REPORT OF THE
DEPARTMENTS OF MEDICAL
ASSISTANCE SERVICES AND HEALTH

# Relating to Infant Mortality

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA


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# COMMONWEALTH of VIRGINIA

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COMMISSIONER

*Department of Health*
*Richmond, Virginia 23219*

December 29, 1986

Memorandum

To: The Honorable Gerald L. Baliles and Members of the General Assembly

From: C. M. G. Buttery, M.D., M.P.H.
State Health Commissioner

Ray T. Sorrell, Director
Department of Medical Assistance Services

Subject: Senate Joint Resolution #39

Reducing Virginia's infant mortality rate has been a priority of the Department of Health for a number of years. Since fiscal year 1984, Division of Maternal and Child Health expenditures have almost doubled to allow the expansion of existing programs and the initiation of new programs aimed at reducing infant mortality. The emphasis has been on implementing preventive programs, such as Resource Mothers and Preterm Birth Prevention, including the augmentation of local health department prenatal services. Comprehensive prenatal care is the single, most significant factor in preventing low birthweight, a major determinant of infant mortality.

The Department of Medical Assistance Services has promoted improved pregnancy outcomes by recently increasing reimbursement rates to obstetricians/gynecologists from $262.50 to $625.00 for the provision of normal prenatal, delivery and labor services. The Department continues to work toward securing appropriations to allow increased reimbursement rates for other primary care providers.

Senate Joint Resolution #39 addresses the concerns identified by Virginia's Legislative Task Force on Infant Mortality, chaired by Senator Robert C. Scott. Topics of concern include apnea monitor utilization, personnel needs, case management, nutrition surveillance and data timeliness.

Senate Joint Resolution #39 presented an opportunity for the Departments of Health and Medical Assistance Services to carefully review their current program policies and activities relative to the concerns of the Legislative Task Force. The enclosed report presents the specific activities which will be undertaken by the Departments to address these issues. In addition, the report discusses the systemic barriers which must be overcome to ensure the effective implementation of proposed strategies.

Enclosure

VDH
Virginia Department of Health

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## Executive Summary

In 1985, one out of every 87 infants born to Virginia residents died before reaching its first birthday. An infant's chance of survival is better in 38 other states than in Virginia. Low birthweight is the primary factor associated with infant mortality; infants weighing 2 lbs, 12 oz or less are over 100 times more likely to die in the first 28 days of life. Those low weight infants who survive are very likely to suffer mental or physical handicaps.

In addition to the human costs, infant mortality has high economic costs. Many low birthweight infants require costly neonatal intensive care. Total postnatal health care costs for very low birthweight infants are estimated to be between $20,000 and $100,000 per infant, compared to an estimated $550 for a normal weight infant without complications. There are also expensive costs associated with long term care for those low birthweight infants who survive with physical and/or neurological impairments; the cost of education/residential care for a child with severe handicaps may exceed $450,000.

Many of the human and financial costs of infant mortality are preventable. Comprehensive prenatal care is the single, most significant factor in preventing low birthweight and enhancing a newborn's health.

The cost-effectiveness of prenatal care has been demonstrated. Oregon recently determined that it could provide prenatal care to 149 women for the same amount that it costs to treat five high-risk premature infants. The Institute of Medicine estimates that for every dollar spent providing comprehensive prenatal care to high-risk women, a savings of $3.38 in the treatment of low birthweight infants could be realized. These medical treatment cost-savings represent only a small portion of the overall savings, which include those associated with special education, long term care and other social and human resource expenses.

Governors Robb and Baliles have both taken an active interest in reducing Virginia's infant mortality rate. Both have highlighted it in their State of the Commonwealth speeches and both have included it in their budget requests. The first Governor's Conference of the Baliles administration was convened to address infant mortality in Virginia.

The Virginia General Assembly has also recognized the human and economic costs of Virginia's infant death rate. In the past few years, both houses have appropriated additional money for prenatal care, health services and prevention programs such as Resource Mothers and Preterm Birth Prevention.

Senate Joint Resolution #39 addresses five concerns identified by Virginia's Legislative Task Force on Infant Mortality, chaired by Senator Robert C. Scott (Newport News). The five issues and an overview of study findings and recommendations follow.

1. **Facilitate statewide access to apnea monitors through Medicaid purchase, rental, or contract.**

Due to the apparent lack of adequate controls, and questions raised concerning justification for use of apnea monitors on an outpatient basis, Medicaid payment for this service was terminated in the early 1980's. The only such outpatient service provided under the present Medicaid program is testing for apnea on a diagnostic non-continuous basis. The use of monitoring in conjunction with intensive respiratory therapy may also be covered.

During the past year, Department of Medical Assistance Services staff have met with interested parties to consider possible coverage of apnea monitoring services on an outpatient basis. Research conducted for the purpose of this resolution revealed that the efficacy of home apnea monitoring has not yet been determined nationally. A recent national consensus conference confirmed these study findings. The Department recommends that study of coverage of apnea monitoring be continued through the Governor's Task Force on Indigent Care.

2. **Study the personnel needs in those areas of Virginia having the highest incidences of low birthweight and infant mortality to determine minimally optimal staffing requirements of local health departments, and develop a plan for effective utilization of personnel in providing outreach, family planning, prenatal, perinatal, and neonatal services.**

Personnel needs in the twenty public health districts having rates of infant mortality or low birthweight (or both) that exceeded the state average were studied through utilization of the Nurse Management Model, a computerized tool for identifying public health staff requirements. The analysis revealed a need for 203 positions in these districts to provide family planning and maternity services. Suggested staff distribution follows:

| | |
|---|---|
| Direct Care Providers | |
| public health nurses | 80 |
| certified nurse practitioners (primarily nurse midwives) | 20 |
| nutritionists | 20 |
| outreach workers | 20 |
| clerical staff | 20 |
| health educators | 19 |
| physicians | 6 |
| | 185 |
| Support Staff | |
| managers/supervisors (primarily nurses) | 18 |
| | 203 |

These staff needs require adjustment based on local conditions, including consideration of other local providers serving the same patient population in addition to the health department. A significant barrier to the provision of quality health department family planning and maternity services is the lack of adequate full-time positions at the local level. The use of hourly positions often results in the inability to attract the most qualified candidates and in high staff turnover rates.

3. **Establish the case management system for obstetric patients served by local health departments.**

Effective case management requires the formal designation of public health nurses as case managers for a specific number of patients under their care. Because of limited nursing staff, such formal designations are not made in all health departments. As a result of this study, the Department has developed guidelines for distribution to all health departments to assist them in reviewing their current case management arrangements. These guidelines encourage local health departments to formally designate a case manager for each maternity patient.

The Department has identified various systemic barriers which must be overcome to ensure effective case management, including: lack of sufficient number of full-time health department nursing positions; difficulty of securing a delivering physican for health department maternity patients; ineffective interagency communication and cooperation; and difficulty in ensuring adequate transportation for health department patients to and from medical providers.

4. **Initiate the necessary process by which Virginia may participate fully in the Center for Disease Control's (CDC) Nutrition Surveillance System.**

Participation in the CDC Nutrition Surveillance System requires the development of a data processing program that will transcribe the Virginia Special Supplemental Food Program for Women, Infants, and Children (WIC) data into the format required by CDC. Development and testing of the program are expected to be completed by the end of fiscal year 1987. Once in full operation, the WIC Program will receive monthly CDC nutrition surveillance reports at no charge.

5. **Compile and disseminate data related to pregnancy outcome in a timely manner.**

Virginia data related to pregnancy outcome are compiled in a manner that ensures accuracy and completeness and are distributed once finalized. A number of activities are underway or planned which will expedite the compilation and distribution of Virginia data, including: negotiations with states to exchange computer tapes in addition to copies of records; more thorough follow-up of incomplete or missing records at time of filing; modernization of the existing computer system by direct entry of data into the computer terminal; and the placement of microcomputers in hospitals for direct entry of birth certificate information.

Most states publish their annual statistical reports later than Virginia. Those states that publish earlier than Virginia do not perform extensive follow-up for completeness and accuracy.

## I. INTRODUCTION

This report is submitted by the Departments of Medical Assistance Services and Health in response to Senate Joint Resolution #39 relating to infant mortality. The resolution is included as Appendix A. The resolution requests the Department of Medical Assistance Services to facilitate the purchase, rental or contracting of apnea monitors for access statewide. In addition, the resolution includes the following four directives to the Department of Health:

1. Study the personnel needs in areas of Virginia having the highest incidences of low birthweight and infant mortality to determine minimally optimal staffing requirements of local health departments and develop a plan for effective utilization of personnel to provide outreach, family planning, prenatal, perinatal, and neonatal services.

2. Establish the case management system for obstetric patients served by local health departments.

3. Initiate the process by which Virginia may participate fully in the Center for Disease Control's Nutrition Surveillance Program.

4. Compile and disseminate data related to pregnancy outcome in a timely manner.

Senate Joint Resolution #39 directs the Departments of Medical Assistance Services and Health to submit their findings and proposals for implementation to the Governor and 1987 Session of the General Assembly.

The report that follows is organized into five sections addressing the one directive to the Department of Medical Assistance Services and the four directives to the Department of Health. Each section begins with the pertinent legislative directive from the resolution.

## II. FACILITATE PURCHASE, RENTAL, OR CONTRACTING OF APNEA MONITORS

### Study Directive

> The Department of Medical Assistance Services is encouraged to provide funding for apnea monitors in order that these life-saving monitors may be available for indigent and Medicaid eligible persons. The Department is requested to utilize its customary procedure in facilitating the purchase, rental or contracting of apnea monitors for access Statewide.

### Definition and Statement of Need

An apnea monitor is a device that measures heart rate and breathing movement and which sounds an alarm when diminished levels are experienced. Apnea monitors have been used on infants at risk for Sudden Infant Death Syndrome (SIDS) or "crib death", on the premise that apnea (cessation of breathing for more than 20 seconds) can be detected by use of the monitor, allowing intervention measures to be taken to prevent prolonged apnea or death.

Monitors are used in the hospital and may also be provided in the home. Prior to the use of apnea monitors in the home, parents are trained to respond appropriately to alarms.

SIDS is defined as the unexpected death of a previously healthy infant between the ages of two weeks and one year, unexplained by complete autopsy examination. The national death rate due to SIDS ranges from 1.4 - 1.5 per 1,000 live births. The rate is as high as 4.2 in some urban areas. As reported in the July 10, 1986 issue of the New England Journal of Medicine, there were 26 consecutive cases in which a presumptive diagnosis was made of SIDS and careful follow-up investigation revealed only two cases in which a cause of death other than SIDS could not be postulated or was not demonstrated. The Virginia death rate from SIDS in 1985 was 1.3 per 1,000 live births.

According to data from 16 hospitals in the Central Virginia and Tidewater areas, 169 Medicaid infants had a potential need for monitors in 1984. Since this figure represents approximately one-fourth of the Medicaid population at potential risk for apnea related problems, a total of 676 infants would have a potential need for a monitor annually. Monitoring is generally provided for at least six to 18 months.

## Historical Perspective

In late 1980 and during 1981, the Department of Medical Assistance Services (DMAS) conducted a major review of the appropriateness and utilization of apnea monitors. Constraints required by a shortfall in the DMAS budget resulted in a review of all services provided by the program. Due to the apparent lack of adequate controls, and questions raised concerning justification for use of apnea monitors on an outpatient basis, Medicaid payment for this service was terminated. Usage appeared to have been concentrated in the Tidewater area, and was essentially unmonitored. The only such outpatient service provided under the present Medicaid program is testing for apnea on a diagnostic non-continuous basis. The use of monitoring in conjunction with intensive respiratory therapy may also be covered. Inpatient services are covered under per diem rates.

Within the past year, Department of Medical Assistance Services staff have held informal meetings with various interested parties, such as suppliers, advocacy groups, and individuals, including Edwin C. Meyer, M.D., Child Neurologist at the Medical College of Virginia, to consider possible coverage of apnea monitoring services on an outpatient basis. Doctor Meyer is attempting to develop alternate treatment for the SIDS prone child.

## Study Methodology and Findings

For the purposes of this study, Virginia vital statistics data were analyzed and an extensive literature review was conducted regarding the technical, sociological, and psychological aspects of apnea monitoring. In addition, information relating to coverage of apnea monitors was secured from the North Carolina Medicaid Program.

During the nine year period from 1976-1985, Virginia live births increased from 69,972 in 1976 to 85,984 in 1985. The death rates from SIDS decreased during the same time period from 1.9 per 1,000 live births to 1.3. This time period overlaps the period during which the Virginia Medical Assistance Program no longer provided payment for monitors. This apparent contradiction in the need for apnea monitors and the decrease in SIDS deaths may be explained in part by possible earlier over-reporting of SIDS deaths.

In 1983, the National SIDS Foundation stated "pediatricians and parents must be aware that monitoring has not yet been established as preventive treatment for SIDS". The efficacy of home apnea monitoring and various proposed pharmacologic therapy have not yet been formally evaluated. A small portion of infants have died despite monitoring, and it is very difficult to provide proof of prevention of death. Both heart rate and breathing movement detectors have a high incidence of false positive alarms. In California, during the period 1980-1984, monitoring was recommended for 1,841 infants. Infants who had monitors recommended were at near equal risk of dying from SIDS (3.7 SIDS per 1,000 live births) as those who did not (3.0 SIDS per 1,000 live births).

The use of an apnea monitor may initially reduce the parents' anxiety, whether or not it protects the infant from death. This reduction of anxiety is desirable, although it can be shortlived because alarms are inevitable. These alarms have a tendency to increase anxiety and seem to confirm the potential SIDS, even when many, if not all, the alarms are false. It has been suggested that this increased anxiety leads to stress within the family, which, in turn, could adversely affect a predisposed infant. The continual reinforcement of the possibility of the infant dying may result in parents' self-protecting efforts to reduce the pain of unexpected death, and lead to withdrawal or even rejection of the child. J. Bruce Beckwith, M.D., who as Director of Laboratories at Children's Orthopedic Hospital and Medical Center, in Seattle, Washington, reported on 500 cases of SIDS and stated, "Whenever possible, we have tried to avoid the use of monitors as they represent a potentially significant interference with mother-child relationships."

A Development Conference on Infant Apnea and Home Monitoring was held on September 29 through October 1, 1986, at the National Institute of Health. Although results of the conference have not been widely disseminated, preliminary information appears to reinforce the findings of this report.

## Costs

The projected annual cost of providing apnea monitors to the estimated 676 Medicaid infants potentially in need of such monitors is $2,028,000 or $3,000 per patient. This amount includes the cost of the rental and technical maintenance of the monitors.

## Recommendation

The Department of Medical Assistance Services acknowledges the concerns of individuals who have been involved in situations in which SIDS has impacted them personally, and those who are striving to meet the medical and technical

needs of monitoring for this vulnerable segment of the population. Nonetheless, consideration of coverage of apnea monitoring should be continued through the Governor's Task Force on Indigent Care (SJR 32). This study will not only impact infants who are Medicaid eligible, but also those who are indigent and may be considered for coverage of services by legislative action. Final conclusions and recommendations of the recent Development Conference on Infant Apnea and Home Monitoring will be provided to the Indigent Care Task Force in order that it may utilize the most up-to-date information available in developing recommendations for its final report.

## III. STUDY PERSONNEL NEEDS IN TARGETED AREAS

### Study Directive

Study the personnel needs in those areas of the Commonwealth having the highest incidences of low birth weight and infant mortality to determine the minimally optimal staffing requirements of local health departments and to develop a plan for the effective utilization of its full-time and part-time personnel to provide outreach services and the adequate delivery of family planning and prenatal, perinatal and neonatal medical services to the citizens of these areas;

### Target Areas

The health districts selected for study were those having rates of infant mortality or low birthweight (or both) that exceeded the state average. These districts included: Chesapeake, Crater, Cumberland Plateau, Eastern Shore, Hampton, Hanover, Lenowisco, Norfolk, Northern Neck, Peninsula, Middle Peninsula, Piedmont, West Piedmont,Pittsylvania, Portsmouth, Rappahannock Area, Richmond City, Southside, Western Tidewater, and Virginia Beach.

### Methodology

The minimally optimal staffing needs for family planning and maternal and child health services were determined by utilizing a Nurse Management Model. The Model is a computerized management tool which is used to determine manpower requirements based on service needs. The Model, which has been used in the Department of Health for approximately four years, was developed from national standards and the experience of Virginia.

In order to determine personnel needs of the twenty targeted health districts, pertinent data for each district were analyzed, utilizing the Model in the following manner:

Step 1 - The current maternity and family planning patient load, staffing patterns, and services provided were determined.

Step 2 - A profile of public health need for maternity and family planning services was determined. Specifically, the number of women in need of maternity services was determined by taking the number of births plus the

number of spontaneous abortions and multiplying it by the percent of families with children under five years of age who are below 125% of poverty. The number in need of family planning services is defined as one-half of women of childbearing age who are at risk of unwanted pregnancy and who are below 150% of poverty.

Step 3 - The minimally optimal staffing requirements were determined by applying the time standards developed by the Department of Health through experience and special studies to service standards recommended by various sources, including the American College of Obstetrics and Gynecology.

Step 4 - The minimally optimal staffing requirements were compared to existing staffing patterns for maternity and family planning services. The difference between the current staffing and the minimally optimal staffing was calculated.

## Personnel Requirements

The analysis of personnel needs revealed that 203 additional staff positions would be necessary to meet the minimally optimal staffing requirements for maternity and family planning patients in the targeted health districts. The suggested breakdown of these additional positions follows:

| | |
|---|---|
| **Direct Care Providers** | |
| public health nurses | 80 |
| certified nurse practitioners (primary nurse midwives) | 20 |
| nutritionists | 20 |
| outreach workers | 20 |
| health educators | 19 |
| clerical staff | 20 |
| physicians | 6 |
| | 185 |
| **Support Staff** | |
| managers/supervisors (primarily nurses) | 18 |
| | 203 |

Some districts require additional staff to serve more patients. Others need additional staff to provide more services to existing health department patients. (See Appendix B for a detailed breakdown).

Analysis of some districts highlighted a critical need for additional supervisory/managerial staff. Such staff are necessary to target resources to the population most in need. Effective management/supervision enables health departments to provide the most effective and cost efficient service to the community.

The personnel needs identified by the Central office for the purposes of this study will require adjustment based on local conditions and differences. For instance, it would be important to consider the caseloads of other local providers that serve the same patient population, including private physicians, teaching hospitals, and other agencies. Such information could reduce the estimated number of women needing services and therefore reduce the number of staff needed. The personnel requirements presented in Appendix B are not adjusted for these factors and therefore are a global estimate, subject to refinement when district assessments are available. The Department of Health encourages health districts to utilize the Nurse Management Model to determine local personnel needs and provides technical consultation to localities. Some health districts are presently conducting such assessments.

These study findings pertain only to the maternity and family planning needs of the 20 targeted health districts. The need for social workers, nurses' aides and licensed practical nurses in the targeted localities were not included as part of this analysis, nor were the personnel needs of all nontargeted localities.

## Personnel Plan

A plan for the effective utilization of existing health department personnel in meeting perinatal needs includes the following components:

1. Hourly positions should be converted to full-time positions. The lack of full-time positions to be used at the local level results in the hiring of hourly staff. For example, the Special Supplemental Food Program for Women, Infants, and Children (WIC) operates with 2/3 of its staff in hourly positions. Because hourly positions do not provide benefits, many localities find they cannot attract the most qualified candidates. Also, high turnover among hourly personnel results in inefficient use of administrative time devoted to recruitment and orientation. One mechanism that has been used previously by localities to handle this problem was the establishment of county positions. Many localities are no longer able to do this, however, as a result of the delay and increased costs of liability insurance.

2. The Department of Health will continue to provide technical assistance to localities as they conduct clinic efficiency studies. As requested by the Department of Health, all health districts will complete analyses of clinic efficiency by 1988, utilizing the Patient Flow Analysis technique. This technique allows analysis of personnel costs and clinic waiting time.

3. The Department of Health will continue to direct outreach efforts to those women at highest risk of poor maternity outcomes. This group includes women who enter care late in their pregnancy; who lack a sound educational background; who are poor; and who are under 20 or over 35 years of age. As a basis for local outreach planning, the Department of Health developed and distributed Perinatal Outreach Strategies to all health districts in 1985. This document describes successful outreach strategies that have been utilized throughout the country as well as those that are currently in effect in areas of Virginia.

4. The Department will distribute the case management guidelines developed in response to Senate Joint Resolution #39 to health districts to assist them in reviewing their current case management arrangements. These guidelines encourage all health departments to formally designate a case manager for each maternity patient. The establishment of a case management system for health department patients is a directive of Senate Joint Resolution #39 and is addressed in the following section of this report.

## IV. ESTABLISH CASE MANAGEMENT SYSTEM

### Study Directive

Establish the case management system for all obstetric patients served by local health departments.

### Definition and Statement of Need

The goal of case management is to provide a coordinated, comprehensive system of care. In a case management system for maternity patients, the goal is to provide this care throughout the prenatal, delivery, and postpartum period for mother and child. The functions of case management include: 1) assessment 2) planning for care 3) linking services 4) monitoring care and 5) patient advocacy. The case manager is responsible for ensuring that these services are provided for the patient, although the case manager does not necessarily personally provide all of them.

Under a case management system of care, a coordinated plan is developed and implemented which will meet all needs of the patient. This type of care pieces together otherwise fragmented services. The case manager would coordinate a broad-based team of professionals, including physicians, nurses, social workers, nutritionists, outreach workers, and health educators. Team members share the responsibility for assessing medical-social problems and developing a plan of care. Care is coordinated with other agencies, including mental health, social services, Medicaid and schools.

An effective case management system is particularly important in promoting continuity of care for obstetric patients who receive prenatal care in the public sector and delivery services through the private sector. It is the transition from the public sector to the private which particularly requires careful planning and coordination.

According to a 1981 Department of Health survey, routine low-risk, uncomplicated prenatal care appears to be available to most indigent women through the local health departments. A problem exists, however, when the same woman is ready to deliver and 1) there is a shortage of qualified obstetrical physicians to assume responsibility for the patient; 2) there is no pediatric coverage for the newborn; or 3) there is no source of payment, or only partial payment for the hospital or private physician.

The survey revealed that in certain areas of the state private physicians and/or hospitals refuse women for delivery services. Being refused care locally, these women may be transported, in some cases considerable distances and at risk to the patient, to state supported regional center hospitals, where the infant is delivered. In such situations, continuity of care is compromised as the patient has not, in many instances, made a prior arrangement with or been examined by the delivering physician. In fact, survey results indicate that in at least half of the health departments, the prenatal patients do not have any prior contact with the delivering physician. In addition, no arrangements have been usually made for pediatric coverage for the newborn.

It is anticipated that health department patients may face even greater difficulty in securing delivery services as a growing number of ob/gyns are abandoning their obstetrical practices. Recent skyrocketing liability insurance premiums, a fear of malpractice suits, limited reimbursement from third party payors and an increasing patient caseload, have caused many ob/gyns to discontinue their obstetrical services.

Because of the financial obstacles faced by health department patients in securing delivery services, it is essential that these services be coordinated by the case manager during the prenatal period. Contact with the delivering physician prior to delivery should be encouraged by the case manager.

## Existing Case Management System

Case management functions are being carried out, in varying degrees, by public health nurses at local health departments. As part of the traditional nursing role, public health nurses routinely assess holistic needs and coordinate care for all patients under their care. In the health department setting, the public health nurse is the most appropriate staff member to serve as case manager since she is the professional most involved in the total care of the patient. Other professionals involved in the patient's care usually provide a more specialized service and are not necessarily employed by the health department.

The comprehensiveness of nursing case management is necessarily limited because of limited nursing staff and varies among the localities. In some localities, nurses are formally designated as case managers for a specific number of patients under their care. Such designations may be made by assigning the case manager role for a certain geographical region to each nurse who works with maternity patients or by assigning the role to the nurse who saw the patient on her first visit. Such formal designations of case managers are desirable since they are cost-effective and facilitate improved patient care.

In a system that does not rely on designated case managers, there may be gaps in patient care. An individual practitioner treating the patient may believe a specific patient need is being addressed by another practitioner, when in fact, it is not being addressed by any. Gaps in patient care can lead to more costly services later. Formal case management also prevents duplication of services.

As a result of this study, the Department of Health has developed guidelines for distribution to all health departments to assist them in reviewing their current case management arrangements. These guidelines encourage all local health departments to formally designate a case manager for each maternity patient. The case management guidelines are included as Appendix C.

### Systemic Barriers

For case management to be effective, a number of systemic barriers must be overcome. A growing number of ob/gyns are abandoning their obstetrical practices. Many physicians who do provide obstetrical services are poorly distributed geographically. Additional full-time health department positions are necessary to ensure the adequate provision of family planning and prenatal services: A number of local health departments are unable to ensure transportation to and from medical professionals. Interagency communication and cooperation are not consistently effective.

Other barriers require further effort and leadership. An automated management information system enabling agencies to share patient data among themselves would promote interagency cooperation and result in more effective interagency communications.

A comprehensive transportation assessment by each health district would provide the data necessary to determine the unmet local transportation needs of pregnant women and the method and cost of best meeting the need. The expectant mothers who currently cause the greatest concern are the non-Medicaid patients who do not have automobiles or money for transportation to a local health department, doctor or hospital. Effective case management requires that the patient have access to transportation. Case managers strive to ensure access by providing bus tokens, money for gas or a ride in a state car when necessary. Resources are often insufficient to help all of the maternity patients who need transportation.

## V. INITIATE PROCESS FOR PARTICIPATION IN THE CENTER FOR DISEASE CONTROL'S NUTRITION SURVEILLANCE PROGRAM

### Study Directive

Initiate the necessary process by which the Commonwealth of Virginia may participate fully in the Center for Disease Control's Nutrition Surveillance Program.

### Background

The Nutritional Status Surveillance System coordinated by the Center for Disease Control (CDC) has two components. One component addresses the

nutritional status among high-risk pediatric populations and the other addresses nutritional status among pregnant women from generally low-income high-risk groups. Thirty-four states are participating in the pediatric component of the system and 17 states participate in the pregnancy component. The system continues to expand as additional states participate and as new nutritional status indices are added. System data are collected from a variety of sources, including health department clinics and other health and nutrition programs. Data collected by the system have a number of important applications for state use, which include the following:

1. Needs Assessment

   - Identify prevalent nutritional health problems
   - Identify characteristics of sub-populations at greater nutritional risk
   - Estimate magnitude of nutritional health problems in high-risk sub-populations

2. Program Planning

   - Justify funding for the establishment/expansion of nutrition services/programs
   - Develop short/long range goals/objectives for nutrition services/programs to prevent, reduce, and eliminate prevalent nutritional health problems

3. Nutrition Intervention and Education

   - Identify and reduce risk factors among individuals with poor nutritional health to minimize the complications and consequences of morbidity

4. Quality Assurance

   - Identify and control errors in nutrition assessment
   - Identify staff training needs in nutrition assessment

5. Nutrition Epidemiology Investigations

   - Describe prevalent nutritional health problems
   - Identify risk factors associated with poor nutritional health status in young children and pregnant women, poor pregnancy outcome, and not breastfeeding
   - Determine health outcomes/consequences directly attributable to poor nutritional status
   - Identify factors associated with effective interventions

## Current Status

Participation of the Virginia Special Supplemental Food Program for Women, Infants, and Children (WIC) Program in the CDC Nutrition Surveillance System requires a data collection instrument compatible with the CDC system and a data processing program capable of transcribing WIC data into the CDC format. In 1984, the WIC Program designed its initial data collection instrument to be compatible with the CDC System. Development and testing of the data processing program are expected to be completed by the end of fiscal year 1987. Once in full operation, transcribed WIC data tapes will be sent to CDC twice monthly for entry into the system. The Center for Disease Control will send monthly nutrition surveillance reports to the WIC Program at no charge.

# VI. COMPILE AND DISSEMINATE DATA RELATED TO PREGNANCY OUTCOME

## Study Directive

Compile and disseminate data on infant mortality, teenage pregnancies and other matters related to pregnancy outcomes in a timely manner.

## Regulatory Requirements

Title 32.1, Chapter 7, Article I, of the Virginia Code authorizes the Virginia Department of Health's Division of Vital Records and Center for Health Statistics to collect data regarding births, deaths, fetal deaths (including induced abortions), marriages and divorces in the Commonwealth. The statute sets forth requirements regarding the specific contents of the records, reporting, and release of certified copies or data from the records. The statute requires that all records be completed in full. The birth, fetal death and abortion records must be completed and filed by the institution of the event or, if none, by the person in attendance. The death record, except for the medical certification of cause-of-death, is completed by the funeral director. Marriage and divorce filings are the responsibility of the courts of jurisdiction.

The birth record must be filed within seven days of the birth at the local health department of the area where the event occurred. Records of death, natural fetal death and induced abortion must be filed at the local health department within three days of the event. The local health department forwards all vital records on hand to the Division of Vital Records on the 10th and 25th of each month. Clerks of court forward to the Division of Vital Records all records of marriages and divorces on hand on the 10th day of each month. A marriage must be filed with the court by the officiant within five days of the ceremony.

## Data Processing Procedures

In the Division of Vital Records all records are batched by type and primary month of the event, numbered, and made available for certification. The Center for Health Statistics codes, keys and processes the data. Records

are edited for errors and incomplete or missing information. Queries are sent to the appropriate party to try to obtain corrected or more complete data. Processing of each month's records is completed within two to three months of receipt in the Division of Vital Records. An "Interstate Exchange of Records" agreement among the states allows copies of birth and death records involving residents of other states to be forwarded to the state of residence. The state of residence may not use these records for certification purposes but the data may be used for demographic and health analyses. Resident vital statistics for border areas of Virginia would be greatly affected if these out-of-state events were not included since approximately 5,000 Virginia resident births and 2,500 deaths occur in other states each year.

Tape files of each type of event are maintained separately for each data year and each month's processing is merged with the appropriate year-to-date tape. The annual close-out procedures for the data year begin immediately after the end of the December processing which is in March; however, the files are far from complete. Efforts must first be made to ensure that the queries from the December report and those that have not been received from previous reports are followed-up and returned at the earliest possible time. Checks must be completed to see that records for all known events are filed and, if not, appropriate contacts made to have them filed immediately.

Special follow-up is done on low-weight, low apgar score live births for which an infant death record has not been filed. If it is determined that the infants did not survive, death records must be filed. Approximately 15 additional infant deaths are located through this process each year. While these measures are being taken, edits and audits are being run on the data on tapes, late Virginia records are being filed, and out-of-state records for Virginia residents are being received in the Center.

Although time consuming, the data processing procedures described above are essential to produce the accurate, relevant information necessary for assessing, planning, and evaluating health programs or actions relative to the citizens of Virginia. Usually by the end of the summer, Virginia's vital statistics for the previous year are available to users. Center staff are then able to accommodate numerous individual requests for data by preparing special tables, charts and analyses as required and making specific computer runs whenever necessary. Raw data tapes are also provided upon request. The published annual statistical report is distributed by the end of the year.

Virginia's annual statistical report is published earlier than those of most other states. For instance, the 1984 Massachusetts, Rhode Island, and California annual statistical reports show publication dates of April, May, and June, 1986, respectively. Virginia's 1984 report was published in December, 1985. Many of the states that publish earlier than Virginia do not perform extensive follow-up for completeness and accuracy.

## Strategies for Improving Data Accuracy and Timeliness

1. The Center for Health Statistics is planning to modernize its existing computer system by the direct entry of data into the computer terminal. The direct entry system will merge the coding, keying and querying into a single operation, eliminating much of the time-consuming paper handling.

Edits will be performed and query letters produced by the computer at the time of data entry. The data will then be available for indexes and for use in the procedures that ensure completeness and accuracy. The new system will also allow the direct updating and correcting of the electronic file.

2. To further expedite the receipt of birth certificates, the Center of Health Statistics and Division of Vital Records are exploring with the Virginia Hospital Association the placement of microcomputers in hospitals for direct entry of birth certificate information, which would then be transmitted to the Department of Health. This process would eliminate the keying of data by Department of Health staff.

3. Center of Health Statistics staff will work closely with the Division of Vital Records in a more vigorous and thorough follow-up of inaccurate, incomplete and missing records at the time of filing so that they may be received and processed prior to the close of the year.

4. A major problem delaying the release of data is the late receipt of records on out-of-state vital events for Virginia residents and the inordinate amount of time consumed in handling them. Negotations are in progress with several areas, particularly the District of Columbia and Maryland, to exchange computer tapes in addition to copies of records. Such an exchange of tapes would ensure an earlier receipt of information by the Center and would eliminate most of the coding and keying for more than 3,500 records.

# Appendices

## APPENDIX A

## Senate Joint Resolution #39

SENATE JOINT RESOLUTION NO. 39
AMENDMENT IN THE NATURE OF A SUBSTITUTE
(Proposed by the Senate Committee on Rules on
Feburary 10, 1986)
(Patron Prior to Substitute-Senator Scott)

Relating to infant mortality.

WHEREAS, in 1982, Virginia ranked forty-third in state infant mortality rates in the nation with a rate of 12.9 per 1,000 births, higher than the rate for the nation and some third-world countries; and

WHEREAS, although the State Department of Health has been directed by the General Assembly in the 1984-1986 biennium budget to make "programs which improve pregnancy outcome...a high priority," there still appears to be a need to aggressively seek solutions to this problem; and

WHEREAS, the Legislative Task Force on Infant Mortality through its study during the 1985 interim found the following:

1. A one year study conducted by a local health department in one area of the Commonwealth, revealed that seventeen percent of the women who scheduled an appointment to obtain contraception during that year became pregnant before their appointment; and

2. Delays in scheduling an appointment with local health departments is also a problem in other areas of the Commonwealth, some women having to wait as long as six weeks; and

3. There is a need to compile and disseminate data on infant mortality, teenage pregnancies and other data related to pregnancy outcomes in a timely manner; and

4. Economic constraints and federal cutbacks necessitate the immediate purging of nearly 4,000 needy women and children in Virginia from the WIC program, the Special Supplemental Food Program for Women, Infants and Children; and

5. The Center for Disease Control's Nutrition Surveillance Program is structured to provide states with an analysis of certain data regarding the state's population to determine that portion with the highest nutritional risk. This analysis would assist the Commonwealth in dropping from the WIC program only those Virginians who are nutritionally least at risk; and

6. The establishment of the case management system for all obstetric patients served by local health departments would provide a coordinated system for the delivery of health and social services and assure continuity of care for such patients throughout their pregnancy, delivery and postpartum period; and

7. The case management system would provide: interagency communication and coordination with community organizations for the delivery of needed services, coordination between the clinic and hospitals for the delivery of indigent follow-up care, and a maternal transport system for indigent obstetric patients, who are ineligible for Medicaid, to receive prenatal care and for delivery; and

8. Apnea monitors have been proven effective in monitoring and saving the lives of high-risk infants, such as those with certain pulmonary diseases and neurological disorders in which the respiratory system is affected, now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That the Department of Medical Assistance Services is encouraged to provide funding for apnea monitors in order that these life-saving monitors may be available for indigent and Medicaid eligible persons. The Department is requested to utilize its customary procedure in facilitating the purchase, rental or contracting of apnea monitors for access Statewide; and, be it

RESOLVED FURTHER, That the State Department of Health is hereby requested to:

1. Study the personnel needs in those areas of the Commonwealth having the highest incidences of low birth weight and infant mortality to determine the minimally optimal staffing requirements of local health departments and to develop a plan for the effective utilization of its full-time and part-time personnel to provide outreach services and the adequate delivery of family planning and prenatal, perinatal and neonatal medical services to the citizens of these areas;

2. Establish the case management system for all obstetric patients served by local health departments;

3. Initiate the necessary process by which the Commonwealth of Virginia may participate fully in the Center for Disease Control's Nutrition Surveillance Program;

4. Compile and disseminate data on infant mortality, teenage prgnancies and other matters related to pregnancy outcomes in a timely manner; and, be it

RESOLVED FURTHER, That the Clerk of the Senate shall prepare and send a suitable copy of this resolution to the Governors of the States of Tennessee, North Carolina, Maryland and West Virginia, the Commonwealth of Kentucky and the Mayor of the District of Columbia that they may be apprised of the sense of this body that such states reciprocate in the compilation and dissemination of timely data on infant mortality, teenage pregnancies and related pregnancy outcomes; and, be it

RESOLVED FINALLY, That the Departments of Medical Assistance Services and Health submit their findings and proposals for the implemention of the interventive strategies recommended to each Department to the Governor and the 1987 Session of the General Assembly.

APPENDIX B

RESOURCE REQUIREMENTS FOR MATERNITY AND FAMILY PLANNING SERVICES

| DISTRICTS | PROGRAM | WOMEN SERVED | ADDITIONAL WOMEN NEEDING SERVICES | CURRENT STAFF | NEEDED STAFF | ADDITIONAL STAFF NEEDED |
|---|---|---|---|---|---|---|
| RAPPAHANNOCK AREA | MATERNITY | 764 | 0 | 5 | 10 | 5 |
| (Planning District 16) | FAMILY PLANNING | 1,966 | 1,537 | 5 | 9 | 4 |
| LENOWISCO | MATERNITY | 505 | 19 | 4 | 7 | 3 |
| (Planning District 1) | FAMILY PLANNING | 1,962 | 943 | 8 | 9 | 1 |
| CUMBERLAND PLATEAU | MATERNITY | 282 | 281 | 5 | 8 | 3 |
| (Planning District 2) | FAMILY PLANNING | 1,757 | 2,190 | 8 | 11 | 3 |
| WEST PIEDMONT | MATERNITY | 285 | 232 | 3 | 7 | 4 |
| (Planning District 12) | FAMILY PLANNING | 1,242 | 2,068 | 4 | 10 | 6 |
| PITTSYLVANIA-DANVILLE | MATERNITY | 918 | 0 | 8 | 12 | 4 |
| (Planning District 12) | FAMILY PLANNING | 2,576 | 731 | 6 | 11 | 5 |
| SOUTHSIDE | MATERNITY | 454 | 0 | 6 | 6 | 0 |
| (Planning District 13) | FAMILY PLANNING | 2,140 | 295 | 6 | 6 | 0 |
| PIEDMONT | MATERNITY | 487 | 0 | 6 | 7 | 1 |
| (Planning District 14) | FAMILY PLANNING | 2,182 | 659 | 4 | 7 | 3 |
| RICHMOND CITY | MATERNITY | 1,805 | 0 | 14 | 25 | 11 |
| (Planning District 15) | FAMILY PLANNING | 7,081 | 1,070 | 31 | 38 | 7 |
| HANOVER | MATERNITY | 281 | 0 | 3 | 3 | 0 |
| (Planning District 15) | FAMILY PLANNING | 1,132 | 681 | 4 | 5 | 1 |
| CRATER | MATERNITY | 971 | 0 | 10 | 13 | 3 |
| (Planning District 19) | FAMILY PLANNING | 4,200 | 677 | 14 | 13 | 0 |
| W.TIDEWATER | MATERNITY | 983 | 0 | 8 | 13 | 5 |
| (Planning District 20) | FAMILY PLANNING | 3,326 | 0 | 9 | 9 | 0 |
| NORFOLK | MATERNITY | 907 | 0 | 5 | 12 | 7 |
| (Planning District 20) | FAMILY PLANNING | 8,316 | 1,656 | 20 | 27 | 7 |
| MIDDLE PENINSULA | MATERNITY | 390 | 0 | 2 | 5 | 3 |
| (Planning District 18) | FAMILY PLANNING | 1,376 | 262 | 5 | 6 | 1 |
| PENINSULA | MATERNITY | 943 | 0 | 9 | 12 | 3 |
| (Planning District 21) | FAMILY PLANNING | 2,904 | 4,216 | 4 | 18 | 14 |
| HAMPTON | MATERNITY | 446 | 420 | 2 | 13 | 11 |
| (Planning District 21) | FAMILY PLANNING | 1,851 | 2,107 | 3 | 12 | 9 |
| EASTERN SHORE | MATERNITY | 653 | 0 | 5 | 4 | 0 |
| (Planning District 22) | FAMILY PLANNING | 1,590 | 0 | 5 | 5 | 0 |
| PORTSMOUTH | MATERNITY | 757 | 524 | 6 | 18 | 12 |
| (Planning District 20) | FAMILY PLANNING | 1,757 | 1,804 | 5 | 11 | 6 |
| NORTHERN NECK | MATERNITY | 400 | 0 | 5 | 6 | 1 |
| (Planning District 17) | FAMILY PLANNING | 1,422 | 0 | 5 | 5 | 0 |
| VA BEACH | MATERNITY | 1,883 | 0 | 7 | 25 | 18 |
| (Planning District 20) | FAMILY PLANNING | 3,782 | 4,274 | 8 | 21 | 13 |
| CHESAPEAKE | MATERNITY | 904 | 0 | 7 | 12 | 5 |
| (Planning District 20) | FAMILY PLANNING | 2,043 | 1,213 | 5 | 11 | 6 |
| ALL TARGET | MATERNITY | 15,018 | 1,476 | 120 | 218 | 99 |
| DISTRICTS | FAMILY PLANNING | 54,605 | 26,383 | 159 | 244 | 86 |
| | SUBTOTAL | 69,623 | 27,859 | 279 | 462 | 185 |
| Data Source: | * IN ADDITION, 18 MANAGERS/SUPERVISORS REQUIRED | | | | | 18 |
| Fiscal Year 1986 | TOTAL | | | | | 203 |
| Health Department Data System | | | | | | |

## Appendix C

## Guidelines for Case Management of Health Department Maternity Patients

1. Every patient should have an assigned case manager.

2. To ensure that patients receive the necessary services, the case manager is responsible for:

   a. serving as a patient advocate and a source of information for both patient and other staff members involved in care of patient.

   b. coordinating patients' care by involving a broad-based team of professionals who assess the patient and establish a plan of care. Depending upon individual needs, the discipline having the most contact with the patient will vary.

   c. maintaining contact with patients who are referred to high risk centers.

   d. maintaining communication with the hospital through the liaison nurse when one is available.

   e. coordinating care among agencies, such as mental health, social services, Medicaid, and schools.

   f. coordinating patient transportation to clinic and/or hospital.

3. As patient advocate and coordinator of care, the case manager should assist the patient (and her family) in taking responsibility for care, rather than encourage dependency.

4. The case management system should provide for initial counseling and later follow-up of positive pregnancy tests with the objective of beginning maternity care in the first trimester.

5. As many services as possible should be provided patients during the same visit. For example, referral to WIC should be made when the patient is seen for her first maternity visit. In some districts, health department services are offered in the same building as social services. Having the services of different departments in close physical proximity aids in case management.

6. The case management system should ensure that the patient has arranged for a delivering physician and hospital and should encourage prior examination by the delivering physician. Patient records should be available to the delivering physician.

7. Written statements should be developed with private physicians and hospitals to identify the manner in which critical information concerning the patient will be shared as well as to assure that such information is received in a timely manner.

7. Written statements should be developed with private physicians and hospitals to identify the manner in which critical information concerning the patient will be shared as well as to assure that such information is received in a timely manner.

8. Orientation for new staff should include information about the case management system, including the role of community agencies and organizations in patient care. Existing staff should receive continuing education to update their skills and knowledge. Case managers in particular must be given the opportunity to learn how to assess and triage patients.

9. The following alternatives for providing transportation should be considered: 1) providing patients with bus tokens 2) providing patients with money for gas 3) arranging for a van to transport patients, including consideration of interagency pooling of vans 4) identifying other community agencies or resources to assist with meeting transportation needs and 5) use of State cars. The use of State cars may be the best option because the driver would be covered by the State's liability policy. City or county vehicles may be used, but restrictions on their use must be considered, such as their not being allowed to be taken across county lines. In some cases, the transportation need itself can be decreased by providing care at the local level whenever appropriate instead of transporting patients to regional centers.

10. Innovative approaches to delivering care should be explored, such as establishing cost-effective satellite clinics or mobile health units to increase accessibility, or offering financial incentives/gifts to attend clinics.