U. S. Department of Health and Human Services, Aging, No. 365, June 22, 1993.

[11] Lave, Judith R. et al, "Evaluation of a Health Promotion Demonstration Program for Rural Elderly," Health Services Research, Vol. 31, No. 3, August 1996.

services offered, the center has tripled the number of residents it serves. The key component of the program is a 1-800 telephone line. An average of 25 callers a month are referred to participating agencies. Initially, the project planned to provide 200 emergency meals per month; they are now delivering close to 1200 meals every month.[12]

The *County Council on Aging* was established in 1991 to improve and expand access to services for seniors in Northampton County, North Carolina. Twenty-five percent of the elderly in Northampton County live below the poverty line. Many of the elderly have complex health care, nutritional, transportation, and social needs. During the first two years of the program, 274 clients were helped to access necessary health care services and 14 clients were helped to remain in their own homes. The van that the program purchased was used not only to provide transportation to and from appointments, but also to deliver a total of 3,895 meals during the first two years of the program.[13]

Lessons Learned

Programs addressing the health care needs of rural populations repeatedly cite the recruitment and retention of health care providers as their primary concern. Among the reasons for these difficulties were the general isolation from other providers that the health care professionals felt and the inability of rural communities to afford current salaries. The *Rural Health Outreach Project* serving Whatcom and Skagit Counties in rural north-western Washington was forced to compensate for the inability to recruit a full-time nurse practitioner with two part-time nurse practitioners. The *Linn County Mobile Rural Health Project* also cited the recruitment and retention of a nurse practitioner and mental health specialist as one of their major difficulties. These two projects are only a few of the projects that voiced this common concern.[14]

When providing services to migrant farm workers and their families, all of the programs found that utilizing the services of health care providers who could speak the language of the workers made the program more successful in improving their health status. The *Immokalee Companeros Project* in Collier County, Florida used bilingual and bi-cultural team members to break through cultural barriers. They provided translation services during home visits and at the health center; they helped families complete public assistance applications; and they provided transportation to health-related appointments when needed.[15] The *Tri-County Community Health Center* found that the ability of the

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[12] Rural Health, The Story of Outreach, Health Resources and Services Administration, DHHS, 1995.

[13] Randall, Teri, The Outreach Sourcebook - Volume 2: Rural Health Demonstration Projects 1992 - 1995, Health Resources and Services Administration, January 1996, p. 27.

[14] Ibid, p. 2.

[15] Ibid, p. 13.

project staff to communicate with patients in their own language enabled them to have a more complete understanding of patient needs.[16]

Finally, programs that coordinated and combined local health care and social service resources seemed more likely to financially sustain themselves. Without the pooling of community resources, the project coordinator of *Rural Health Outreach Project* in rural northwestern Washington asserted that "the chances of this project succeeding would have been very slim at best."[17] The health center in *St. Lucie County, Florida* found that offering prenatal care and WIC services in the same building improved the program's ability to impact the health status of pregnant women.[18]

THE REALITY

The quantifiable data used to determine changes in the health of Nelson County residents for the purpose of this study came from the *Virginia Vital Statistics Annual Report* for 1992, 1994 and 1995. The year 1992 was chosen as a baseline before RHOP began. Although 1995 would be our ideal comparison year, some of the data were not available for this year. We substituted 1994 in those instances.

The four health outcomes measured are: 1) deaths attributable to heart disease, 2) incidence of sexually transmitted diseases, 3) low weight births, and 4) natural fetal terminations for teens (see Appendices 3A and B). Between 1992 and 1995, deaths caused from heart disease decreased. We identified heart disease as a concern for the elderly population among our target groups. In the same time period, incidence of sexually transmitted diseases decreased. Natural fetal terminations for teens and low weight births, both increased from 1992 to 1994.

We analyzed the cost-per-patient encounter in an attempt to measure the efficiency with which RHOP is performing its services (see Appendix 1). The cost of health depots overall increased slightly from grant year 1994 (July 1994 -June 1995) to grant year 1995 (July 1995 - June 1996): $37.60 to $40.32 per encounter. However, separated into the two categories of community clinics and home visits, we found that the cost-per-patient encounter increased radically for home visits, from $78.55 to $133.70 in grant year 1995. The cost for community based clinic services decreased from $29.03 to

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[16] Watkins, Elizabeth, "A Model Program for Providing Services for Migrant Farmworker Women and Children," Public Health Reports, Nov. - Dec. 1991, No. 6, pp. 567-575.

[17] Randall, Teri, The Outreach Sourcebook - Volume 2: Rural Health Demonstration Projects 1992 - 1995, Health Resources and Services Administration, January 1996.

[18] Carcillo, Joseph A., "Improved Maternal and Child Health Care Access in a Rural Community," Journal of Health Care for the Poor and Underserved, Vol. 6, No. 1, 1995, p. 23-40.

$27.51, a 5.2 percent decrease. Transportation services also decreased in cost from $18.49 to $17.65 between the two grant years. In total, cost-per-patient encounter increased 6.6 percent.

It is interesting that the home visits have increased so dramatically per average patient encounter. This could be a result of the nurse traveling further to care for patients than she did in the initial year of the program or more follow-up visits that were not counted as a separate patient encounter. Costs for home visits and health depots can be assumed to be understated because transportation costs were estimated and are believed to be low.

Given that some health measures have improved and others worsened, it is difficult to say how the overall health status of residents of Nelson County has changed and whether or not the changes are a result of the Rural Health Outcome Program. Ultimately one would want to identify many health measures to see changes in the health of the target populations of RHOP or RHOP-type programs.

A COMPLETE MODEL OF EVALUATION FOR PROGRAMS SIMILAR TO RHOP

Ideal Health Outcome Measures

Ideal health outcome measures of a health outreach program should identify the change in the measured variable that occurred among the target population during the life of the program. Our search for such ideal health outcome measures for RHOP was hampered by a lack of baseline studies and difficulties in isolating the target population from the county population at large. The following is a list of preferred outcome measures that were researched, their status in this study, and comments concerning their use in the future:

> DECREASE IN NON-EMERGENCY VISITS TO THE EMERGENCY ROOM FROM NELSON COUNTY RESIDENTS IN THE RHOP TARGET POPULATION. These data were available for this study but was not gathered due to the costs involved in hiring the institutions to gather the data.[19] This data can not be used to identify the target population consequently use of the data would be for the county as a whole. Future use of such indicators will require prior coordination with data sources as preparation of the data requires long lead times and associated costs that someone must bear. Information on the average

[19] The University of Virginia Medical Center was willing to collect the information for a suitable grant to cover costs. They noted that similar studies at the national level have taken years to complete at significant cost. Letter from Marcus L. Martin, Professor and Chair, Emergency Medicine, University of Virginia, dated October 22, 1996.

costs per non-emergency visit to the emergency room can be extracted from national studies.

DECREASE IN NON-EMERGENCY 911 CALLS REQUIRING DISPATCH FROM NELSON COUNTY RESIDENTS IN THE RHOP TARGET POPULATION. We have not received information from the 911 administrator for Nelson County. This information also needs prior coordination to ensure that the data is recorded in a useful form and that there are assets available to record the data. Prior coordination will limit costs associated with this data. Average costs per dispatch can be extracted from national studies.

DECREASE IN MORTALITIES PREVENTABLE THROUGH ACCESS TO PRIMARY CARE AMONG RHOP TARGET POPULATION. There is no single, comprehensive source for this information. Nelson county does not have a dedicated coroner. They contact hospitals in Charlottesville or Lynchburg when local authorities feel that there may be foul play. While this measure would be ideal in evaluating RHOP type programs, it would take a large investment in terms of time and effort both before the program begins and while the program is underway. It is likely that this would involve payments to medical and law enforcement agencies to make determinations and record data. Valuation of lives extended would be based upon the baseline group's average demographic statistics applied to actuarial tables.

IMPROVEMENT IN COMMUNITY HEALTH DUE TO RHOP PROGRAM. This measure would be extrapolated from prior studies that measure the intermediate and long-term impact of health outreach and health services programs. This measure will not be used in this report due to the lack of prior studies and the difficulties noted below in measuring the change in access to primary care. In the future, more time could be devoted to identifying pertinent studies for use in program evaluation.

INCREASE IN ACCESS TO PRIMARY CARE OF TARGET POPULATION IN COMPARISON TO ALTERNATIVE OUTREACH PROGRAMS. In order to determine true change in access, the rate of access among existing health care providers and RHOP is necessary to capture any shift from pre-existing service providers to RHOP. We received information from one health care provider indicating an increase from 150 to 225 target population persons seen during the course of RHOP. The health care provider was unable to determine if this was a direct result of RHOP. Absent more complete information, we cannot claim any increase in access to primary health care simply from a review of RHOP health encounters as a shift in providers could in fact lead to a zero sum gain overall.

Ideal Model

These health outcome measures would be included in a best case scenario in the following manner:

All costs: direct and in kind, would be valued and compared to:
The decrease in non-emergency visits to the emergency room times the national average cost per such visit plus:
The decrease in non-emergency 911 calls that lead to dispatch times the national average cost of such dispatches plus:
The number of lives extended times the group average demographic applied to an actuarial table, preferably the table used by the major insurance provider for the county plus:
The percent increase in access to primary health care times the valuation of such access based upon prior studies.

This model would capture the primary costs and benefits of an RHOP-type program but would not include the benefits of serving as an information conduit for other social and health services organizations and the effects of this organizational synergism.

Available Health Outcome Measures

As the feasibility of our preferred health outcome measures is in doubt, we surveyed the available data for the county as a whole. While these data are flawed from the outset because they fail to focus on the target population, the data may shed some light on the possible impacts of RHOP. It must be stressed, however, that many health and education services as well as socio-economic changes within the county also impact these measures. The measures and suitability are discussed below:

LOW BIRTH WEIGHT RATES/ TEENAGE PREGNANCIES/ PRE-NATAL DEATHS. This information will indicate the health status changes in the area of pre-natal and post-natal health. RHOP is involved in such services.

DEATHS FROM CARDIOVASCULAR DISEASE. This information indicates death rates for major health problems. RHOP impacts these types of disease through primary care, education, and awareness.

INCIDENCE OF SEXUALLY TRANSMITTED DISEASES. RHOP is active in education and prevention of STD's.

Data Sources

Future evaluations can benefit from prior coordination for the collection of data necessary to conduct a thorough benefit-cost analysis. We have therefore included potential data sources below with comments as to their use in the future:

PATIENTS. Patients can provide valuable information as to what action they would have taken had RHOP not been available to them in addition to basic demographic and financial data. One of the difficulties with this data source is that attempts to collect the data can impinge upon the trust necessary to bring the under-served into the program. Many of the patients are wary of the system and might be lost should they be intimidated by data collection attempts. Surveys of patients and all county residents who are impacted by RHOP type programs would be useful but would require trained surveyors because of low education levels, language dissimilarities, and trust problems.

RHOP PROVIDERS. RHOP providers can provide valuable medical data for categorizing encounters and what result would have occurred if treatment had not occurred. Additionally, RHOP providers can make professional assessments of patients demographics and financial status'.

OTHER PRIMARY CARE PROVIDERS. Information from these providers on their services to the target population are critical to identifying the true change in health access of the target population.

EMERGENCY ROOMS. Administrators can provide valuable baseline and current information. With adequate prior coordination, it is possible to further sort the data by identifying the target population.

EMERGENCY SERVICE COORDINATORS. Administrators can sometimes provide data depending on what information they record such as 911 calls, dispatches, and outcomes. Prior coordination will maximize the value of the data.

SOCIAL SERVICE PROVIDERS. Administrators can indicate the value of rural health outreach workers as disseminators of information of other social services that impact the target population. While not an intended impact of such outreach programs, it is both a benefit for the general mental health and welfare of the target population and a positive externality to the county as a whole.

CORONERS. Where a comprehensive coroner program exists, coroners can review files to determine the rate of deaths that would have been preventable with access to primary health care among the population. This study would be historical and time consuming in nature but could provide valuable insight.

SIGNIFICANT TARGET POPULATION EMPLOYERS. Large employers of the target population such as farm owners who utilize migrant labor may be able to quantify the impact of health outreach on the productivity of workers. This productivity should be captured because it is beneficial to the target population and society as well as the employers.

THE GRANT PROCESS

The best data sources and most comprehensive model are of little use absent a baseline study or without the inclusion of funding within the grant to facilitate data collection, processing, and analysis. In order to maximize the informational potential of grants, we recommend the following:

An initial grant for conducting baseline studies, creating the evaluation model, and the designing the data collection system (and the program implementation).

One year later, a review of the initial grant results which, if acceptable, leads to the release of the program implementation grant. This grant includes sufficient funding for intake personnel and other assets necessary to support data collection and analysis during the life of the project.

Upon completion of a sufficient period of operation, a grant should be issued to a suitable institution for the evaluation of the baseline and operational data for cost effectiveness, benefit-cost, and any other analyses deemed necessary (this grant ideally would tap into the wealth of capabilities present in the higher education system of the Commonwealth).

While we understand that there are political issues concerning the spread of grant money, the charter of VHCF would be better served through thorough analysis of programs identified to have high potential for being a model for expanded application throughout the Commonwealth. VHCF may wish to present successful models to the Commonwealth, to potential grantors and grantees, or to VHCF's professional peer organizations. The model will be most credibly presented with thorough program analysis. This will lend greater strength to VHCF recommendations in the health care delivery field.

These modifications to the VHCF grant process would necessitate fewer grants of larger size but would enhance the professionalism and credibility of VHCF results.

CONCLUSION

The four health outcomes measures used in this study to measure the changes in the health of the residents of Nelson County are deaths attributable to heart disease, incidence of sexually transmitted diseases, low weight births, and natural fetal terminations for teens. No quantifiable pattern in the changes of these health measures was found. We analyzed the cost-per-patient encounter for community clinics, home visits, and the transportation program in an attempt to measure RHOP's efficiency. The overall cost-per-patient encounter increased 6.6 percent, but the individual programs did not show any pattern of increase or decrease in costs. It is notable that the home visits increased dramatically, however.

The VHCF is in a position to guide the Commonwealth in the investment of scarce public resources in the health care field. As such, the primary goal of grants should not be limited to the provision of innovative services. The primary goal should incorporate a viable mechanism to evaluate programs receiving grant moneys to determine if their replication by the Commonwealth is warranted. RHOP is an example of a grant which, while providing valuable and innovative services, did not include the research and funds necessary to allow a complete evaluation of the program for the Commonwealth.

Prior to the implementation of a grant, goals are established along with reporting procedures. Researching data sources and evaluation criteria prior to this point will help focus data collection and reporting efforts on goals which assist in the ultimate assessment of the project. These goals should encompass information that is available as a baseline against which a program's performance can be measured. Prior research may also indicate the need for a portion of the grant to be earmarked for data collection, such as funds for an intake worker or coordination with state agencies for data collection.

It clearly costs more to fund a grant that provides for a structured program evaluation. In times of shrinking budgets, there is a temptation to focus on the services provided. This is understandable, but in the long run, fewer grants with better program evaluation will provide the Commonwealth and its citizens with more complete information when making decisions about the delivery of health care.

Appendix 1

COST-PER-PATIENT ENCOUNTER

	October 1994 - June 1995		July 1995 - June 1996	
Service Provided	Number of Encounters and Total Costs	Average Cost Per Encounter	Number of Encounters and Total Costs	Average Cost Per Encounter
Community based clinic services	1156 encounters Total cost = $33,555.26	$29.03	2136 encounters Total cost = $58,764.00	$27.51
Transportation (to and from health and human service appointments)	185 encounters Total cost = $3,420.00	$18.49	315 encounters Total cost = $5,559.88	$17.65
Home Visits	242 encounters Total cost = $19,009.77	$78.55	293 encounters Total cost = $39,176.00	$133.70
Total	1583 encounters Total cost = $55,985.03	$35.37	2744 encounters Total cost = $103,499.88	$37.72

Source: Nelson County Rural Health Outreach Program

Appendix 2 SUMMARY OF PROGRAMS

Program	Target Population	Outcome Measures
Linn County Mobile Rural Health Project	Children	• 1,727 patients were seen for a total of 4,093 visits in 3 years. • 34% of the patients had had no prior contact with the county health department. • Raised the county's immunization rate for 2-year olds by 77%.
Watch Me Grow	Children	• Of the 360 children registered, 15% showed signs of developmental delay and 50% had never received care for their condition.
Tri-County Community Health Center	Children Migrant Families	• Raised immunization rates for children from 41% in 1985 to 60% in 1987. • Children who visited more than once were less likely to suffer from iron deficiency anemia. • Low birth weight births decreased. • Increased prenatal care before birth.
St. Lucie County, Florida	Children Migrant Families	• The number of EPSDT examinations increased from an average of 1,284 from 1986-1988 to 5,722 in 1991. • ER visits for children decreased from 15,955 in 1988 to just 8,427 in 1991. • The percentage of women delivering without prenatal care decreased twofold from 1989 to 1991.
Immokalee Companeros Project	Migrant Families	• Between 1/93 and 5/95, 507 families were served for a total of 2,365 individuals.
Rural Health Outreach Project	Migrant Families	• Provided health care services to over 900 children and 200 adults, as well as dental services to more than 1,000 adults.
Rural Elder Outreach Program	Elderly	• Primarily anecdotal measures of success in providing links to health resources.
Rural Elder Promotion Program	Elderly	• High participation rates for health screenings. • Participation ranged from 17% for the smoking cessation program to 58% for the immunization program.
Alternative Health Care Program	Elderly	• For $35/day, this project provides nursing care, 3 meals, immunizations, and recreation. • Deliver close to 1200 meals per month.
County Council on Aging	Elderly	• In the first 2 years, 274 clients were helped to access health care social services. • 3,895 meals were delivered during the first 2 years of service.

Appendix 3

A.

HEALTH OUTCOME MEASURES	1992	1994	1995
Deaths attributable to heart disease	80	79	65
Incidence of sexually transmitted diseases	35	44	23
Low weight births	12	16	n/a
Natural Fetal terminations - teens	2	8	n/a

B.

HEALTH OUTCOME MEASURES	% pop 1992	% pop 1994	% pop 1995	% total births 1992	% total births 1994	% total teen pregnancies 1992	% total teen pregnancies 1994
Deaths attributable to heart disease	0.0061	0.0061	0.005				
Incidence of sexually transmitted diseases	0.0027	0.0034	0.0018				
Low weight births				0.0805	0.1143		
Natural fetal terminations - teens						0.0769	0.2051

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