Improving The Odds:

Healthy Mothers And Babies

For North Carolina

A Plan To Reduce Infant Mortality
and Infant Morbidity In North Carolina

Report of the Task Force To Reduce Infant Mortality and Morbidity in North Carolina

Of The North Carolina Institute Of Medicine

To The Kate B. Reynolds Health Care Trust

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In deepest appreciation to the board of The Kate B. Reynolds Health Care Trust for their on-going support to the Institute of Medicine in the development of the plan to reduce infant mortality and morbidity.

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Improving the Odds: Healthy Mothers And Babies For North Carolina

A Plan To Reduce Infant Mortality And Infant Morbidity In North Carolina

North Carolina is the tenth largest state in the nation. It boasts some of the finest research facilities in the world, a healthy rate of economic growth, a prestigious public university system and yet, it has one of the most shameful rates of infant deaths in the country. Babies born in North Carolina are more likely to die before reaching their first birthday than in 45 other states in the nation. The United States has a substantially higher rate of infant deaths than those of most developed nations. Many infants who do live are doomed to lives of illness and disability.

This is a situation which must be addressed in North Carolina. The costs are far more than human suffering. The economic impact on the state as a whole and on governmental resources is staggering.

The Kate B. Reynolds Health Care Trust asked the North Carolina Institute of Medicine to help assess maternal and infant health services, identify needs in North Carolina and establish realistic and achieveable goals to reduce the infant mortality and morbidity rate. The Institute then appointed the Task Force for Reducing Infant Mortality and Morbidity

The Institute of Medicine's Task Force has analyzed the causes of this tragedy. It has found that the single most important cause of infant death and disablity is low birth weight—a condition which world wide experience proves can be dramatically improved by early, consistent and thorough health care throughout pregnancy.

Most of the economic resources expended to address the problems of low birth weight and prematurity, have been spent providing high technology care to seriously ill newborns immediately after birth. The average cost of care for such a newborn is $30,000. Some costs can soar as high as a half million dollars. Yet many low birth weight cases can be prevented through early prenatal care. The cost of caring for five low birth weight infants in intensive care facilities would pay for prenatal care for 149 women. Prenatal care would make it far more likely that children born would not only survive their first year of life, but would be far less likely to suffer illness and other handicapping conditions.

Experience in other nations and in other states indicates that the objective of assuring healthy children can be obtained. There are no mitigating sociological or population eccentricities which would make North Carolina unique. The Institute of Medicine has found that poor health status of infants in North Carolina is caused by a combination of lack of access to care, lack of information about care, failure to give priority to the health of mothers and children, and bureaucratic, legal and economic barriers to care which have prevented pregnant women and women who are likely to become pregnant from getting the care they need. The excellent analytical report *Identification of the Major Factors Associated with Infant Mortality and Infant Morbidity In North Carolina* by Dr. Catherine Dollfus and Dr. Allan Cross was presented to the Kate B. Reynolds Health Care Trust in July, 1987.

Ideally, every baby conceived should be a wanted child and the mother should be in the best of health. Unfortunately this is not the case. Teenagers who are not fully physically developed themselves and become pregnant, put themselves and their babies at high risk for long term medical problems. Other women fail to take care of themselves, abuse alcohol or drugs and, again, increase the risk of abnormality in the baby.

More effort and education must be directed to the prevention of pregnancy in those who constitute a high medical risk group.

Generally, a healthy woman will have a healthy pregnancy and a healthy infant. Healthy lifestyles, especially adequate nutrition and health care, are particularly critical just before and during pregnancy. The plan of the Institute of Medicine is designed to assure that women know how to improve the odds that their babies will be healthy, that needed services are in place, that caregivers have the latest information on how to improve the chances for positive pregnancy outcomes and that women who need the services can find, get to and pay for the services they need.

The Institute proposes that the state of North Carolina set a five year goal to reduce the infant mortality rate to the national average of 10 per 1,000 live births by 1993. To achieve this goal, the rate of premature and low birth weight babies should also be reduced to the national average.

This report, funded through the Kate B. Reynolds Health Care Trust, is designed as a blue print to begin the process to assure that in time children born in North Carolina will be as likely to be healthy and productive as they are in any advanced civilization on earth.

North Carolina Has Laid a Solid Foundation

North Carolina has developed a significant network of services to reduce infant mortality and morbidity. Cooperation between federal, state and local sources of funding, and between public and private health care providers, has enabled many pregnant women and infants in poverty to receive basic and special services. These components include not only services, but consultation, technical assistance and professional education to maintain the quality of care. Here is an inventory of available services on which we can build to improve and expand services for the many young women not now receiving the care they need:

Family Planning: Subsidized family planning clinics exist in all 100 counties through the family planning program.

Nutrition: The Women, Infants and Children program exists in all 100 counties, but serves only 43 percent of eligible women.

Child Health: The Child Health program funds child health clinics in all 100 counties.

Maternal Health: Prenatal Clinics are currently conducted in 87 counties.

Perinatal Health: A network of 19 high risk maternity clinics are subsidized to provide special medical, nutritional and psychosocial care to poor pregnant women with medical complications.

The High Priority Infant Program: Through this program, health departments identify newborns at risk for developmental delay and follow them closely to assure early referral to developmental evaluation centers for careful assessment.

Developmental Evaluation Centers: Eighteen programs are well distributed aross the state to diagnose and serve infants and young children.

The Children's Special Health Services Program: This program subsidizes specialty clinics and reimburses hospitals who serve poor children with chronic remediable disease.

Sudden Infant Death Syndrome (SIDS) Program: This program supports health departments in all 100 counties in providing counseling and support to families who have experienced a SIDS death.

Adolescent Pregnancy Prevention: These initiatives began in the early 80's. Family planning clinics provide enhanced outreach to teens in need as a part of the basic service. Recent appropriations by the General Assembly have increased the number of teens served. In addition, 34 special projects were funded by the General Assembly to help communities develop education and community coordination strategies to prevent adolescent pregnancy. Despite these efforts, teenage pregnancy continues to be a significant contributor to the state's infant mortality.

Lifestyle change intiatives: In 29 county health department family planning clinics there are Preconceptional Health Promotion Projects. In these services, family planning clinic patients take a questionaire to help them identify lifestyle risk factors for poor pregnancy outcomes. These factors are then discussed with the client and she is referred to services which can support her in making the lifestyle change. Included are nutritional problems such as obesity and underweight, smoking, alcohol abuse and similar problems.

Recruitment to Prenatal Care: These efforts have been enhanced through the teen pregnancy programs and the Baby Love program.

Prematurity prevention: Many counties have been providing risk screening for preterm labor and special patient education. The pilot project at Bowman Gray in northwestern North Carolina has been successful in lowering the low birthweight rate among its project births. Health departments were funded in 1985 to reimburse doctors and hospitals for prematurity prevention.

Baby Love: Through this program, Medicaid increased its coverage of pregnant women and infants to include families with income up to 100 percent of the federal poverty level. Medicaid also increased its physician's fees for obstetrical services to recognize the problems of medical malpractice insurance. Medicaid made its coverage for maternity services more comprehensive. As a result, childbirth education and home visiting are covered. A new care provider called "maternity care coordinator" is funded to work as a patient advocate with all human service agencies at the local level, to recruit clients, to acquire needed supportive services and to follow up the program. As of March, 1988, 90 counties were preparing to offer maternity care coordination. The Baby Love program has also undertaken a marketing effort to women all over the state.

"More babies died in their first year of life last year in North Carolina, increasing the state's infant mortality rate by 4.3 percent. The 1987 rise—from 11.6 to 12.1 deaths per thousand births—came after four years of mild improvement. The death rate for black babies—already nearly twice as high as whites—worsened more dramatically than it did for whites."

—Raleigh News and Observer
October 6, 1988

Why has the rate of prematurity not improved?

Despite the fact that North Carolina is providing many effective programs, more women than ever are getting little or no prenatal care and Medicaid does not cover all those in need. Many of these women are at the bottom of the pay scale and have little or no insurance—they cannot afford prenatal care. In addition, as medical liability premiums for physicians who deliver babies has skyrocketed, family practitioners and obstetricians are withdrawing from practicing obstetrics. This combination has forced the number of women seeking publicly funded care to increase by 34 percent since 1985. The waiting period at county health departments is growing; they are understaffed and underfunded and as a result, accessibility of health department prenatal care is limited. This is particularly distressing because health departments often see many of the pregnant women who are most in danger of high risk pregnancies. Further complicating the problem is that the population of this predominately rural state is spread out, and transportation to services is sometimes an insurmountable barrier.

Can the problem be solved?

Yes. Although solving some of the problems may be expensive, none is impossible. Providing health insurance for prenatal and delivery services is cost effective. What is needed is to convince employers of this fact. Expanding Medicaid to 185 percent of current federal poverty guidelines will assist in reaching the poorest of the poor. For those women who fall through the cracks in service, subsidies to health departments to expand delivery funds must be offered. Medicaid enrollment practices must be streamlined to eliminate barriers to prenatal care. Efforts to assist physicians as they deal with rising malpractice rates to care for Medicaid eligible women must be taken. All health departments must provide prenatal services which are competent, attractive and pleasant. The transportation issue in rural areas must be addressed. Insurers must be worked with to assure that all pregnant women can have prenatal care. The Bowman Gray prematurity prevention program must be duplicated and funded throughout the state.

Recommendations

Assure that prenatal care is available and accessible in North Carolina

The first and most important step that must be taken in

North Carolina is to find a way to assure that needed services are available in North Carolina. Primary in this consideration is to assure that needed manpower is in place. Currently health care providers including health departments are discontinuing prenatal care and delivery of babies because medical malpractice rates for obstetric services are exorbitant. Many physicians are also refusing to see Medicaid patients because of complex paperwork requirements and slow reimbursement. Health care funding sources must take into consideration malpractice rates when setting reimbursement rates. The General Assembly and the Department of Insurance must examine the malpractice issue to see if legal remedies are possible to remedy the situation. Medicaid paperwork requirements must be simplified. Rural Health Clinics and other community based services should receive increased funding.

The problem of lack of medical manpower is especially critical in the far eastern and far western portions of North Carolina. Accessibility to prenatal services should not be denied to pregnant women simply because of where they live.

A. The General Assembly should fund gaps in service.

1. Establish community consultants in Maternal and Child Health in each of the four regional offices of the North Carolina Department of Human Resources. These consultants of care would be responsible for assuring that a network exists among all available health care providers in each geographic area and that care from preconception to the first month after pregnancy is coordinated. In addition, the consultants would travel around their regions, establishing community organizations to assist with transportation, education in the importance of prenatal care and working with county governments and care providers to assure that a complete system of care is in place in each county and accessible to all citizens of the state no matter where they live.

2. Establish four teams of obstetricians and nurse midwives to serve critically underserved areas in the far eastern and western portions of the state.

3. Establish discretionary funds for county health departments to meet gaps in service to low income women. Such funds would be used for transportation and travel costs, special tests, infant ambulatory care, medications or other needs. Each county would be allowed to use these funds to fill its particular gap in prenatal care.

4. Establish a delivery fund for those who are not

eligible for Medicaid coverage and who have no other means to pay the cost of pregnancy care and delivery. There are individuals such as teenagers who are unemancipated minors who are not eligible for Medicaid coverage and who are not covered for pregnancy care under their parents' health insurance policies. In 1986, a total of 6,726 infants were provided prenatal care through health departments. These represent live births to low income women not covered under Medicaid. Medicaid paid for the delivery of 14,844 low income women in 1986. The expansion of Medicaid to 100 percent of the poverty level for pregnant women and infants which occurred on October 1, 1987, expected the additional coverage of 15,000 births. Even with the proposed expansion of Medicaid to 100 percent of the poverty level, there are still many low income pregnant women who are not covered. In 1987, there were 5,795 live births to those 17 and younger.

B. Prenatal Care Must Be Financially Possible For Those Who Are Most At Risk.

1. Financial eligibility for Medicaid should be increased to 185 percent of poverty for pregnant women and infants up to one year of age.

2. Private insurance coverage for pregnant women and infants should be increased by encouraging North Carolina insurers to cover the insured's dependents (spouse and daughters) for obstetrical care without waiting periods or co-payments. Pregnancy should be eliminated as a pre-existing condition in insurance coverage. Working women should be covered for prenatal care and delivery services by insurance coverage through their employment.

Assure that the population of North Carolina—the general public, the providers and the patients—are fully informed about the need for early and consistent prenatal care in preventing premature births.

1. The focus of an educational program is to make the community aware of the costliness in dollars and human suffering of premature births. The public should be informed of the importance of early and consistent health care before, during and after pregnancy. Assuring that the general public has needed information about health care will require a broad based advertising and public information approach. Approaching newspapers with story ideas and newsreleases on reproductive health and healthy pregnancies will assist in getting information out to the reading public. Public service announcements will also assist to some

degree in getting information across to the non-reading public. However, both approaches are limited because they rely on the discretion of editors and program managers about where, when and how the information will be distributed. Certainly, these are mechanisms that must be used, but they cannot be relied on to adequately educate the public. The North Carolina Association of Broadcasters and the newspaper associations in the state must be approached and lobbyied for full assistance in getting information out. Some other states have found their broadcasters, for example, open to providing one hour-long televised program broadcast in prime time. The state's Association of Outdoor Advertisers and the state advertising council should also be approached with the problem and asked for assistance in producing print and broadcast advertisements to address the problem. Should all organizations agree to assist, the educational efforts for the general public would be greatly enhanced.

One thing to keep in mind is the lesson manufacturers of all new products learn—in order to affect change in behavior, it is important to saturate the public with a catchy message which is repeated over and over again. To fully educate the public and to assure that information is targeted to high risk groups would require the same techniques used in all successful advertising campaigns—a full blown, fully paid advertising effort. No mechanism currently exists for acquiring and using the level of funding needed for such an ongoing campaign.

Targeting information to high risk groups such as low-income, teenagers and minority groups should employ more individualized efforts. Included in such efforts should be the development of posters, publications written and designed to appeal to the specific group and targeted radio advertisements. Such information as how to take care of yourself before you ever conceive a child, nutrition before and during pregnancy, health habits during pregnancy and prenatal care should be addressed in brochures handed out in pharmacies, health departments and schools in targeted areas. Fast food restaurants should be approached about the possibility of joining in the effort and using their facilities as distribution points for brochures and posters. Posters targeted to low income groups should be developed. Efforts should be made in conjunction with local health departments and other local groups to get posters put up in laundromats, fast food restaurants and local teenage hangouts.

Churches in the state should be approached about joining the effort to encourage every pregnant woman to care for her health during pregnancy and during preconception. Churches serving low income families or those working in community outreach efforts to assist disadvantaged populations should also be approached about the possibilities of distributing brochures to

low-income pregnant women.

2. Efforts to educate the patient must be made. A system of incentives to get women into prenatal care early and to assure that they keep their prenatal appointments should be developed. Pregnancy tests should be offered free by health care providers. Once a woman is diagnosed as pregnant, she should be introduced to an incentive to encourage her to keep her prenatal appointments. Other states are using coupons. They have approached manufacturers and distributors in their states to produce coupon booklets to encourage all low-income women to keep prenatal appointments. Women who keep prenatal appointments are given coupon booklets for discounts on disposable diapers, baby food, baby clothes, etc. Birthing vouchers for those women who come to care early are an option to pay for prenatal care and delivery for low income women.

An entertaining and informative videotape might be developed and distributed to providers of prenatal service to be shown to women who are diagnosed as pregnant while they are in the doctor's office or the health department. The tape should discuss the purpose of the various procedures in prenatal care, the importance of good nutrition, avoiding drugs, alcohol and smoking, things to watch for that might indicate trouble in the pregnancy and what to do about it and other factors to be decided by a panel of experts. This videotape should be designed with the client in mind. It should also be made available to schools for health classes. Whether in a health department clinic or a doctor's office, the patient should receive an explanation of good health habits during pregnancy.

3. Bulletins to alert providers of care to statistical data on infant mortality and morbidity and how their community compares to the state should be established. They should be informed of the steps taken by the state to assure a continuum of care to pregnant women; the latest findings on contraindications in pregnancy for certain drugs or procedures; available information such as pamphlets which can be made available to patients; areas of current and potential research in reproductive health (i.e. the health status of the father within the three months prior to conception and its affect on the child). The support of physicians in every county is critical. Area Health Education Centers are integral in the development of programs to stimulate and inform practitioners of new developments in maternal and child health.

Assure that a consistent long range strategy to implement needed changes is in place.

To assure that the public and private sector efforts are coordinated and effective and that needed educational services are in place and effectively operating, the North Carolina Institute of Medicine recommends that it take on the role of a catalyst agency to bring the disparate elements together. In order to do this, the Institute should establish the position of full-time Facilitator of Perinatal Planning and staff the position. Using the Institute's Task Force on Infant Mortality and Morbidity as an advisory body, the facilitator would undertake to establish solutions, goals and strategies and work to create change in the system. Among the facilitator's important tasks would be to work with county-based Maternal and Infant Health Committees to work with counties to overcome their specific problems. The facilitator should work with the WIC program to assure that all eligible women and children are receiving the nutrition services they need. The facilitator should also work with state and regional agencies to assist in such activities as streamlining the Medicaid enrollment process, improving Medicaid reimbursement, implementing the statewide prematurity prevention program, develop strategies to make the experience of prenatal care more worthwhile for pregnant women and assuring that educational strategies are implemented.

In the following set of papers, expert members of the task force describe in detail recommendations to improve the status of health care before during and after pregnancy. The recommendations from these various reports comprise the heart of the work of the task force. The Task Force recommends that the following steps be taken to achieve the goals of reducing infant mortality and morbidity:

Step 1. Assure that prenatal care is financially possible for every woman in North Carolina.

These are the recommended actions:

1. Economic barriers to care should be overcome through the provision of pregnancy coverage in all health insurance for those who are employed and public financing for all those who are not.

2. Publicly funded and medically covered prenatal clinics should be made available in all 100 counties.

3. The state's share of Medicaid costs should be increased.

4. The obstetrics fees of physicians should be increased to more closely approximate the cost of providing this care. These fees should be reviewed annually to assure that they increase with increasing costs of care.

5. Funding of care coordinator services should be extended to eligible at risk infants up to one year of age; and to eligible women requiring special preconceptional health services.

6. Medicaid coverage for eligible pregnant women should be extended to include intensive nutrition counseling services not covered by the Women, Infants and Children nutrition program.These services would be provided to women at special nutritional risk needing counselling beyond the visits provided by the Women, Infants and Children nutrition program.

7. State funds should be made available to local health departments to cover the difference between local salary scales and the state salary scale for public health nurses and physician extenders.

8. The rural obstetrical care incentive fund should continue and be extended by increasing the maximum amount per physician from $6,500 to $8,000 and increasing the number of counties covered under the program to insure physician coverage for prenatal care.

9. Malpractice laws should be altered to reduce fear of malpractice suits among providers of care to pregnant women.

Step 2. Assure that comprehensive health services for care throughout pregnancy are in place across North Carolina.

1. The N.C. Women, Infants and Children nutrition program should be reviewed to find more effective means of enrolling participants and to find more funds to serve the nutritional needs of pregnant women and young children.

2. More physicians need to be recruited to underserved areas. Funding for the Rural Health Program needs to be increased.

3. Participation levels of obstetricians in Medicaid need to be increased.

4. More nurses need to be recruited as public health nurse midwives.

5. Women with a history of previous abnormal pregnancies or with a family history of birth defects or with a known or suspected genetic or metabolic disorder should be in a program of

interconceptional care.

6. A care coordinator program should be developed in each county to assure services and are provided to all women identified as high risk for preterm labor.

7. Publicly funded prenatal clinics should make their services more client oriented.

8. Initial and ongoing risk assessment and education for preterm labor should be incorporated into prenatal care for all women.

9. Employers should be encouraged to provide pregnant employees with 1) adequate insurance for maternal and infant care services; 2) adequate leave to receive needed perinatal services; 3) worksite education programs to improve perinatal health and 4) a reduction in worksite hazards to maternal and fetal health.

Step 3. Assure that needed research is undertaken to assure positive pregnancy outcomes and service effectiveness.

1. Research should be conducted on the relationship of the health practices of the male partner during the three months before conception such as drug use or sexually transmitted diseases

2. Research should be conducted on the causes and prevention of premature rupture of the membranes particularly among low income populations.

3. An evaluation should be done of the effects of public awareness, health promotion and services on pregnancies occurring after a consistent effort has been put forth.

4. A state panel of experts should research the benefits of pregnancy health education programs in the workplace.

Step 4. Assure that all bureaucratic barriers to care have been removed.

1. Local Women, Infants and Children nutrition programs should be examined to identify and remove barriers preventing use of the program and to promote nutrition education programs at the local level.

2. Transportation services should be provided to all those without transportation.

3. Existing publicly funded and medically covered prenatal clinics in which pregnant women experience long waiting periods for first prenatal visits should be made more accessible.

4. Maternal and infant health committees should be established in each county made up of community leaders to assess the adequacy of available resources, identify gaps in service, establish new and needed programs. Technical assistance should be provided to counties from the state and regional levels.

Step 5. Assure continuing and expanding educational efforts.

1. Preconceptional and prenatal health education should be incorporated into worksite health education efforts. Educational materials should be developed at the state level. Incentives to employers offering the program should be developed.

2. School based education should be provided on the significance of prenatal and perinatal conceptional health on pregnancy outcomes.

3. Health promotion services should be made available in all public and private health care provider programs regarding preconceptional health.

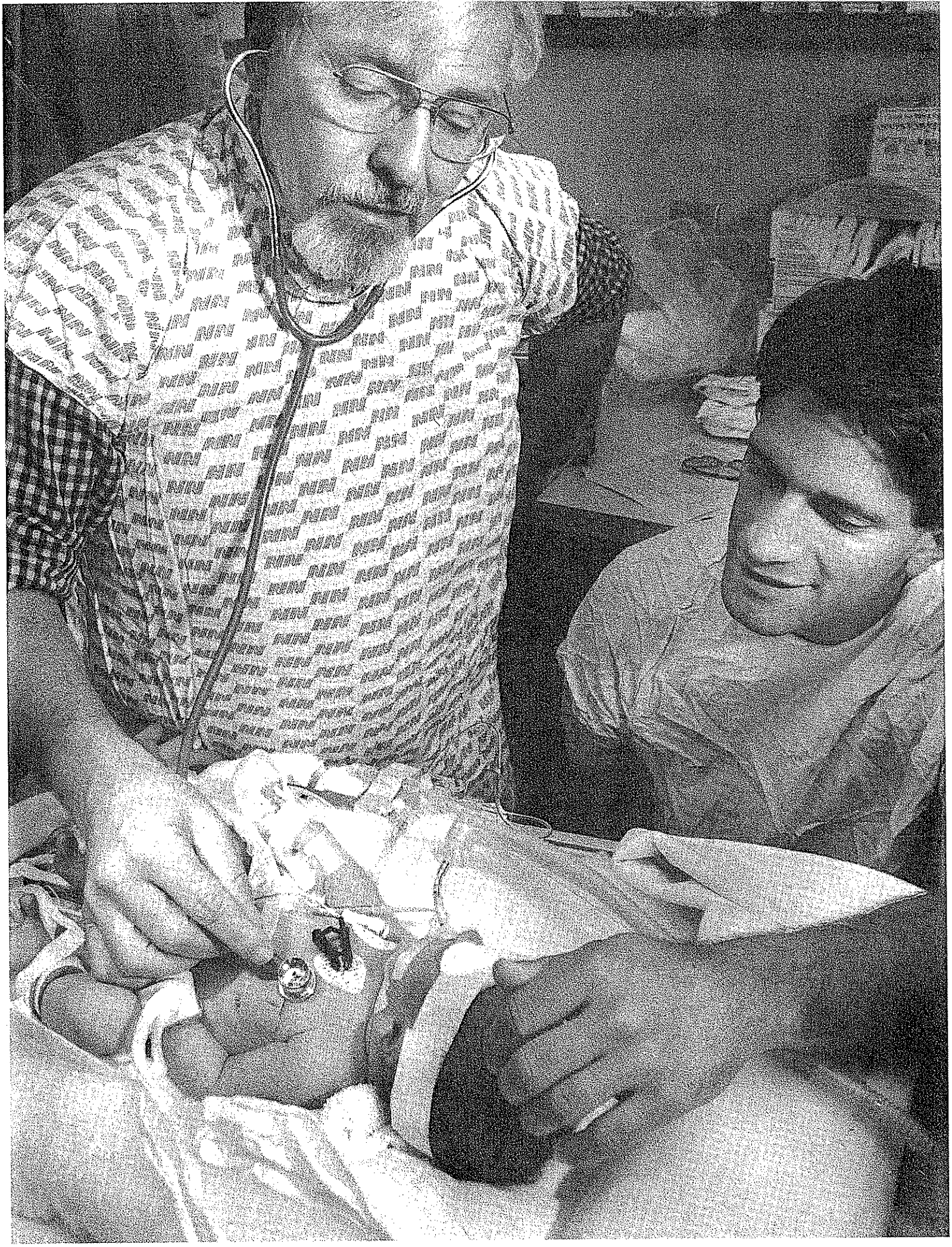
4. Education should be provided to all health professionals on the need to communicate positive health practices to those interested in, or at risk of, becoming pregnant.

5. The existing Careline number should be advertised to and utilized by both health care providers and by those in need of services.

6. Church and industry based volunteers should be developed to help educate the public.

"The problem of babies dying is not one at which the state can throw up its hands. There can be no surrender. These are North Carolina's children, and they deserve every chance to be North Carolina's adults."

—Raleigh News and Observer, October 8, 1988



Preconceptional Health Promotion Rationale, Priorities and Selection Criteria for Funding

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Introduction: Although significant improvements in perinatal mortality rates have been realized in recent decades, reproductive casualties in the form of spontaneous abortions, stillbirths, neonatal deaths, prematurity, congenital defects and maternal morbidity remain costly reminders of lost or impaired human potential. Recent evidence suggests that the incidence of congenital defects is, in fact, increasing. In the United States and in North Carolina, low birthweight is the leading cause of death during the neonatal period and congenital malformations are the major contributor to death during a child's first year. The incidences of these two leading causes of infant mortality have not changed appreciably in decades. Increasingly sophisticated antenatal and intrapartum technologies and increasingly awesome achievements in neonatal nurseries have not impacted on our ability to prevent either low birthweight or congenital malformations. This finding suggests that new avenues for prevention be explored.

Rationale: The period of greatest environmental sensitivity for the developing fetus is between 17 and 56 days following conception. During this period, hereafter referred to as the "periconceptional" period, cell organization, differentiation and organogenesis take place and any insult, be it viral, drug related, nutritional, or physiologic, can jeopardize normal development. Studies indicate that in the first trimester the fertilized ovum increases in mass by two and one-half million times; during the second and third trimester the growth is, in comparison only 230 fold. By the end of the eighth week following conception and certainly by the end of the first trimester, the majority of structural anomalies that will effect the fetus are already determined. The periconceptional period also plays an important role in determining the eventual birthweight of the neonate. In addition to the occurrence of congenital anomalies, which are frequently associated with low birthweight, other factors in the first trimester such as poor maternal nutritional status, abnormal placentation due, for instance, to tobacco exposure and maternal alcohol use are recognized determiniants of preterm delivery or slowed intrauterine growth.

Unfortunately, a majority of women do not have their pregnancies diagnosed until the critical period of periconceptional development is well underway or complete. In fact, the period of organogenesis begins just three days after the first menstrual period, at which time few women are aware they are pregnant and virtually none have had the opportunity to initiate prenatal care. It is not until prenatal care is begun that women learn of opportunities to increase their chances of a healthy pregnancy and infant. In consequence, the rapidly growing embryo may be subjected to potentially injurious stimuli during its most vulnerable developmental phase and obstetrical health care providers are encumbered by being entered into the race to deliver a healthy infant after the race has begun.

A new obstetric challenge is to educate women before this critical period begins, or before conception, about the potential influence of their lifestyle choices and health status on the earliest embryonic cells. Through such education, women will have an opportunity to modify their habits and maximize their health status in a timely manner, thereby increasing their chances of healthy reproductive outcomes. This approach, hereafter referred to as preconceptional health promotion, offers an opportunity for the primary prevention of low birth weight, congenital anomalies and other poor pregnancy outcomes. Preconceptional health promotion strategies suggest that prenatal care should be extended beyond its traditional limits to incorporate the three months preceding conception and that the importance of the periconceptional period in determining pregnancy outcomes become an accepted concept in the public's consciousness.

Local and State Action Recommendations

• A public awareness program which emphasizes the potential relationship between a woman's preconceptional and periconceptional health and health habits and her reproductive outcomes.

• A statewide effort to educate all primary care internists, obstetricians, family physicians, nurses, and nutritionists regarding the significance of the pre- and periconceptional periods on reproductive outcomes, of potential problem areas which should be investigated with every woman of childbearing age, and of appropriate guidance which should be offered.

• The availability of preconceptional health promotion services in all public and private programs of women's health care (i.e., private physician's offices, hospital clinics, local health departments, etc.).

• A statewide network of available and affordable referral and consultation services regarding nutritional needs, genetic issues, alcohol and drug abuse, and medical conditions for women identified to have specific risks. (In many instances, existing services, with a modification of emphasis, could serve this purpose.)

•A statewide clearinghouse through the Division of Health Services to review current scientific literature and to disseminate important findings to appropriate providers across the state (e.g., new information on pre- and periconceptional diabetes control to internists, family pratitioners and pharmacists; data on the teratogenic effects of Accutane to internists, family practitioners, dermatologists and pharmacists; the ideal periconceptional management of women with epilepsy to internists, family practitioners and neurologists, etc.).

• A statewide toll-free phone service (such as Careline or using Careline) to provide patients and health professionals with up-to-date information on the hazards associated with specific environmental and drug exposures in the pre-and periconceptional periods.

• Use of pharmacists to provide one-to-one patient education regarding potential risks of specific drugs in the periconceptional period (e.g. Accutane).

• Programs of preconceptional health promotion in the workplace.

• School-based education on the significance of the pre- and periconceptional period on reproductive outcomes.

• Continuing research on the relationship between maternal periconceptional health status and behaviors on reproductive outcomes.

• Investigation of the relationship of the male partner's preconceptional health status and habits on perinatal outcomes.

• Evaluation on the impact of preconceptional health promotion public awarness and services in North Carolina.

"Nations with fewer resources than the United States are doing a better job of assuring infant survival, concludes C. Arden Miller, professor of Maternal and Child Health, UNC School of Public Health. 'The European experience and many special projects in our country have demonstrated that the wisdom and the means are available for the United States to improve vastly its performance for the care of pregnant women and newborns,' Miller concludes. 'Assuring appropriate care for every pregnant woman is an issue that is neither medical nor financial: it is political.'"

—European Strategies to Reduce Infant Mortality
November, 1987
The Body Politic

Available resources

Preconceptional Health Appraisal (@Moos-Cefalo; UNC-CH 1984, revised 1987)

Looking Ahead pamphlets on periconceptional influence of alcohol, smoking, nutrition, and drugs and chemicals on reproductive outcomes; written for individuals with minimal reading skills (Moos, @ Department of OB/GYN; UNC-CH 1984, revised 1987).

Is There a Baby In Your Future? pamphlet on general issues of importance in the periconceptional period (Moos, @Department of OB/GYN; UNC-CH, 1988).

Is There a Baby In Your Future? health fair exhibit (available through Department of OB/GYN at UNC-CH or Family Planning Branch, North Carolina Department of Human Resources, Raleigh, N.C.).

Smart Planning . . . Healthier Babies school curriculum for grades 8-10 (@ Moos/ Kort; UNC-CH; available through Department of OB/GYN, UNC-CH or State Department of Public Instruction c/o Bob Frye).

Thinking Ahead community education program for increasing general health and habits on reproductive outcomes; includes a slide/tape program and structured activities (@ Moos/ Kort, UNC-CH, 1988; available through Department of OB/ GYN, UNC-CH).

Educational package for professionals in *Implementation of North Carolina Preconceptional Health Promotion Project* (@Moos, 1988; available through Department of OB/GYN, UNC-CH).

Babies and You—a program of education for expectant parents in occupational settings; includes some information on preconceptional health; available through local March of Dimes Birth Defects Foundation.

Preconceptional Health Promotion services available in 30 local health department family planning programs in North Carolina.

Careline—a resource clearinghouse of health referral opportunties in North Carolina; operated by DHR—Raleigh (1-800-662-7030).

Suggested Criteria for Evaluation Proposed Projects

• The target population is clearly defined as non-pregnant

• Evaluation of individual risks is broad-based, acknowledging that genetics, chemical and drug exposures, health status, nutrition, etc. may all be of significance in determining reproduc-

tive outcomes.

• Educational interventions are of appropriate cognitive level for target populations

• Provision exists for referral to more specialized resources as needed.

• Financial and geographic barriers to follow-up care (e.g.) nutrition counseling, genetics counseling, etc.) have been addressed.

• Care is taken to coordinate prenatal care with preconceptional care so that histories and tests (e.g., rubella titer) are not duplicated unnecessarily.

• A clear understanding of the purpose of preconceptional health promotion is evident (i.e. all women/couples deserve enough information to make informed decisions about their future childbearing.)

• There is no evidence that the proposed program of education/intervention will limit the choices given to patients or will attempt to coerce women/couples into decisions about their reproductive futures with which they are uncomfortable.

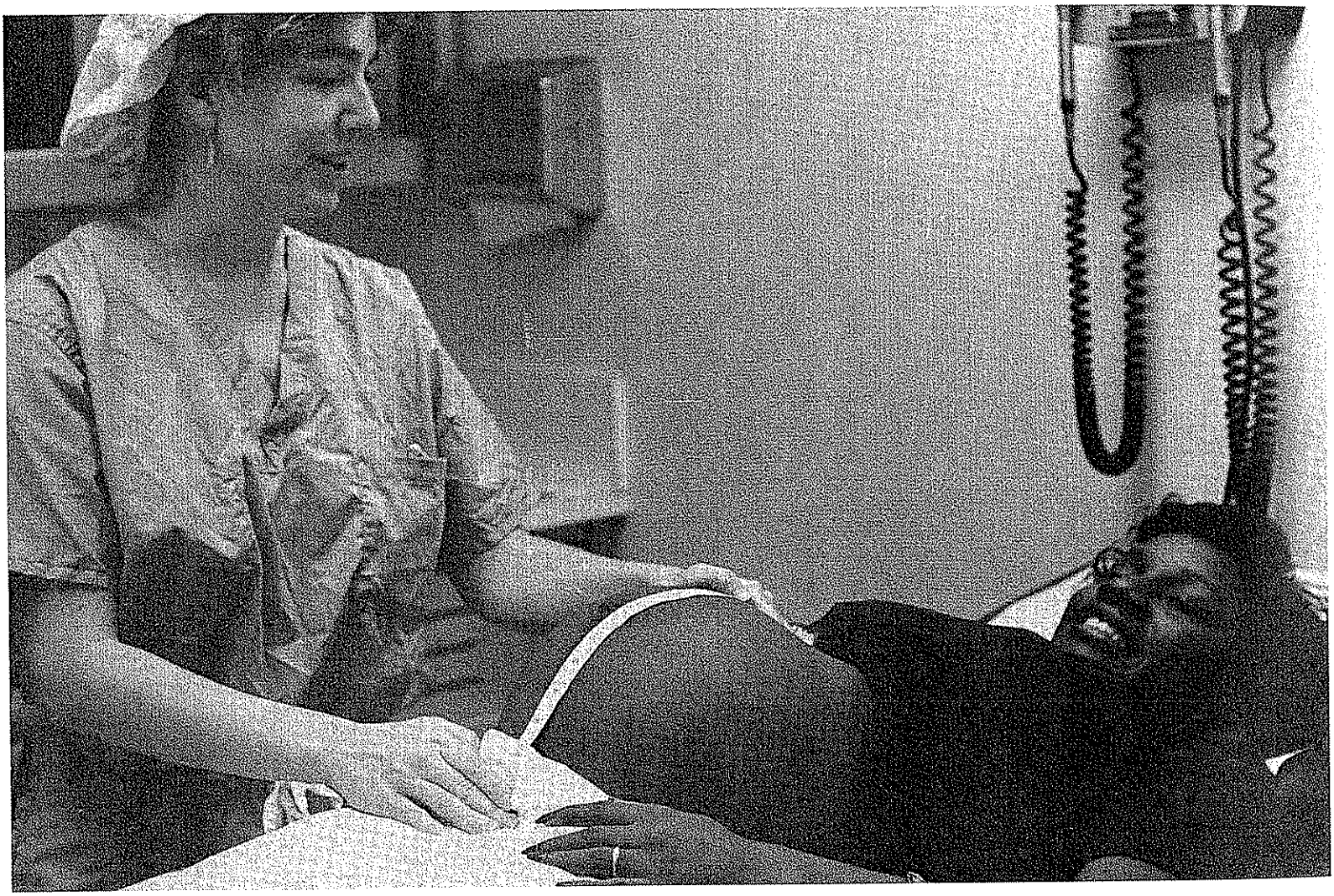
• All personnel involved in a specific project (i.e. from clerk to project director) will have a common understanding of the purposes of preconceptional health promotion.

• The proposed program builds upon or complements existing preconceptional health promotion activities in the state.

• A clear and realistic evaluation component exists.

"Later in life, children born to teenage mothers are less likely to adapt well to school, are more likely to score lower on I.Q. tests, and are at increased risk for repeating at least one grade in school Additionally, there is some evidence that children born to young mothers are at increased risk of neglect, mental retardation, congenital defects, and other handicapping conditions such as epilepsy."

—Adolescents and Young Adults



Building Community Support for Mothers and Infants

by Alan Cross, M.D.

Maternal and Infant Health Committees should be established in all 100 counties to coordinate and develop perinatal services at the local level

Introduction: Research in the last 20 years has begun to clarify the benefits of a variety of prenatal services. In every county in North Carolina many of these valuable services are provided to the majority of pregnant women in need. However, no county provides all the appropriate services to every woman in need. The resources available and the gaps in service provision differ from county to county. For many of these services the county is the political and social unit through which these services are organized and administered. Therefore decisions regarding personnel, facilities and services provided are made by agencies or political leaders at the county level. Improvements in perinatal services will therefore require the support of local leaders.

Background data: Thirteen county health departments do not provide prenatal clinic services for indigent patients with physician coverage. For many of the 87 that do, the facilities and personnel are inadequate. In 27 counties the average waiting period for an appointment is three weeks or more. Only 29 counties provide preconceptional health programs. Most counties do not have special programs for pregnant teenagers. In the private sector as well as the public health departments there is a considerable variability in the quality of prenatal services as well as the availability of special services like prematurity prevention. Because of the different resources, facilities and personnel, as well as differing sociodemographics, each county has its unique strengths and weaknesses in the provision of perinatal health care services. For even the best of the counties, considerable improvements could be made. However, the prescription for those changes will be different for every county.

Recommendations at the local level: Each county should establish a maternal and infant health committee made up of leaders from the community. These should include health professionals, educators, business, political and religious leaders as well as perinatal health care consumers. This broadly based committee should assess the adequacy, completeness and coordination of the perinatal health services provided in the county. Gaps or inade-

quacies in those services should be identified and prioritized. New programs to address the inadequacies and fill the gaps should be proposed by the committee and advocated for through the normal political processes. Technical assistance should be provided for these committees from experts at the regional and state level as well as through the university and other academic communities.

Recommendations at the state level: Perinatal health experts from state government, university and other academic settings should form an expert panel to provide technical assistance to the county based perinatal health committees. A coordinator should be hired for each of the regional offices in the N.C. Department of Human Resources to provide assistance to the counties in that region in establishing their perinatal health committees and assisting them in carrying out their mandate and coordinating the use of technical assistance.

Criteria for success: The success of this endeavor would be measured by the number of committees that are established, the breadth of their membership, the frequency of their meetings, the completeness of their prioritized list of problems and their ultimate ability to implement programs aimed at solving those problems. Careful coordination between the needs of these committees and the resources of the technical assistance panel will be critical to their success.

A broad multifaceted public education program should be established to improve public awareness of the important aspects of perinatal health.

Introduction: The dramatic advances in our understanding of important issues in perinatal health have not to date been adequately shared with the public. The solutions to the major medical and social problems that complicate pregnancy require an active participation on the part of the mother-to-be as well as social and economic support from the community. Significant changes in health behavior related to pregnancy will only occur with an informed and motivated clientelle. Significant improvements in the resources allocated to each community to support perinatal health services will likewise only come from an informed and concerned public. Public education is therefore a critical component of improving perinatal health.

Background data: Preconceptional health promotion, now offered in 29 health departments provides an opportunity for women to improve their health before conception has even occurred. The

first two months of pregnancy are the most critical in the development of the baby, yet during much of this time, many women do not even know that they are pregnant. Attention to nutrition, alcohol consumption, drug use, and smoking can all influence the baby's early development. Early use of prenatal care services is likewise critical to a healthy pregnancy. Learning to identify the often subtle early signs of problems in pregnancy is essential for the mother to prevent those problems from progressing. In the third trimester, understanding the importance of nutrition, tobacco use, physical and mental stress as well as the early signs of pregnancy complications is also important. Being well prepared for the events of delivery has also been shown to have a dramatic influence on the complications of the delivery process itself. Several studies have also shown that teaching parenting skills to young families can have demonstrable benefits in the health and development of the young children in those families. Education of the young family in the appropriate use of medical resources as well as counseling on nutrition, behavior and development and simple strategies for coping with stress have all been shown to improve the family's functioning and the baby's health.

In many of the communities across the state that pride themselves on their improved standard of living, there are in fact serious problems in perinatal health. Statistics are available on low birthweight rate, infant mortality and inadequacy of prenatal care services. Even more relevant are the numerous anecdotes from any community of problems that occurred that could have been prevented. The public, however, is largely unaware of this problem as it has not received a high priority in the recent past. Community based education on these important health and social issues is an important first step in the process of advocating for improvements in the future.

Recommendations at the local level: Each county should implement a variety of perinatal health education programs for all segments of the community. A series of articles in the local newspaper or public service announcements on a local radio station might be a good place to start. The health curriculum in the public schools should include perinatal health information, particularly the importance of avoiding pregnancy in the teenage years. Major employers in the community should sponsor educational campaigns among their employees. Special educational efforts should be targeted at community leaders to insure that they understand the major problems and potential solutions to the perinatal health of their community.

Recommendations at the state level: To facilitate this multifaceted public education effort, materials need to be developed that

can be used at a local level. Basic fact sheets that can serve as the background for newspaper articles or radio spots need to be developed. Curricular materials for school based health education likewise need to be developed. Innovative approaches to perinatal health education in the worksite need to be developed. Teachers, health department nurses, occupational health personnel and others need to be trained to more effectively deliver these educational interventions. Curricular materials development, up-to-date expert information and training activities should all be coordinated at a state and/or regional level to insure the greatest accuracy and maximum efficiency of this effort. A small committee of perinatal health educators should be convened to serve as the core of this effort at a state level.

Criteria for success: The type and quality of material developed by the central coordinating committee will be an important measure of the success of this effort. The number and quality of mass media programs will likewise be an important measure of success. At the local level the adoption of curricular and other materials in the schools, work settings and other places will also serve as a measure of success.

Programs should be developed that draw on the resources of community support networks to reach out and provide social support and services for mothers-to-be in the community.

Introduction: A growing body of research suggests that stress and social isolation can have a profound negative effect on pregnancy and child health. In the past, these problems may have been partially prevented by supportive, multigenerational families and closely knit community networks such as the church. Social and demographic changes of the last few decades have disrupted the family support network, increased the divorce and separation rate, increased some of the stresses of poverty and at times created dependence on a bureaucratic welfare system which increases rather than reduces the stresses of poverty. Medical interventions delivered by health care providers will not adequately address or reduce these problems.

Background data: In the last decade a number of programs have been developed to provide community or home based assistance to pregnant women and young families. These programs have used home visitors and individuals who worked within community groups such as churches. In some programs these workers have been health professionals but others have drawn upon lay persons from the community. All have received training in the particular forms of assistance to be provided. Some have worked

as volunteers while others have been paid for their efforts. The assistance provided by these workers has varied from program to program with some emphasizing very specific educational goals while others provide a very individualized form of social support. The rigor of evaluation of the efficacy of these programs in improving health has been varied. However, these programs that were most scientific in their evaluation have all demonstrated some benefits to the mothers and children. All of the programs have provided anecdotal evidence of their benefit. In analyzing the results of these multiple projects, it is difficult to determine which component of the varied interventions had greatest impact on health outcomes. There is therefore considerable additional research needed to further understand how to efficiently utilize home and community based resources to support mothers-to-be and young families in the community.

Every community has a wealth of informal resources embedded in the network of human relationships that define families, friends and social groups. The relationships within families are not always supportive and when they break down, an individual's larger network of friends and acquaintances becomes increasingly important. Individual friendships, neighborhood groups, church groups and other supportive people within the community or worksite make up this social support network. Having such a network is important to all people but particularly to those who may be under stress or have limited resources. Pregnancy and early child rearing, particularly among the poor, represents a time of frequent stress.

Recommendations at the local level: Every community should seek to strengthen its informal support networks and focus their attention on the problem of pregnant women and young children. This might be accomplished through an individual church, a group of churches or denominations. Through such a church group, individuals might be identified to be trained and work as volunteers to assist the pregnant women and young mothers of their congregation. A similar program might be developed by large employers, pairing such trained volunteers with pregnant women or young mothers in the work force. Even county based agencies or health care settings might serve as the focal point for such community outreach services. The outreach worker, be they paid or volunteer, can offer a range of assistance from educated advice on health problems to very informal, individualized friendship and support. Chambers of Commerce, civic clubs and other social groups might also serve to promote and develop these projects.

Recommendations at the state level: Efforts should be made to

engage the state level administrative units of local organizations in this process. For example, the state level administrative offices of different religious denominations might take on this task and work with their local churches in implementing programs across the state. Similarly, large industrial groups with multiple worksite facilities across the state could play a similar role with their worksites. To facilitate these efforts a panel of experts with prior experience in these types of programs might be convened at a state level to offer assistance.

Employers should be encouraged to provide pregnant employees with 1) adequate insurance for maternal and infant care services; 2) adequate leave to receive needed perinatal services; 3) worksite education programs to improve perinatal health and 4) a reduction in worksite hazards to maternal and fetal health.

Introduction: North Carolina has more women in the work force than nearly any other state in the nation. The majority of these women are working in blue collar jobs, in mills, furniture plants and agricultural business. Employment not only serves as a source of needed family income but also influences perinatal health in a variety of ways. The adequacy of health insurance coverage provided by the employer will clearly influence the mother's ability to take full advantage of prenatal health care and delivery services. Policies regarding sick leave, maternity leave and employment during pregnancy will all influence the mother's ability to utilize perinatal services. Many worksites present particular hazards to pregnant women that may adversely affect the health of both the mother and baby. Because of the profound effects and interactions between employment, health care and health outcomes, the employment situation can serve as a cause of ill health, a barrier to good health or in a more positive vein, a potential resource for improved health.

"The state of Virginia has determined that prenatal care could save $59.8 million per year on care for the mentally retarded."
--American Medical News
April 22-29, 1988

Background data: Many of the industries in North Carolina have taken advantage of a readily available non-unionized pool of workers many of whom are women. The rural setting of many of these industries combined with the lack of pressure from organized labor or government regulation has resulted in a great variability in the nature of benefits provided to pregnant women and young mothers in the work force. For example, the health insurance packages for many employees provide little or no prenatal care coverage. To avoid the rising cost of health insurance, many employers are increasingly turning to part-time labor for which no health benefits are provided. The added risks of pregnant women in the work force have lead some employers to

terminate employment for these women, thereby eliminating insurance benefits as well as the important income provided by the job. Where maternity leaves exist, they vary greatly in length or the guarantee of comparable employment upon return. There is at this time inadequate understanding of the real and potential hazards to pregnancy in different occupational settings.

Employers have the opportunity to use the benefits of employment and the work site setting to promote good perinatal health. Comprehensive insurance coverage with inducements to the early and complete utilization of prenatal care have been shown to reduce the costs of health care. In one study, every dollar spent on additional prenatal care saved $2.37 by preventing the expensive complications of bad pregnancy outcomes. Therefore, those employers, particularly those who are self-insured, will actually save considerable money by improving their health insurance coverage of prenatal care. As worksite hazards are better understood, employers would likewise benefit by reducing pregnant women's exposure to those hazards and thereby avoiding the health and social costs of the damage that might be done. Some industrial settings have developed creative ways of relocating pregnant women to other work settings to avoid such hazards. Worksite education programs to improve perinatal health may also save the employer money. The benefits of a comprehensive, work-site perinatal health program are not just humanitarian, but can also be measured in the bottom line reduction in costs to the industry. The humanitarian benefits and reduced costs to the larger society extend above and beyond the cost savings to the employer.

Recommendations at the local level: Major industrial groups in North Carolina should be encouraged to consider the benefits of offering a comprehensive perinatal health program through the worksite. This program should include insurance coverage for comprehensive prenatal health care and delivery services. Industrial policies should also provide incentives for women to take advantage of these services by receiving early and complete prenatal care. Generous leave policies for pregnancy related complications as well as normal maternity leave should also be a part of this package. Each industry should be encouraged to explore potential work site related perinatal health hazards and develop policies for diminishing those hazards to the pregnant work force. Additionally, health education efforts aimed at improving perinatal health should be established in worksite settings and made available to all women who are pregnant or contemplating pregnancy. The overall financial benefits of these programs to the employer should be carefully delineated and used as the prime rationale for establishing programs.

Recommendations at the state level: A small group of experts on perinatal health should be convened to explore the issues that relate employment to perinatal health. The research and other data that support the benefits of a comprehensive work site perinatal health program should be gathered by this panel. This information can then be used to motivate different employers. One or two major North Carolina industries should be encouraged to take the lead in establishing a comprehensive perinatal health program (such as the program at Burlington Industries.) Experience gathered in this effort as well as the benefits accrued can then be used to motivate other employers to follow suit. Ultimately, legislative action might be used to require employers to provide such perinatal programs in the future.

Programs to improve maternal and infant nutrition must provide those services to all in need.

Introduction: The benefits of good nutrition to pregnant women and young children are well established. Adequate weight gain during pregnancy has been shown to improve infant health. Iron, certain vitamins and numerous other nutrients have been shown to benefit both baby and mother. Now research holds even greater promise. For example, there is growing evidence that folic acid supplementation may reduce the likelihood of neural tube defects.

Background data: Although most women in North Carolina are not malnourished, there is a segment of the population whose nutrition is inadequate or borderline and not ideal for a healthy pregnancy. We do not know the number of such women who might benefit by improved nutrition during pregnancy. The special supplemental food program for women, infants and children (WIC) provides nutrition education and supplemental foods to 110,000 individuals each month. These include 15,000 pregnant women, 1,500 breast feeding women, 8,000 postpartum women, 33,000 infants and 52,500 children. This program is administered at the local level in all 100 counties. Pregnant, breast feeding or postpartum women and infants or children up to age five are eligible if their income is below 185 percent of the federal povery level and a nutritional risk problem can be identified. Extensive evaluations of the benefits of the WIC program have shown that it reduced late fetal deaths among pregnant women who participate as well as causing a longer gestation period. In a Harvard study it was shown that for each dollar spent in prenatal WIC, there were $3.00 saved in medical costs. There was also a decrease in anemia among participants.

In many communities the local adminstration of this

program has created personal and administrative barriers that discourage eligible families from participating. We do not know how many eligible individuals are not participating nor do we know how many others are nutritionally at risk and are not receiving nutrition education or assistance across the state.

Recommendations at the local level: The local administration of the WIC program in each county should be carefully reviewed to identify barriers that discourage eligible participants from being enrolled and receiving the benefits of this valuable program. These barriers should be assessed and programs developed to reduce them. Additionally, nutrition education programs should be promoted as a part of comprehensive community education in perinatal health.

Recommendations at the state level: The Nutrition and Dietary Services Branch of the Maternal and Child Care Section of the Division of Health Services should organize the review of WIC administration at the local level and assist each county in developing new, more effective means for enrolling eligible participants. In addition to assisting local program administration, efforts should be made at the state level to find additional funds to more adequately serve the nutritional needs of pregnant women and young children across the state.

Availability Of And Access To Care

by Richard R. Nugent, M.D., M.P.H.

Publicly funded and medically covered prenatal clinics should be made available in all 100 counties.

Introduction: Not every county is able to offer publicy funded prenatal clinic services at its health department, hospital or other facility. Indigent pregnant women residing in these counties must therefore travel extra distances to obtain services.

Background data: As of September, 1988, 87 counties were conducting weekly prenatal clinics that were publicly subsidized. Among the 13 counties that did not, only three counties had 1986 statistics for quantity of prenatal care and infant mortality at or below the state rate. The remainder of the counties have quantity of prenatal care or infant mortality statistics nearly equal to or worse than the state. These counties have sizeable poor populations which justify conducting clinics in their health departments. The main reason they do not is lack of available medical resources. Physicians doing obstetrics either do not practice in the county, or are unwilling to provide services in public clinics. Reasons given include fear of suits, or inadequate reimbursement, or both. A survey of health directors conducted in February, 1988 revealed that (1) 22 counties experienced physician withdrawal from prenatal clinics in the last year, and (2) 43 counties considered their lack of physicians to be an important barrier to prenatal care for low income women.

Constraints on the availability of nursing staff also exist. The nursing shortage is impacting in public health, especially as hospitals increase nursing salaries in the private sector.

Since January, 1988, the counties of Ashe, Alleghany, Avery and Craven have lost prenatal clinics because of withdrawal of their physician support. In addition, physicians have withdrawn from high risk maternity services in Elizabeth City and New Bern. These special clinics were serving pregnant women with medical complications. Nine counties are affected as a result of their closure because they each provided a regionalized service.

Local Action Recommendations: Each county without a public prenatal clinic should establish one. Local funds should be committed and state/federal funds sought to create these clinics in health departments of moderate to larger sized counties. For those with very small numbers of indigent pregnant women and no delivery service it may be desirable to bring in prenatal care by a

mobile clinic based out of a larger community with adequate medical resources in obstetrics. Use of county funds to address the issue of sudden increases in medical malpractice insurance costs should be favorably considered. Recruitment of nurse midwives should be seriously considered because they give high quality obstetrical care to normal pregnant women, and their insurance premiums, although increasing, are much lower than those of obstetricians.

Increasing fiscal support for public health nurses, for salary increases is also necessary.

State Action Recommendations: The N.C. General Assembly should appropriate funds and create a program to provide an incentive for physicians to practice obstetrics and serve indigent women in or from all 100 counties of the state. Currently family physicians are saying that public funding for a portion of their malpractice premium related to obstetrics would be a significant incentive to practice in rural areas and serve indigent women. Since indigent women exist in all counties, sufficient funds should be appropriated to encourage prenatal care provision in them all. A pilot program is now being initiated, but it suffers seriously from funding so minimal that only about 20 counties can participate. That creates a disincentive for the rest.

The N.C. General Assembly should fund a grant program to place teams of obstetricians and certified nurse midwives in communities with an existing obstetrical resource which needs supplementation, and in addition, is located in a multi-county area (5 to 10 counties) where surrounding counties have no prenatal services. These teams could provide midwives and physicians to rotate out to the other underserved counties for prenatal care, but would also be available in the base community to perform deliveries. These teams would help to maintain wider distribution of prenatal services, in the face of forced consolidation of delivery services due to loss of providers.

Existing publicly funded and medically covered prenatal clinics in which pregnant women experience long waiting periods for first prenatal visits should be made more accessible.

Introduction: Public prenatal clinics have experienced unprecedented increases in patient attendance in recent years. This is due to an increase in the number of uninsured pregnant women, to a decrease in available obstetric physician manpower, and to the increasing cost of obstetrical care. The increases in attendance at prenatal clinics have not been accompanied by proportionate

increases in funding for clinic staff and attending physicians.

Background Data: In FY 1985, an unduplicated count of pregnant women attending prenatal clinics in health departments was 21,919. By FY 1988 that number had grown to 29,358, a 34 percent increase. During this period, there were modest increases in federal and state appropriations but few increases, indeed some cutbacks in local appropriations. The result in some of our moderately urban counties has been long waiting periods for a first visit. In February of 1988, a survey of health directors revealed that 27 counties had waiting periods of 3 weeks or greater, up from 18 counties in 1986.

Additionally, the same survey revealed that 46 counties considered their lack of available clinic space to be an important barrier to the provision of prenatal care in their health departments.

Local Action Recommendations: Where insufficient clinic capacity to see patients on a timely basis is due to physician shortage, incentives should be created through medical malpractice insurance cost relief. Local boards of health in affected counties should pursue requests of county commissioners to cover these costs, as suggested above.

Because nursing shortages and increasing hospital nursing salaries are beginning to attract nurses away from health departments, there is a serious need to increase public health nurse salaries. Local boards of health in counties so affected should seriously consider these changes and their costs. Where insufficient clinic space is available, facility development in the health departments or hospital should be pursued. If other facilities must be used, they should be located near other major local and social service agencies.

State Action Recommendations: Where limited physician and nursing time is available, the state should implement recommendations in the first above and should revise recommended salary scales for nurses.

Publicly funded prenatal clinics should make their services more "client-oriented," that is, design services to meet individual patient needs and make services attractive, worthwhile, available and accessible.

Introduction: Much has been learned about the application of marketing techniques to public services in recent years. Attempts to make services more "client oriented" begin with carefully determining prospective clients' desires and perceptions of the

service to be offered. Survey methods have been popular in the past, and recently a new method called focus groups has been developed. In addition with the Medicaid program expansion to provide maternity care coordination, direct reporting by these caregivers can give fresh insight.

These insights are especially necessary now because several statistical indicators of quantity of prenatal care have been worsening in North Carolina.

Background Data: In 1985, the number and percentage of births in North Carolina with no prenatal care as reported on the birth certificate were 1,078 and 1.2 percent respectively. by 1987, those figures had increased to 1,412 and 1.5 percent.

A survey of women giving birth in 1986 who had no prenatal care, which attempted to determine why they did not receive care, was conducted in 1987. When asked by public health nurse interviewers why no prenatal care was received, the responses were of interest. Of the 75 percent that would have preferred more care, 23 percent said that "it costs too much." Of the same group, 16.5 percent said they have "no way to get there." but fully 35.3 gave no particular reason that could be clearly described. The survey asked many other questions determining other factors related to receiving care. Women who had a pregnancy test by their doctor or the health department were more likely to receive care than those who did not have this test, when the comparison was controlled for a variety of demographic and geographic variables. Women who were on WIC were much more likely to have prenatal care in the controlled comparison. Women that were older, or of higher parity were less likely to have prenatal care in the controlled comparison. These differences were statistically significant in this study. The responses to the "why" question suggest that we were not able to assess very much of the patient's true reasoning in not seeking care. Perhaps other methodologies may be more effective.

In recent years, marketing efforts in private industry have developed a methodology called "focus groups." In this method, potential clients or buyers are gathered in a small group and the product or service is discussed by them with a "neutral" person as a facilitator for the discussion. It is felt that the small group discussion is a supportive environment for expression of perceptions and reactions which may be guarded in other response situations.

Local action recommendations: Counties should develop new approaches to determine the needs and desires of women seeking or deciding whether to seek prenatal care, including the development of "focus groups." Counties should thoroughly implement

a system of maternity care coordinators as a way to determine true barriers encountered by patients in receiving prenatal services. Counties should extend care coordination services to the preconceptual woman in need and to the infant in need up to one year of age.

State action recommendation: North Carolina should develop more capability in its Division of Health Services Regional Offices to provide consultation and technical assistance to local communities in making services more "client oriented." These capabilities should include expertise in focus group efforts and in other methods to determine client desires and perceptions. Further technical assistance to support maternity care coordination efforts in localities should be provided as well as assistance in modifying services in response to findings.

"It's not that we don't know how to combat this problem, its that we don't *do* some things we know will help. Medical experts say proper nutrition during a mother's pregnancy and during a child's first year of life can greatly reduce the risks of infant death. Yet look at North Carolina: an alarming 57 prcent of financially eligible pregnant women, infants and children in this state do not get nutrition supplements through the federal Women, Infants and Children Program (WIC). And 40 states and the District of Columbia provide higher cash payments through Aid To Families With Dependent Children than does North Carolina."

—Charlotte Observer, August 9, 1988

Financial Access To Care

By Richard Nugent M.D., M.P.H.

Expand financial access to care

Introduction: The National Commission to Prevent Infant Mortality has stated as its top recommendations that universal access and universal financial access to care for pregnant women and infants be achieved, and has made many recommendations towards this end to reduce infant mortality. The basic issue in creating universal access to these services is to eliminate or greatly reduce the number of uninsured/underinsured pregnant women and infants. It is believed that when financial access for all pregnant women is achieved, the largest barriers to prenatal care will be overcome.

Background data: Medicaid currently covers women with incomes at or below 100 percent of the poverty level. At this level of coverage, it is estimated that there remain 9,700 uninsured or underinsured pregnant women, and 10,100 infants who would qualify if the income eligibility were increased to 185 percent of poverty. While the number of uninsured/underinsured is difficult to estimate, it is believed that this program expansion would significantly reduce the number of North Carolinians that lack financial access to care.

State Action Recommendations

I. The Medicaid Program should receive additional state funding to accomplish the following:

A. Increase financial eligibility to 185 percent of poverty for pregnant women and infants up to one year of age.

B. Increase the State's share of cost for eligibility determination in exchange for onsight eligibility determination at clinic locations.

C. Increase the State's share in covering transportation costs.

D. Medicaid fees should be increased to more closely approximate the cost of providing care. Fees should be reviewed annually to assure that they increase with increasing costs of care.

E. Develop a "revolving fund" which will be used to support new care coordinator positions until they are self-sustaining through Medicaid earnings.

F. Extend funding of care coordination services to eligible "at risk" infants up to one year of age; and to eligible women requiring special preconceptional health services.

G. Extend Medicaid coverage for eligible pregnant women to include intensive nutrition counseling services not covered by WIC.

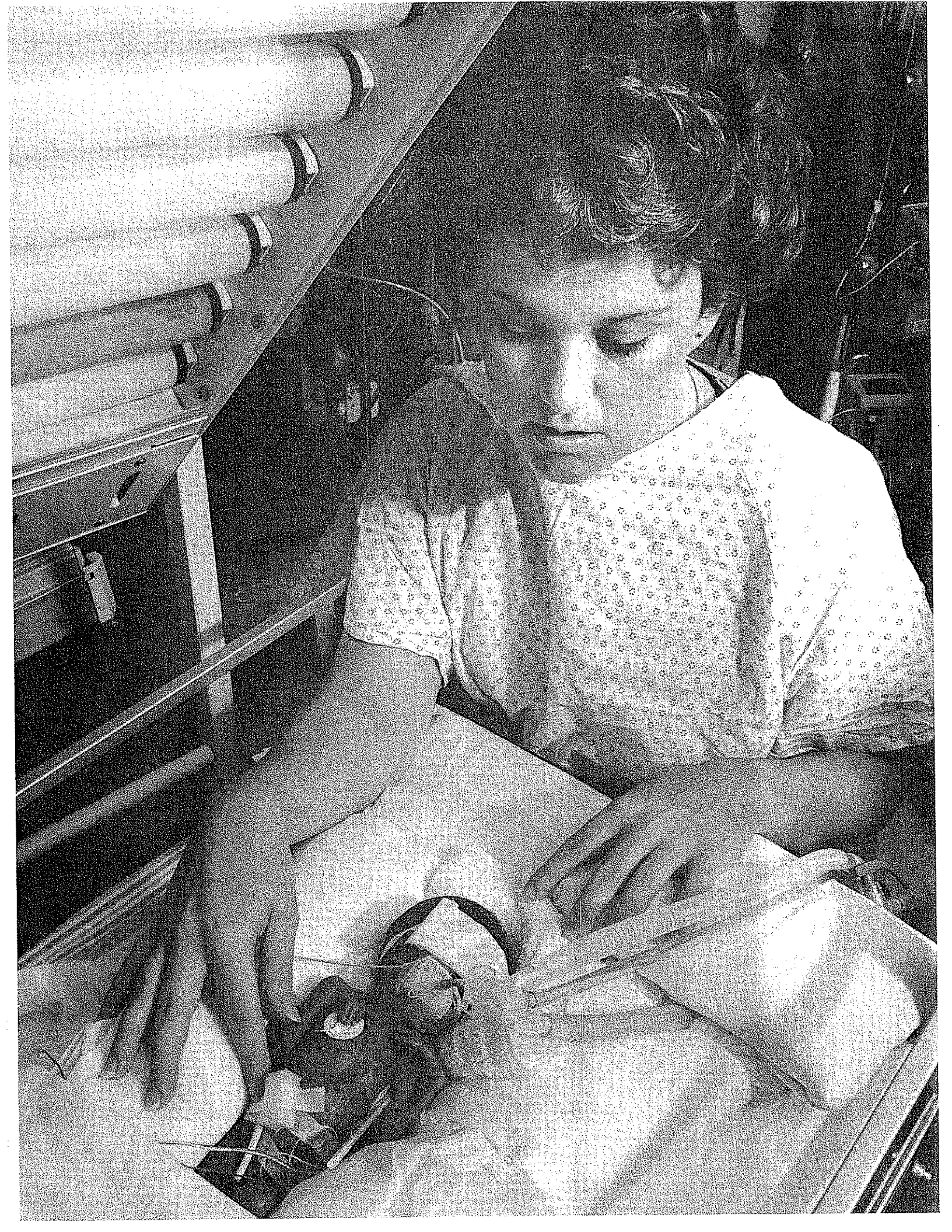
II. Maintain other sources of state support for reimbursement

Maintain the Health Department Maternity Fund as a source of reimbursement for medications, special tests, and consultations for low-income pregnant women and infants in health department services for whom Medicaid is sought but not received. For example, unemancipated adolescents whose family income is above Medicaid levels, but for whom no family financial support for adolescent health care is available.

III. Address the problem of non-competitive nursing salaries in health departments by making state funds available to local health departments to cover the difference between local salary scales and the state salary scale for public health nurses and physician extenders.

IV. Address the special problems of counties that are underserved for obstetrics due to physician withdrawal because of medical malpractice insurance premium cost. This can be done by continuing and extending the Rural Obstetrical Care Incentive Fund by increasing the maximum amount per physician from $6,500 to $8,000 and increasing the number of counties covered under the program to insure physician coverage for prenatal care.

V. Increase private insurance coverage for pregnant women and infants by requiring North Carolina insurers to cover the insured's dependents (spouse and daughters) for obstetrical care without waiting periods or co-payments. Pregnancy should be eliminated as a pre-existing condition in insurance coverage.



Defining and Providing Adequate Prenatal Care

By David Rainey, M.D.

Women in All 100 North Carolina Counties Should Have Access to the Highest Standard of Prenatal Care

Introduction: The North Carolina Institute of Medicine's task force to reduce infant mortality concluded that the greatest single factor influencing infant mortality was low birth weight, and that prenatal care was in turn the greatest impacter on low birth weight prevention. Not all 100 counties provide prenatal care, and the quality and distribution of services varies from county to county for various reasons.

Background: Standards for the content of prenatal care are set and updated regularly by the American College of Obstetrics and Gynecology. These standards have also been published jointly with the American Academy of Pediatrics in Guidelines for Perinatal Health. Psychosocial aspects have been emphasized by the American Public Health Association in its Guidelines for Ambulatory Maternal Health. In summary, the first prenatal visit is recommended before 12 weeks of gestation. Every woman should be systematically assessed for risk during the initial visit, using medical, obstetrical, nutritional, behavioral, environmental and psychosocial risk assessment methods. Accurate pregnancy dating is crucial to good prenatal care. The laboratory screening tests as recommended by the American College of Obstetrics and Gynecology should be carried out at specified intervals. Subsequent visits should then depend on the individual woman's needs with each visit having a defined purpose. The needs that determine the frequency of contact should again be not only medical but educational, behavioral and psychosocial. This care should be delivered in an atmosphere of caring where providers pay close attention to the patient's feelings.

Such standard care has been shown to be beneficial, with prenatal care resulting in better outcomes, especially in the case of high risk women, according to the committee to study the prevention of low birth weight of the Institute of Medicine.

In North Carolina as of September, 1988, 87 counties out of 100 conducted a weekly maternity clinics for indigent women, that is attended by either a physician or a physician extender with back up. High risk maternity clinics with board certified obstetricians are located regionally in 21 sites throughout the state. All of these services are struggling with the impact of the large increases in medical malpractice insurance and with shortages of physicians and nurses in obstetrics. The clinics are overloaded,

the average waiting time is over three weeks in 27 counties, and 11 counties have no medically covered weekly prenatal clinic.

Some information is available from the N.C. Department of Human Resources concerning the quality of prenatal care in North Carolina. A county listing of the Kessner index which is a measure of prenatal care based on the number of prenatal visits in relation to the duration of prenatal care and interval to the first visit, shows the percent of women receiving inadequate prenatal care by this index in each county. There is a wide variation between counties, and particularly between white and nonwhite women. By the Kessner index, a total of 6.4 percent of North Carolina women received inadequate prenatal care in 1987, where 4.0 percent of white women and 11.6 percent of nonwhite women received inadequate prenatal care. In 11 counties, over 20 percent of nonwhite women received inadequate prenatal care.

The most significant cause of loss of prenatal care clinics is physician withdrawal due to malpractice concerns. The most significant cause of inadequate capacity of existing clinics are nursing shortage, inadequate funding for clinic staff and lack of physician backup.

"The United States certainly knows what to do to reduce infant deaths. The question is whether the nation will do it."

—

Raleigh News and Observer, August 19, 1988

Recommendations: Physicians must be recruited and encouraged to remain in areas that are underserved. Projects to increase obstetrician participation in Medicaid should continue and be encouraged. Recent innovations in this area are to be congratulated and improved upon. Reimbursement for Medicaid services should be prompt.

Programs such as the Division of Facility Services of the Health Resources Development Section's Rural Health Program, which give capital and operational funding and architectural and general technical assistance to community based practices in rural areas, could be given additional funding.

If a major reason for lack of prenatal care and thus an increase in infant mortality, is becoming the shortage of physicians, i.e. obstetricians, due to the fear of malpractice suits, then there is an additional, powerful reason to initiate change in the present litigious climate. Powerful arguments should be brought to bear on the legislature to alter the present situation in some positive way.

Programs could be initiated that are designed to recruit local nurses for public health work and particularly sponsor eduation for nurse practitioners or clinical midwives, who would then be encouraged to work in needy areas, especially if they are recruited from the rural areas that need the help.

Criteria for success: The approximation to the highest standard of prenatal care achieved in North Carolina would be an indication

of the success of the above proposals. This would involve surveys to ascertain what type of prenatal care and how much prenatal care is being offered over the state. This is further discussed in proposal number 3.

2. The Expected Standard of Prenatal Care Should Be Made Known To All North Carolina Women By A Broad Educational Program

Introduction: The standard of prenatal care as outlined and expected by the American College of Obstetrics and Gynecology et. al. is not understood nor appreciated by all North Carolina women, especially young women, those foreign born with poor understanding of English, or by those with little formal education. Many important causes of low birth weight infants and thus increased infant mortality and morbidity, result from ignorance of the necessity for the timely commencement and continuation of prenatal care.

Background: The first few months of pregnancy are critical in the development of the baby, yet many women especially young women, do not seek health care until well after the recommended 12th week of gestation. The reasons are legion and well documented, ranging from ignorance or denial, and fear to problems associated with finances and transportation. It is likely that when women delay past the recommended 12th week to medically confirm their pregnancy, little attention has been given during those 12 or more weeks to influences that affect the baby, i.e. attention to nutritional, medical or behavioral issues. Ideally, after the initial visit, the women can be enrolled in appropriate prenatal care, but the damage may have already been done. Community based information on the expected standards of prenatal care for all women in North Carolina is an important step in preventing low birth weight infants. All women should understand that good, prompt prenatal care as outlined above, delivered in an atmosphere of understanding, caring and support is useful and important to them and not just to favored others.

Effective public education programs can be illustrated by the decrease in smoking in the United States after the Surgeon General initiated intense public health warnings on the dangers of smoking in 1964. Also, a widespread public information program effected childhood immunizations in the 1970's. Both of these initiatives enjoyed wide social, political and scientific support, as must the program to prevent low birth weight babies.

Recommendations: Each county should implement various educational programs. Firstly, as stated above, the need for

prenatal are must be made known as well as the dismal record of North Carolina in infant mortality compared to the United States as a whole. Health curricula in the public schools should include information on the need for prompt initiation and continuation of prenatal care for pregnant women. Ideally, avoidance of teenage pregnancies will be stressed. Mass media techniques such as radio, newspaper or even TV spots should reinforce the message. The use of local "role models" from the community could help provide teaching for younger women. These role models could be interviewed in newspapers or at school. Well written booklets or pamphlets on the expected standards of prenatal care should be distributed at adolescent clinics or from school health classes. Messages should target specific groups. In addition to the emphasis on younger women as noted, employers could help in the educational process, targeting more mature women on their work forces.

The materials used by the counties should be coordinated at the state level, with state supported health nurses or teachers aiding in the delivery of the message, hopefully in conjunction with the message of family planning and avoidance of teenage pregnancy. The evaluation, revision and continuity of the public health message should be coordinated at the state level.

Criteria for Success: The type and quality of the programs initiated at the state and local levels will be important measures of success. The awareness of the local population to the problem and potential solutions could be ascertained by various survey means before and after implementation of the program.

The Quality and Quantity of Prenatal Care In North Carolina Should Be Carefully Examined in Several Counties

Introduction: To accurately and effectively recommend the highest standard of prenatal care for women in all 100 counties, it is important that information concerning the quality and quantity of prenatal care be known in those counties. Some information is already known. The Task Force to Reduce Infant Mortality and Infant Morbidity in North Carolina has shown that the percentage of women receiving inadequate prenatal care as estimated by the Kessner index, decreased from 6.5 percent in 1980 to 5.7 percent in 1984, but rose to 5.9 percent in 1985 and 6.4 percent in 1987. Those receiving no prenatal care has risen from 0.90 percent in 1980 to 1.51 percent in 1987. To assess areas of need, a county by county evaluation of prenatal care available is necessary.

Background: As stated above, the standards of prenatal care have been outlined by the American College of Obstetricians, Gyne-

cologists et. al. Following the initial assessment before 12 weeks gestation, it is recommended that visits be made every four weeks through 28 weeks of gestation, then every two weeks through 36 weeks, then weekly until delivery, to detect any signs of symptoms of developing problems of pregnancy. In addition to initial laboratory screening, subsequent lab tests are performed routinely in the third trimester. Advice regarding a variety of aspects of maternal and infant health is offered at each visit. It is recognized from studies of the efficacy of prenatal care, that some prenatal care is better than no care, that an adequate number of visits is associated with better outcomes and that higher risk women benefit more from prenatal care. While the timing and frequency of prenatal care can be monitored at a county or state level, there is little available information about content of care, or how closely various health care providers comply with the standards of the American College of Gynecologists et. al The Kessner index as noted above, gives a valuable estimate of prenatal care but is based mainly on the number of visits. Compliance varies across the components of prenatal care, and by provider site. The Committee to Study the Prevention of Low Birth Weight of the Institute of Medicine concluded that research on the content of prenatal care should be a high funding priority. They recommended that research be concerned with the description and analysis of the current composition of prenatal care. They suggested that surveys provide information from the provider site and also from the recipients to better define and improve the content of prenatal care.

Recommendations: Surveys should be initiated at the county level coordinated at the state level into the content of prenatal care from the recipient's point of view and from the providers, i.e. private office based care, health departments, hospital outpatient departments, nurse midwifery services and other public programs. The degree of compliance to the standards desired for prenatal care can then be compared for the various regions in North Carolina, to facilitate understanding as to funding priorities in the most needy areas.

Careful attention should be paid to the number of visits received by low and high risk women, attending the various health centers. Additional information in this area could lead to further exploration into alternative visit schedules, i.e. scheduling fewer visits for low risk women, while scheduling more visits for those with specific needs, ie. nutritional or psychosocial.

Research into this area could also lead to recommendations that more nurse practitioners or nurse midwives be involved with prenatal care in North Carolina, particularly in the care of women at high risk because of social or economic reasons.

Criteria For Success: The information gathered by such surveys would be examined by state and county health care providers and subsequent changes or improvements in the scope and components of prenatal care would be a gauge of success. Such studies would have national significance and other states would have further information to guide their prenatal programs.

4. Specialized Care Should Be Available To All Women Identified As High Risk Pregnancy Patients.

Introduction: Continual risk assessment should be a standard part of antenatal care. There is evidence to show that known risk factors can be used to identify high risk patients early in the course of pregnancy, and intraparitally. A total of 20 percent of pregnant women can be identified prenatally to be at risk, accounting for 55 percent of poor pregnancy outcomes. In addition five to ten percent of pregnant women can be identified as being high risk for the first time during labor, accounting for another 20 to 25 percent of poor pregnancy outcomes. Thus the total of 25-30 percent of women identified as high risk result in the total of 75-80 percent of poor pregnancy outcomes.

Background: The presence of many high risk factors can be determined from the ongoing risk assessment during pregnancy. Maternal medical problems including cardiovascular, renal, autoimmune, infectious, pulmonary, endocrine, hepatic or seizure disorders need appropriate consultation and surveillance by appropriate personnel. Obsterical complications including prior history of poor pregnancy outcome, maternal age of less than 16 or over 35, alcohol, tobacco or drug use, multiple gestation, intrauterine growth retardation, vaginal bleeding, pregnancy induced hypertension, polyhydramnios, etc., require close followup by experienced obstetrical physicians with appropriate technical assistance. A history of previous congenital anomaly, of family history of birth defects should be referred for antenatal genetic evaluation and counseling.

There are 19 high risk maternity clinics throughout the state, which have board certified obstetricians and other health care disciplines. Several counties, however, as noted in proposal 1, have no maternity clinic, much less high risk backup. There are available through the Genetic Health Care unit of the Division of Health Services, Maternal and Child Health Section, four major centers providing diagnostic evaluations counseling, treatment and education. These major centers through contractual arrangements, provide comprehensive genetic services and in addition provide satellite clinics across the state.

Recommendations: All women that deliver low birth weight infants, either through preterm delivery or intrauterine growth retardation, should be "targeted" and followed closely in the future, either by their private care provider, or by the public health care providers of their county. These women should be contacted and followed regularly through their intrapartum period and receive appropriate counseling in relation to future pregnancies before they become pregnant again and present in preterm labor as often happens. Programs such as the High Priority Infant Tracking Program follows the infants of these high risk deliveries and programs should be developed which follows the mothers. Such a program could perhaps be combined with the high risk infant tracking program.

Patients identified as high risk require repeated risk assessment as the pregnancy proceeds. Women at high risk should have frequent access if necessary to specialized staff. Priority in transportation needs should be given to those women with a previous history of poor pregnancy outcome or with a developing high risk problem. These women should be targeted by proposals to facilitate transportation to high risk centers.

Women with a history of abnormal pregnancy previously, with a family history of birth defects, or with known or suspected genetic or metabolic disorder, should be involved in a program of interconceptional care to identify and if possible reduce the risk of a repeated poor outcome in a subsequent pregnancy. Interconceptional care has many gaps and unmet needs, such as the need for additional regional counselors. In addition, The American College of Obstetricians and Gynecologists has recommended that maternal serum alpha fetoprotein screening be offered to and discussed with all pregnant women.

"For the sake of the next generation words must be matched with action to lower the infant mortality rate. It is a challenge to conscience to make being born in the U.S.A. as good a risk as it is in Japan."

—Winston-Salem Journal, August 22, 1988

Prematurity Prevention: A System for North Carolina

By Robert G. Dillard, M.D.
and
Mary Lou Moore, R.N., M.A., Ph.D.

Initial and ongoing risk assessment and education for preterm labor should be incorporated into prenatal care for all pregnant women.

Introduction: The concept of assessment and education of all pregnant women to identify those at high risk of preterm labor has been used in both Europe and the United States. While no risk scoring tool perfectly predicts preterm birth, risk scoring has been useful in identifying a group of women who may benefit from specialized prenatal care.

Background: Initial risk assessment for preterm labor is being conducted in the majority of North Carolina Health Departments using a form provided by the Department of Human Resources. Risk assessment is performed in approximately 40 percent of private practice sites in Perinatal Region II and in some other private practice sites in the remainder of the state.

Recommendations:

Local Level: Providers in both public and private sectors should be educated about and encouraged to use risk assessments at the first prenatal vist and again at the end of the second trimester. Women identified at high risk for preterm labor should have their plan of care modified appropriately.

State Level: Risk assessment forms should be provided by the Department of Human Resources to both public and private health care providers without charge.

Criteria for Success: Success will be measured by the number of public and private providers who use risk assessment for preterm labor on at least two occasions (initial and late second trimester) during each woman's pregnancy and by the number of women who use the instructions and know appropriate actions to be taken.

Care coordinaton services should be provided to all women identified at high risk for preterm labor.

Introduction: Care coordination is a process designed to ensure the provision of necessary services to a client in a comprehensive, integrated manner. The basic steps of care coordination are assessment and planning, coordination and referral, treatment and continued monitoring to evaluate progress. In addition, activities of a care coordinator may include the identification of eligible clients into prenatal care, and client advocacy within the health care sytem.

Background: Care coordinator services are available only for women whose prenatal care is covered by Medicaid. At least two-thirds of North Carolina's pregnant women are not Medicaid eligible, and therefore do not have access to care coordination.

Recommendations:

Local Level: Care coordination services should be established for all women who are identified at high risk for preterm labor. Such services include 1) An outreach program coordinated with pregnancy screening services to include a telephone hotline to help women find an appropriate source of care; 2) Home nursing services for women who require bed rest for preterm labor and other pregnancy complications; 3) Education and support programs for optimal nutrition with WIC referral for eligible women; 4) Education and support programs to eliminate poor health habits, including smoking, alcohol and recreational drug use; 5) Social support services, including those designed to reduce stress.

State level: The model for care coordination that has been established for Medicaid eligible pregnant women would form the basis for this model.

Criteria for success: Eighty percent of women at risk for preterm labor will receive care coordination services.

Special programs for the prevention of preterm premature rupture of the membranes should be tested and, if proved effective, adapted throughout the state.

Introduction: Premature rupture of the membranes is a major cause of preterm birth. There is no specific protocol which has proved effective in reducing the incidence of low birth weight associated with premature rupture of the membranes.

Background data: Paul J. Meis, J.M. Ernest, and Mary Lou Moore in "Causes of Low Birth Weight Births in Public and Private Patients" published in the *American Journal of Obstetrics*

and Gynecology in 1987 demonstrated that the incident of premature rupture of the membranes varied among women who received "public" versus "private" prenatal care. Premature rupture of the membranes was the primary etiologic factor causing low birth weight in 33.7 percent of women receiving "public" care and 23 percent among women receiving "private" care. For infants weighing less than 1500 grams at birth the incidence was 13.2 percent in the "private" population and 39 percent in the "public" population.

Ernest reported a correlation between vaginal pH and premature rupture of the membranes. Further research to specify risk factors for premature rupture of the membranes and to test intervention strategies is necessary.

Recommendations:

Local Level: Testing of intervention strategies designed to reduce the incidence of premature rupture of the membranes should be encouraged in pilot test sites.

State Level: Funding should be made available for testing interventions designed to reduce the incidence of premature rupture of the membranes.

Criteria For Success: A minimum of sites throughout the state are funded to test approaches to reduce the incidence of premature rupture of the membranes.

Women with medical problems likely to result in preterm birth including but not limited to preeclampsia and severe diabetes should be referred to appropriate high risk centers for consultation and for management when local facilities are not available.

Introduction: Medical problems associated with low birth weight births may result from acute emergencies, pre-existing health status problems, or may develop during the course of pregnancy.

Background Data: To function effectively, a referral system requires that the community health care provider initiate referral, that the woman and her family agree to be referred, and that the space at the receiving institution is available. North Carolina's system of perinatal outreach education has helped providers understand the importance of referral of women with conditions likely to result in the delivery of preterm infants. Pregnant women at risk for premature birth rarely refuse referral. However, lack of space for infants in intensive care nurseries has made referral by

local health care providers to tertiary centers difficult. Tranportation issues can also be a barrier in referral, particularly referral for consultation not requiring emergency transport via ambulance.

Recommendations:

Local Level: At the community and regional levels, referral arrangements and intensive care nursery bed status should be analyzed. Outreach education efforts should focus on ensuring that all providers are aware of appropriate care for conditions frequently resulting in preterm birth.

State Level: Medicaid reimbursement levels should be examined to determine if low reimbursment rates inhibit necessary expansion of neonatal beds. Permissive legislation is necessary to allow the state to supplement the county match for transportation services for Medicaid supported women.

Criteria for Success: Women with medical problems associated with preterm labor receive the appropriate level of prenatal and intrapartum care as determined by periodic chart audits. No woman should fail to receive appropriate care because of lack of transportation.

A mechanism for coordinating preterm labor prevention activities should be developed.

Introduction: Preterm labor prevention activities are most effective when health care providers, other community members and women and their families are part of a coordinated system of activity. In such a system, women will receive the same information wherever they interact with the health care system (hospital, public or private prenatal care site, home visit, emergency room.)

Recommendations:

Local Level: Coordination at the local level should be facilitated and supported by regional project staff located at the regional center. This staff should consist of one senior level obstetrician who is willing to devote at least 10 percent of effort to preterm birth prevention, an experienced perinatal nurse who can devote at least 50 percent effort to preterm birth prevention, a full-time secretary to coordinate communication between the perinatal regional center and the primary health care provider, and personnel for data entry and analysis.

The activities of the regional project staff should include: (1) Continuing education of health care providers; (2) Data collection and analysis (In regions where data analysis is not feasible, funding for this portion can be direted to adjacent regions.); (3) Provision of educational materials and risk assessment to public and private sectors; (4) Ongoing consultation to counties within the region; (5) Development of education plans of community employers and school personnel; (6) Sharing information through regional newsletters.

State Level: A coordinating committee should be organized with three representatives (one M.D., one R.N., one at-large) from each region. This council could function as a subcommittee of the Perinatal Advisory Committee. Ex-officio members would include representatives from the North Carolina Department of Human Resources.

This council should meet at least quarterly to share information about program successes, barriers, outcomes. There will be a need for more frequent meetings in the start up phase.

This council would facilitate an exchange of information between regions and provide a support mechanism for leaders in each region.

Criteria for Success: Project staff will be funded in each region. A statewide coordinating committee will meet quarterly.

"We know *why* maternal and infant health is important. We know *what* it costs and we know *how* to make a difference. The question before us is *when* we will, as a region and as a nation, respond?"
—Boardrooms and Babies: The Critical Connection

The Child from 29 Days To One Year

By Robert G. Dillard, M.D.

All infants must have readily accessible well-child care during infancy

Introduction: The initial series of childhood immunizations given during infancy is perhaps the most important public health measure available to children. Well-child care as administered by the federally sponsored Children and Youth Programs demonstrated the ability to cut the number of hospitalizations and serious illnesses in early childhood.

Background: Vaccines for immunizations have increased dramatically in price in the past few years. The increase is a result of increases in insurance liability premiums for companies manufacturing the vaccines. The consequence of rising costs is a disturbing decrease in the number of immunized children in the United States. Parents are simply not able to pay the high price of immunization. Few health insurance policies pay for immunization and well-child care.

Recommendations: 1. The eligibility level for Medicaid enrollment for infants up to one year of age should be increased to 185 percent of federal poverty levels. 2. Legislation must be passed requiring that family health insurance policies cover the cost of immunization and well-child care.

A statewide system for caring for chronically ill and disabled infants must be developed.

Introduction: High-risk infants, those born with or developing disabling or chronic illnesses, contribute significantly to our state's infant mortality and morbidity. The majority of these infants are born prematurely and have chronic lung disease.

Background: As neonatal intensive care results in survival of more infants who previously died at birth or shortly thereafter, more infants who have chronic or disabling illnesses are being discharged from our hospitals. Post-neonatal mortality (death between 29 days and one year) is ten to 20 times higher than those not requiring neonatal intensive care. Few pediatricians have the experience or training to provide care for this group of babies. There are few facilities in the state with the capability of caring for long term needs. Fortunately, with expert care, high risk infants

outgrow their infirmities and can lead normal lives.

Recommendations: 1. Regional perinatal centers should develop programs for high-risk infants which provide outpatient care. Such care is highly specialized and expensive. Case management should be a central focus of such programs. Unfortunately, such programs are not possible without considerable financial support. Both state and private sources must be made available for this effort.

2. Inpatient care for chronically ill infants is virtually non-existent in North Carolina. Children who need such care get it in intensive care units in acute care hospitals at considerable expense. At the same time, they often fail to receive care which meets their overall needs such as occupational and physical therapy. Two or three centers providing specialized inpatient care should be developed. As with outpatient care, such care is expensive and highly technical. It is unlikely that centers for such inpatient care can be developed without considerable continuing support. State and private sources should be sought.

"In searching for solutions, state officials should look to Guilford County, one of the few urban counties where infant mortality declined last year. County health officials credit their success to many reasons, but one statistic stands out: They sign up 95 percent of the women who visit the county's prenatal clinic for the WIC program."

—Greensboro News and Record, October 9, 1988

Counties Without Subsidized Prenatal Clinics April, 1987

County	*Primary Reason*
Chatham	Lack of physician to provide medical coverage for the clinic
Clay	Due to lack of resources within the county, prenatal clients go to an adjoining county for their prenatal care.
Graham	Due to lack of resources within the county, prenatal clients go to an adjoining county for their prenatal care.
Harnett	Lack of physician to provide medical coverage for the prenatal clinic.
Hyde	Limited prenatal services are available in the Health Department; patients are referred to private physicians who will provide remaining prenatal care and delivery services.
Iredell	Initial assessment of the prenatal patient is completed at the Health Department. Patients are then referred to private physicians who provide medical care. Supportive services such as nutrition, education and laboratory are provided by the Health Department.
Pamlico	Lack of physician to provide medical coverage for the prenatal clinic.
Pender	As of July 1, 1986, OB-GYN residents from New Hanover were no longer able to staff the clinic. The prenatal patients are referred to New Hanover Hospital as there are no physicians who are able to provide medical coverage for the clinic.
Polk	The Prenatal Clinic was closed in October, 1986, when the physician withdrew his services from the clinic and no other medical provider was obtained to serve the public health patients.

The Experience Of Bowman Gray

The Northwest North Carolina Prematurity Prevention Project is centered at Bowman Gray Medical School in Winston-Salem. It was considered a good site for a pilot project because of the mix of urban and rural areas and the population mix. Covering 20 counties with a popultion of 1,650,000, there were approximately 21,000 live births there in 1985. Approximately 40 percent of the region's births are to women receiving care from providers participating in the prematurity prevention program.

Participating in the program are all county health department prenatal clinics, many private obstetricians and family physicians. The program was advertised extensively to all providers in the region.

The key features of the program are:

1. Risk assessment of all patients using a standardized risk assessment tool.
2. Education of patients and providers
3. Intensive prenatal care for patients at risk with weekly visits and cervical examinations after 24 weeks gestation.
4. Assessment of uterine growth activity of patients with signs of premature labor, followed by appropriate obstetrical care.

The program made intensive effort to enlist providers in it and as a result, had a greater rate of provider participation. Through a federal grant to Bowman Gray, the records of all participants were computerized. The results indicate that prematurity prevention projects such as this one work.

Low Birthweight
A Summary

—from *Death Before Life: The Tragedy of Infant Mortality*
Report of The National Commission To Prevent Infant Mortality

• Low birthweight refers to infants born weighing less than 5 1/2 pounds. This may result from a baby not growing adequately during the pregnancy or a baby being born too soon. The smaller the baby, the poorer the chances for survival.

• The low birthweight rate for the United States in 1985 was 6.8 percent or 253,554 babies. In 1985, that was 1 in every 15 infants: 1 in 18 for whites, 1 in 9 for Hispanics, and 1 in 8 for blacks. The rate for black infants is twice that for whites.

• A baby born too small or too soon has a greater likelihood of needing very expensive, high technology care and of being hospitalized repeatedly. The costs to the U.S. health care system can be as much as $30,000 per low birthweight infant.

• Not only are the direct health care costs for low birthweight high, but so are the costs to society as a result of lost productivity. If we could reduce by half the number of disabled low birthweight infants born, the present value of wages that could have been earned over the children's lifetimes would be $0.9 to $1.9 billion

• Low birthweight is a major factor in infant mortality; babies born weighing less than 5 1/2 pounds are 40 times more likely to die in the first month of life than are babies who are normal weight. The risk of mortality increases with decreasing birthweight; babies born very low birthweight are 200 times more likely to die.

• Low birthweight survivors are twice as likely to suffer one or more handicaps, such as cerebral palsy, chronic lung problems, epilepsy, delayed speech, blindness, deafness or mental retardation.

• One in seven infants born to teenage mothers is likely to be born low birthweight—a baby born to a teenager is also more than twice as likely to die than a baby born to a woman in her twenties.

• Early, continuous, and high quality prenatal care significantly reduces both maternal and infant mortality and the risk of low birthweight. In 1985, 24 percent of all mothers did not receive prenatal care in the critical first 3 months of pregnancy.

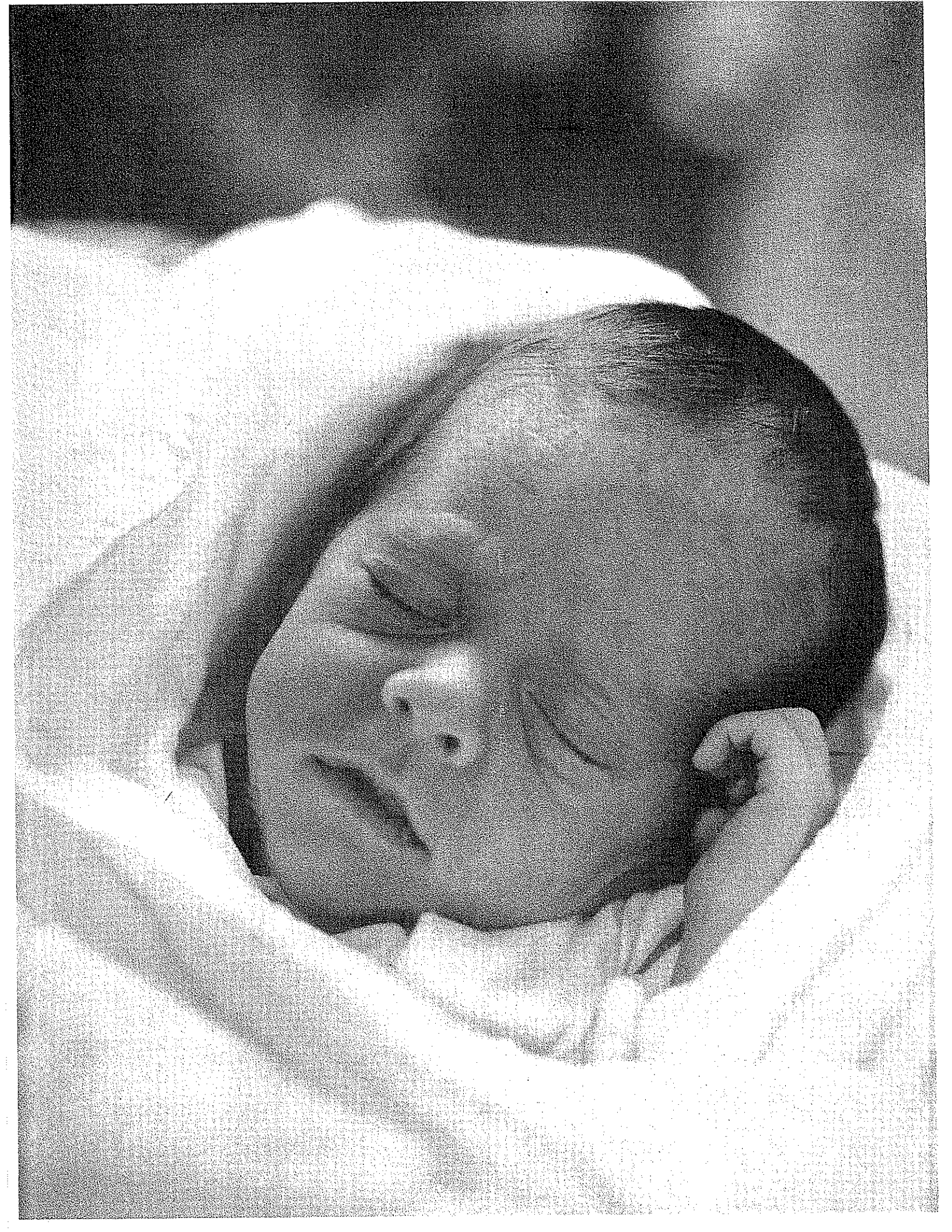
• Despite many unanswered research questions concerning the causes of low birthweight, policymakers have enough information to act more vigorously to reduce the incidence of low birthweight and to improve the health of this nation's infants and children.

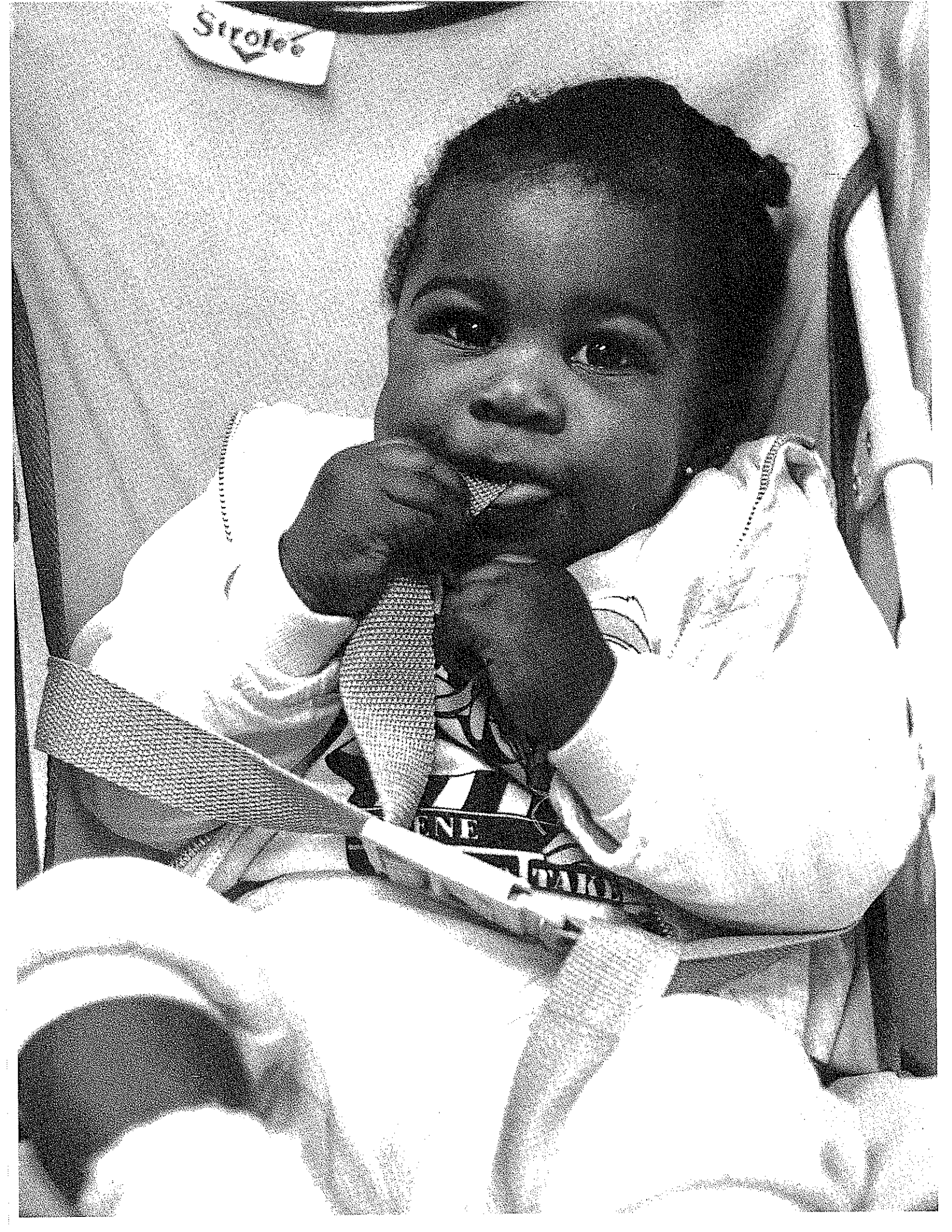
• Useful approaches include placing emphasis on (1) reducing risks before pregnancy; (2) increasing access to early and continuous prenatal care, (3) enriching prenatal care to meet the varying needs of both high and low-risk women, and (4) developing a long-term national, political commitment to reducing the incidence of low birthweight and infant mortality in general.

"The lack of access to health care, the inability to pay for health care,
poor nutrition, unsanitary living conditions,
and unhealthy habits such as smoking, drinking, and drug use
all threaten unborn children. Unquestionably poverty creates substantial risks
--but infant motality is not just a problem of poor people alone."

"Our current health care system addresses infant mortality as a medical issue
rather than as a social problem with medical consequences."

--*Death Before Life: The Tragedy of Infant Mortality*
The National Commission To Prevent Infant Mortality
August, 1988

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