
MATERNAL, INFANT, AND CHILD HEALTH IN RURAL AREAS

by Jennifer Peck and Kristie Alexander

SCOPE OF PROBLEM

- Infant mortality is higher in rural areas in the South and Western regions.³
- Adolescent mortality is higher in rural areas in all four regions of the country.³

GOALS AND OBJECTIVES

Improving the health of women, infants, children, and families, a Healthy People 2010 goal,¹ involves identifying and eliminating health disparities in underserved populations.

According to the Rural Healthy People 2010 survey, maternal, infant, and child

health was ranked as the ninth highest rural health priority and was nominated by 25 percent of state and local rural health respondents as a rural health priority.²

This overview of maternal, infant, and child health addresses the following Healthy People 2010 objectives:¹

- 16-1. Reduce fetal and infant deaths.
- 16-6. Increase the proportion of pregnant women who receive early and adequate prenatal care.
- 16-8. Increase the proportion of very low birth weight (VLBW) infants born at Level III hospitals or subspecialty perinatal centers.
- 16-11. Reduce preterm births.

Maternal, infant, and child health was ranked as the ninth highest rural health priority.²

PREVALENCE

Differences across key indicators of maternal and infant health (infant mortality, birth outcomes, prenatal care) have been observed across urban and rural locations. According to national data from 1996 through 1998,³ infant mortality rates for nonmetropolitan counties appear similar to metropolitan counties. However, as a whole, a number of state-based studies have found increased rates of infant mortality among rural residents.⁴⁻⁷ One study⁴ found that rural residents have a slightly higher rate of neonatal mortality compared to the rest of the state; however, the rate of neonatal mortality in the most rural counties (populations less than 2,500) far exceeds all other areas of the state. In another state study, rural residents with normal birth weight infants were found to have higher rates of postneonatal mortality than urban residents.⁵ Yet another study found rural residents have poorer birth outcomes than

women residing in urban counties. Here, rural residents are reported to have lower

birth weights, shorter gestations, lower Apgar scores, longer hospital stays, higher costs, and greater distances traveled for delivery than urban women or women living in rural areas adjacent to urban areas.⁸

When other known social and biological risk factors are taken into account, there is growing evidence that rural residence may have an indirect effect on infant mortality rather than a direct association. Thus, disparities in infant mortality by area of residence may result from the disproportionate distribution of poverty, race/ethnicity, age, education, and availability and access to medical resources.

State-based studies have found increased rates of infant mortality among rural residents.⁴⁻⁷

IMPACT

Among industrialized nations, the United States ranked 26th in infant mortality in 1996.⁹ Low birth weight and premature births are major sources of both infant mortality and morbidity.¹ Long-term impairments associated with low birth weight and preterm birth include cerebral palsy, autism, mental retardation, vision and hearing difficulties, learning disabilities, and delayed development.¹⁰ Respiratory distress is the most common cause of death among low birth weight infants.¹¹

More nonmetropolitan than suburban women receive delayed or no prenatal care.¹⁶

Risk factors for infant death include low birth weight, preterm birth, delayed or lack of prenatal care, mother

under age 20 or over age 40, low educational attainment of mother, maternal smoking during pregnancy, and more than three previous births.¹² Additionally, maternal and infant morbidity and mortality more commonly result from unintended pregnancies,^{13, 14} because these women are more likely to engage in high-risk behaviors such as smoking, alcohol intake, and poor nutrition,¹³ and delay prenatal care beyond the first trimester.¹³

BARRIERS

There have been several studies reporting less adequate prenatal care among rural women than among urban women. The 1988 National Maternal and Infant Health Survey showed that U.S. women residing in nonmetropolitan areas were more likely to receive inadequate prenatal care than metropolitan residents.¹⁵ The most current comparison, the 1995 National Survey of Family Growth, indicates that more nonmetropolitan than suburban women receive delayed or no prenatal care.¹⁶ Lack of available local prenatal and obstetrical care in rural areas has been reported to be associated with higher rates of preterm delivery, infant mortality, and complications during delivery.¹⁷⁻²⁰ Moreover, pregnant women residing in rural areas with fewer available obstetric services, who frequently opt to deliver outside their

communities, often experience more complications during delivery and higher rates of preterm birth compared to rural mothers who deliver at local facilities.¹⁸

Other barriers to prenatal care for women living in rural communities include less access to health insurance,²¹ greater distance and travel time to providers,²² transportation problems,^{11, 23, 24} and child-care difficulties for larger families.^{23, 24}

PROPOSED SOLUTIONS

Prenatal care is regarded as a successful approach for improving pregnancy outcomes. However, nearly 20 percent of pregnant women in the United States continue to refuse or delay prenatal care.²⁵ Women who do not receive prenatal care or who delay prenatal care beyond the first trimester are at risk for severe maternal morbidity and possible mortality due to undetected complications of pregnancy.²⁵ The effectiveness of prenatal care is believed to be due to three primary components: early and continuous risk assessment, health education, and medical and psychological intervention.²⁶ Thus, maternal mortality can potentially be reduced through quality prenatal and obstetrical care. It is estimated that early diagnosis and effective treatment of pregnancy complications may prevent over half of all maternal deaths.^{27, 28}

SUMMARY AND CONCLUSIONS

Rural mothers and their children comprise a large segment of the U.S. population. Thus, health disparities between rural and urban groups are of national concern. Increased rates of adverse pregnancy outcomes in rural areas, such as preterm birth and low birth weight, have been observed, as well as higher rates of infant mortality. Access to prenatal care is critical for reducing maternal and infant morbidity and mortality, though rural women tend to receive less adequate prenatal care than their urban counterparts. Although the risk factors for these conditions tend to disproportionately affect women in rural areas, the health status of rural mothers and infants can be largely improved by eliminating existing barriers to quality and

comprehensive prenatal care. Ultimately, improving the health of rural mothers and infants, from preconception to pregnancy to birth and beyond, advances the health of the next generation.

MODELS FOR PRACTICE

The following models for practice are examples of programs utilized to address this rural health concern.

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MODELS FOR PRACTICE

FOCUS AREA: MATERNAL, INFANT, AND CHILD HEALTH

Program Name: Rural Healthcare Cooperative Network and Panhandle Partnership for Health and Human Services

Location: Chadron, Nebraska

Problem Addressed: Maternal, Infant, and Children Services

Healthy People 2010 Objective: 1-6

Web Address: <http://www.nehelp.net>

SNAPSHOT

The Children's Outreach Program was the first collaborative project of the Panhandle Partnership for Health and Human Services (PPHHS). PPHHS is a collaborative of organizations, agencies, and individuals dedicated to the common vision of creating, supporting, and facilitating "a health and human service system that is community driven and focuses on meeting diverse needs through protection, prevention, promotion, and provision of accessible services." Nearly 400 miles west of Nebraska's urban centers, PPHHS serves 11 counties covering 14,000 square miles in western Nebraska.

The partnership does not provide direct services; however, each of the collaborative projects was developed as part of a continuum of prevention services to ensure quality care and community health.

THE MODEL

Blueprint: Founded in 1998, the Children's Outreach Program is designed to promote the health of newborns and children under the age of five. Funding is provided via \$260,000 from a Federal Outreach Grant; \$164,000 of matching contributions by members of the Rural Healthcare Cooperative Network (the collaboration of regional hospitals); and funds from the Nebraska Child Abuse Prevention Fund, Nebraska Children and Families Foundation, and the Nebraska Cash Fund. The program promotes the health of newborns by providing free home visits within a few days of discharge from the hospital as well as nursing and family development visits to children zero to five years of age and their families. Approximately 30 health care providers from hospitals and health centers from around the region donate their time and expertise, while administration for the program is provided by Volunteers of America.

Making a Difference: Since 1998, the program has provided 10,000 home visits reaching approximately 750 families per year. Annually, between 75–82 percent of all newborns in the Panhandle region have received at least

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one home visit. The success of the PPHHS partnership is measured through active involvement and membership in the coalition as well as through outcomes, indicators, and performance measures.

Beginnings: PPHHS was informally established in 1997 and subsequently became incorporated as a 501(c)(3) in 1998. In this geographically large frontier area, the impetus for PPHHS was the recognition of a disparity of services, decreasing financial and personnel resources, political and policy isolation, a sagging agricultural economy, low wages, and unmet children's health needs. Founded on the premise of building a culture of collaboration, PPHHS has grown to include 60 member organizations and agencies. Members represent a broad spectrum of health and human services providers.

Guided by a 20-year vision plan, the goal of PPHHS is not to increase layers of bureaucracy but to enhance existing services. PPHHS contracts with a coordinator at the agency level while the agency provides all other resources (including volunteers). For grants, projects and services are housed in host agencies wherein the space represents an in-kind donation. Key staffing positions are covered under grant monies.

PPHHS completed a comprehensive community-based planning process, which included an independent health behavior risk survey. The survey, conducted in 1999-2000 was administered to 7,500 homes in the Panhandle. Additionally, the PPHHS planning process included 71 participatory action groups and the hosting of special focus groups for various special populations.

For each disparate area identified (health care, mental health, education, etc.) by PPHHS, a set of four to six goals was developed to focus the group's efforts. As with the Children's Outreach Program, each program or service has its own outcomes, indicators, and performance measures. With the integration of an information system via a Community Access Program (CAP) grant, PPHHS plans to utilize uniform baselines on a countywide basis.

Challenges and Solutions: The primary challenges to address are reported to be issues of "turf, territory, and trust." The partnership continues to expand through membership and new projects funded. PPHHS works to involve the schools in the partnership.

Financial viability requires a strong emphasis on sustainable programs that integrate existing resources and practices. PPHHS received a \$984,000 Community Access Program grant from the Health Resources and Services Administration in October 2001 for the purpose of developing and integrating an Internet-based information, referral, and management system throughout the Panhandle region. Nominal membership fees and a Maternal

Child Health (MCH) Title V Infrastructure Development Grant support the contract and office functions. The collaborative planning process is funded through existing planning dollars in various agencies and groups. Training conferences are cross-funded through agency training dollars and registration fees. Programs and services are funded through collaborative grants submitted through PPHHS and through allocation of agency resources.

PPHHS developed and maintains a website (<http://www.nehelp.net>) for all Panhandle services and resources as well as a brochure. Specific programs are advertised through referral, such as distributing pamphlets to new mothers (to advertise children's programs), as well as by radio ads. Information is also disseminated through networking among partnership members. Press releases, mail-outs, and list-servers disseminate information to the public. Internally, PPHHS presents an annual report to the members, which outlines the action steps taken to address each goal.

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MODELS FOR PRACTICE

FOCUS AREA: MATERNAL, INFANT, AND CHILD HEALTH

Program Name: Nurse-Family Partnership

Location: Denver, Colorado

Problem Addressed: Maternal, Infant, and Child Health

Healthy People 2010 Objective: 16-6, 16-17

Web Address: <http://www.nccfc.org>

SNAPSHOT

The Nurse-Family Partnership represents a highly refined approach to the long-established service strategy of home visiting. Nurse home visitors follow a visitation schedule that has been designed to meet two needs: 1) enable the nurse home visitor to provide the different services and information required during the different phases of pregnancy and early childhood, and 2) foster a relationship that supports the families' efforts to meet small, achievable goals that lead to positive program outcomes.

The program reflects improved women's prenatal health, infant health and development, and maternal life course. The program is implemented at the local level but is aided by the national office in program implementation. Each program uses the Clinical Information System as part of the national evaluation process to monitor program performance and identify factors that contribute to the program's success or failure.

THE MODEL

Blueprint: The Nurse-Family Partnership is a home visiting program using trained nurses as home visitors. The program has been tested, refined, and found to be consistently effective over the past 20 years in three scientifically controlled studies. Since 1996, the program has been developed in over 250 counties in 23 states. The target population is low-income women, first-time mothers, and their families through the first-born child's second birthday. The program is implemented at the state and local levels. At the state level, support is provided through a partnership between a state agency and the National Nurse-Family Partnership Office based at the University of Colorado Health Science Center. The national office provides assistance with community and organizational planning; provides training for the nurse home visitors, their supervisors, and administrators responsible for managing the program; and conducts evaluation services. Each agency that operates the program hires nurses to serve as home visitors and supervisors.

Women are referred to local program staff from prenatal care providers in the community served. The program is introduced to the prospective client, and if she chooses to join, nurses begin visiting every one to two weeks. The nurses' goal is to improve health behaviors that can affect preterm delivery, low birth weight, and infant development. After delivery, the focus turns to the enhancement of family care of infants and toddlers. In addition, the program focuses on preventing unintended subsequent pregnancies, failure to find work, and welfare dependence—factors that lead to chronic poverty, higher risk for crime and delinquency, and suboptimal care for children.

Making a Difference: The three randomized controlled trials have been maintained over the past 25 years with longitudinal follow-up of all program participants. In addition, program staff use the Clinical Information System to keep track of family characteristics, needs, services provided, progress toward accomplishing objectives, and to help nurses and program staff continuously improve the implementation of the program.

Beginnings: In the 1970s, Dr. Olds, the program founder, examined society's most difficult health and social problems. He concentrated on problems that could be impacted through preventive intervention early in the life cycle. The Nurse-Family Partnership was designed to improve health behavior during pregnancy, nurturing competent caregiving for infants and toddlers, and promoting attainment of positive life goals that resulted in family economic self-sufficiency. The program began in the 1970s strictly in the research setting and since 1996 has been available to the public.

Challenges and Solutions: Challenges vary from site to site but include issues related to efficient program delivery, funding sustainability, client retention, staff recruitment for significant expansion of the program, and higher costs to deliver the program in rural areas. Funding sustainability is addressed by not allowing sites to initiate the program without solid funding (e.g., Medicaid, Temporary Assistance for Needy Families). Client retention is being addressed through quality improvements initiatives led by the national office, which includes bringing together staff from sites that have successfully retained families. Nurse recruitment and retention are addressed prior to the initiation of the program. Costs of the program may be higher in rural areas due to the distances home visitors must travel to visit families, with the result being that each nurse may not be able to successfully serve a caseload as high as those carried by nurses in more urban locations. National office site developers assist communities in considering various implementation and management models, and to design program management systems that are most likely to work in particular settings.

The national office provides written reports, presentations, and a website to educate potential referral sources and community members about the Nurse-Family Partnership.

The nurses' goal is to improve health behaviors that can affect preterm delivery, low birth weight, and infant development.

The Nurse-Family Partnership has received numerous awards and honors from national and international organizations dedicated to violence prevention, child abuse prevention, substance abuse prevention, prevention research, health, and juvenile justice.

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MODELS FOR PRACTICE

FOCUS AREA: MATERNAL, INFANT, AND CHILD HEALTH

Program Name: Maternal Infant Care Program

Location: Peekskill, New York

Problem Addressed: Maternal, Infant, and Child Health

Healthy People 2010 Objective: 16-6, 16-7, 16-19

Web Address: <http://www.hrhcare.org>

SNAPSHOT

The Maternal Infant Care Program is an innovative program that seeks to improve the emotional and physical health outcomes of new mothers and their children. Community women are recruited and trained to serve as partners during the prenatal through postpartum period. Support is offered to break down barriers to care through a variety of venues including driving the mother to her appointments, childbirth education classes, or translation at the time of her visit to the doctor. Prenatal classes are offered weekly to participants; women are able to pick up their Women, Infant, and Children (WIC) program checks; and earn incentive points for attending the class and redeem them for baby care items, strollers, and car seats, etc.

This model focuses on low birth weight (LBW) babies, breast feeding, access to all services, increased access to prenatal care during the first trimester, and increased rates for well-baby check ups and for women coming in for their postpartum visit.

THE MODEL

Blueprint: The Maternal Infant Care Program operates in community health centers and migrant camps. The program began in 1996 and is a collaborative between 10 organizations including the March of Dimes, Zeta Phi Beta sorority, and area churches and businesses. Key staff who are directly involved in the model for practice include WIC-nutritionists, nurse midwives, educators, lactation consultants, childbirth educators, family health services, behavioral health specialists, and social workers.

This model focuses on low birth weight (LBW) babies, breastfeeding, access to all services, increased access to prenatal care during the first trimester, and increased rates for well-baby check ups and for women coming in for their postpartum visit. The target population includes all women of childbearing age but primarily focuses on racial/ethnic minorities and migrant farm worker women. The rural sites are 75 percent Hispanic and 25 percent African American or other. The program is carried out in education sessions and offers all services under one program.

Making a Difference: The program is ongoing and continues to request donations from churches, etc. Data are collected and reported annually on the rate of LBW babies, rate of breastfeeding, and length of breastfeeding.

The percentage of LBW babies decreased from 7 percent in 1999 to 1 percent in 2001. In addition, the percentage breastfeeding at eight weeks postpartum increased from 67 percent in 1999 to 72 percent in 2001.

Beginnings: The program was initiated in 1996 after a review of statistics for women's health and WIC programs. The original stakeholders included March of Dimes, Zeta Phi Beta, area churches and businesses, and patients. New stakeholders have been added including the Warwick United Methodist Church and the Migrant Head Start program. Services are provided through a community health center that has two paid staff, two donated staff, and three volunteer staff.

Challenges and Solutions: The program was initiated with a small start-up grant from the St. Faith Foundation. Since that time though, financial support of this program has been through a collaboration of private and public organizations that donate services or people power. The Hudson River Health Care Program provides the majority of funding needed through its grant-operated WIC and women's health services.

The program is publicized primarily through the WIC and prenatal department and word of mouth. The program received the Models that Work Award in May 2000 through the Bureau of Primary Health Care (BPHC), Health Resources and Services Administration (HRSA). The curriculum is available on the HRSA/BPHC website (http://www.bphc.hrsa.gov/mtw/MTW_PLANETREE.HTM), which provides detailed information on how to implement the program.

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