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Signs and Symptoms of Infection in Newborn Infants with and without Sibling Visits

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SIGNS AND SYMPTOMS OF INFECTION IN NEWBORN INFANTS WITH AND WITHOUT SIBLING VISITS

by

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The person whose signature appears below certifies that this project in her opinion is adequate, in scope and quality, as a project for the degree Master of Science.

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CHAPTER ONE

The Problem

The recent interest in restoring maternity and infant care to a family-centered affair has raised questions about including children in the events surrounding birth. Even though there are benefits to the sibling by visiting his mother and new brother or sister soon after birth (Mullaly and Kervin, 1978, p. 75), he has been excluded from the maternity unit because of concerns over infection control.

Statement of Problem

Does the sibling pose an infection risk to the newborn, and should he be excluded from early contact with the newborn during the hospital stay? This chapter describes the background and theory related to this problem.

Background and Need for Study

From the time of Florence Nightengale, nurses have been concerned with the prevention and control of infection. Management of a hospitalized patient's environment has been a major part of the infection control process (McArthur, 1980, p. 655).

Strict procedures related to infection control for newborn infants became mandatory around the turn of the century. Epidemics of diarrhea, scarlet fever, diphtheria and other communicable diseases led to many newborn deaths (Olds, et al., 1980, p. 9). Few babies were born in hospitals prior to the turn of the century; but with the threat of epidemics in the early 1900s, physicians encouraged not only hospitalization but total

separation of the newborn from the mother as well as from the rest of the family. The practice of isolating the newborn in a nursery became the norm even after deaths from communicable diseases declined (Olds, et al., p. 9).

Parents as well as nursery staff began to question the need for such strict safeguards for newborn care. Gradually, the proponents of family-centered maternity and infant care encouraged hospitals to relax some of the rigid policies. This has resulted in fathers being allowed in delivery rooms, rooming-in, and sibling presence in alternate birth centers. Even though some hospitals have been daring enough to allow some of these "new" practices that increase early family contact, many are still reluctant to allow sibling contact with newborns during their hospital stay.

There is very little in the literature to suggest that newborns having sibling contact in the first few days after birth are at greater risk from infection than those who are handled by a variety of adults -- parents, nurses, physicians, students, and so on. Thus families have been denied participation on the basis of inadequate data.

Objectives

The purpose of this study is to observe evidences of infection in a group of full-term newborn infants who are nursery residents. Policies can then be based on study findings rather than on assumptions.

Research Question

The study seeks to answer the research question: do infants who have had sibling visits exhibit more signs and symptoms of infection than infants who have not had sibling visits?

Theoretical Framework

This study is based on the belief that the sibling as well as the whole family benefits by sibling-infant contact in the hospital during the newborn's first days of life. The theoretical basis for risk to the newborn from the sibling contact will be developed by considering infection control and the newborn's defenses.

The Family System

The family has been defined as "a group united by marriage, blood, or adoption, residing in a single household, communicating with each other in their respective roles, and maintaining a common culture." (Burgess, Locke, and Thome, 1971, p. 1) The family system is one of the basic subsystems of the human social system and was established by God (L.L.U. School of Nursing Conceptual Model for Nursing p. 2). As the fundamental social unit, it plays an important role in determining the character and structure of society (Anshen, 1959, p. 3).

It is a social system which has the characteristics of wholeness, or interdependence, and interrelatedness. These characteristics make it important to assess the needs of one family member in the context of the whole family and in view of the interactions between all the members. The interactions occurring between the family members are of a circular nature. The "behavior of one member affects the behavior of another who in turn affects the behavior of the first member." (von Bertalanffy, 1968, pp. 37-67; Miller, 1980, p. 6) Thus the entire family is affected by "the level of functioning of the entire system and it's individual members." (L.L.U. School of Nursing Conceptual Model for Nursing, p. 2)

The family has boundaries created by the intense interaction of its

members. Within these boundaries, the young are assisted to develop self-identity as well as family identity (Beavers, 1977, p. 27). The healthy family demonstrates a clarity of roles. The parents function in the leadership role and do not pressure the children into functioning as little adults (Lewis, 1977, p. 177). The role of the siblings is important in the socialization and personality development of the child (Anshen, 1959, p. 37).

When a child enters the family system as a helpless newborn, the whole family may experience disequilibrium. In order to restore balance and comfort in the family system, the members must be able to meet the demands of the new member and integrate him into the family (Moore and Stern, 1980, p. 168).

The birth of a sibling is a stressful experience for a preschool child and is associated with regressive behaviors such as clinging, return to bottle feedings and diaper wetting. These behaviors were found to be decreased when the child was permitted to visit the mother and the new baby in the hospital (Legg, Sherick, and Wadland, 1974, p. 22). Mullaly and Kervin report observing expressions of grief by children excluded from the birth of a sibling (1978, p. 75). Thus it is reasonable to expect that the whole family system would be affected by the stress of the sibling.

Infection Control

The concept of infection control revolves around a relationship of the susceptibility of the human host, environmental factors, the infecting agent or microorganism, and the vector, or carrying agent (McArthur, 1980, p. 656). All these factors play a part in the occurrence of in-

fection. Attempts to break the chain of events that leads to infection must be aimed at all these factors.

Bacteria are the most frequent cause of infections in hospitals (McArthur, 1980, p. 657). The newborn acquires various bacteria during and after birth. These newly acquired bacteria may reside on the skin or in the digestive tract. This harboring of bacteria is called colonization and is normal. The most vulnerable spots for colonization in the newborn are moist areas of the nose, throat, and umbilical stump. Infection may result, however, when the number of bacteria becomes so large as to overwhelm the infant's natural defenses. Hense, it is important to keep the colonization levels low (Korones, 1981, p. 335). Among the ways to accomplish this are daily cleaning of the umbilicus with an antibacterial agent, strict hand-washing techniques, and individual bassinet techniques that restrict the use of common objects between infants (Keay and Simpson, 1977, p. 583).

Sources of Infectious Agents

The flora of the mother's genital and intestinal tracts may contain bacteria pathogenic to a newborn infant. During his descent through the birth canal, he is exposed to these agents. The predominant etiologic agents are group B streptococci and Escherichia coli (Korones, 1981, p. 317).

Infections caused by group B streptococci are evidenced by septicemia, meningitis pneumonia, or empyema. The consequences of this infection are serious; mortality rates range from 60 to 75 per cent with early onset (one to two days after birth), and from 14 to 18 per cent with late onset (between 7 and 60 days after birth) (Isler, 1975, p. 28).

Babies developing infection from E. coli may exhibit diarrhea or sepsis. Early signs of this infection are refusal of feedings and hypoactivity; diarrhea may not appear for a day or two (Korones, 1981, p. 328).

The most troublesome and commonly found nursery flora are Staphylococcus aureus, Escherichia coli, and Pseudomonas aeruginosa (Keay and Simpson, 1977, p. 585; Korones, 1981, p. 317). The gram-negative organisms seem to flourish in the moist environments of faucets, sink traps, solutions, and creams. The hands of nursery personnel are the main sources of cross-contamination (Hazuka, 1980, p. 826). Among newborns, these bacteria cause conjunctivitis or omphalitis (Korones, 1981, p. 329).

The infectious agents most likely to be carried to the newborn by the sibling are the viruses other than those controlled by immunization. Those particularly troublesome are adenovirus (conjunctivitis), thought to be introduced by direct contact with eye secretions of infected children; gastroenteritis; and influenza virus, whose incidence is highest in school-age children (A Manual for the Control, 1977, pp. 117-215).

Newborn Host Defenses

At birth, most of the infant's immunologic defense mechanisms are developed. Although not all the mechanisms are fully mature, the neonatal immunologic system shows a definite capacity for response to the environment (Bellanti and Bonner, 1981, p. 721). The newborn infant possesses both specific and nonspecific defense factors.

Nonspecific mechanisms include surface protection by the skin and mucous membranes. In addition, phagocytic cells are present in the blood that attack any foreign substances they encounter (Korones, 1981, p. 321).

"The inflammatory response of the tissues to localize an infection is immature." (Whaley and Wong, 1983, p. 244) This immaturity is thought to be related to the concentration of complement (C3) which does not reach adult levels until six months of age (Bellanti and Boner, 1981, p. 705).

The newborn's specific defense, that is, his antibody-response system, has the capacity to function, but it is inexperienced because of lack of encounters with infectious agents (Bellanti and Boner, 1981, p. 721).

The newborn will not produce his own gamma globulins for the first month of life (Whaley and Wong, 1983, p. 244). He has, however, received IgG immunoglobulins from the mother by active transport across the fetal membranes. This immunologic endowment reflects most of the mother's lifetime experience with infectious agents (Beer and Billingham, 1981, p. 14). These IgG antibodies protect the newborn for about three months until he can generate a sufficient level on his own (Korones, 1981, p. 322; Whaley and Wong, 1983, p. 244).

The newborn may also receive passive protection if he is given human colostrum and human milk. Colstrum and breast milk protect the infant from acute respiratory and gastrointestinal infections. Colostral cells are comparable with blood leukocytes in their phagocytic capacity (Ho and Lawton, 1978, p. 914). Breast milk contains IgA antibodies, macrophages, and some lymphocytes(Whaley and Wong, 1983, p. 244).

Theoretical Assumptions

Because of the widespread acceptance of immunization as a control for communicable diseases, children are assumed not to be significant carriers of the major childhood diseases. Further, immunized children free from symptoms of illness are assumed not to pose a greater threat of infection

to the newborn than do adults. Because of the trend toward early discharge of mothers and newborns (often within one to two days after delivery), newborns will soon be having contact with siblings whether or not they were allowed hospital visits. Also, because of this short stay, the risk of hospital nosocomial infections is decreased.

The new broad-spectrum antibacterial handwashing preparations are assumed to be as effective on the resident bacteria of the sibling as on the hospital staff when scrubbing prior to handling the newborn.

Hypothesis

There will be no statistically significant difference in the observed signs of infection during hospitalization and in the two to three weeks before the first visit to the pediatrician, between well newborn infants who have had hospital visits from siblings screened for symptoms of infection and those who have not had sibling visits.

Variables

The independent variable for the study will be the presence or absence of hands-on sibling visits to the newborn infant. Dependent variables will be the signs of infection that are observed in the infant while in the hospital and at the first visit to the pediatrician two to three weeks after discharge.

Definition of Terms

The terms used in this study, because they may have more than one meaning, are here defined for the reader.

sibling: a brother or sister of a newborn infant under the age of sixteen

sibling visitation: an arranged visit of the brother or sister to the

hospitalized mother and newborn, during which time the newborn is held and touched by the sibling

normal newborn: a full-term infant with no known clinical problems admitted to the well-baby nursery

Summary

Even though it is nursing's responsibility to recognize the potential for infection and to prevent occurrences through control measures, it is also a nursing responsibility to promote family wholeness. With the increased interest in including the siblings in events surrounding the birth of the newborn, there is a need to study the effects of sibling contact on infections.

Organization of Remainder of Proposal

The literature on current studies involving sibling visits to newborn infants and related topics is reviewed in Chapter Two. Chapter Three describes the methodology and design for the study. A description of the Big Brother and Sister Visitation Program, study tools, and a sampling flow-chart are included as appendices.

CHAPTER TWO

Review of Literature

This chapter describes the results of published studies concerning sibling involvement in family-centered maternity and infant care. Topics include newborn infection control and a review of studies related to sibling visitations.

Sibling Visits to Maternity Units

For years it has been the practice in hospitals not to allow children under 16 years of age into maternity wards. But as the interest of the public as well as professionals shifts to a focus on family-centered maternity and infant care, questions are being asked and strong sentiments expressed concerning the validity of the restrictions of early sibling/newborn contact (Trause, 1978, p. 207).

Adding to the momentum of the family-centered maternity/newborn care movement is the work of the Interprofessional Task Force on Health Care of Women and Children. This group was comprised of representatives from the American Academy of Pediatrics (AAP), American College of Nurse Midwives (ACNM), and American College of Obstetricians and Gynecologists (ACOG). The purpose of this task force was to develop a joint position statement for hospitals in implementing family-centered care. Their results, published in 1978, included the subject of sibling visits. Dr. Richard Aubrey, an ACOG representative of the task force, commented that he expected the results of the report to have a "revolutionary" effect on maternity care (ACOG backs family-centered, 1977, p. 1). Even though this statement gave official approval to the inclusion of siblings in family-

centered care, the involvement was limited to sibling contact with the mother in a family room. Hands-on contact of the newborn infant by brothers and sisters was not specifically included (Interprofessional Task Force on Health Care of Women and Children, 1978, p. 55).

As hospitals across the nation evaluated their maternity and infant care practices, many came to the same conclusion: that family-centered care included the siblings as much as the father, mother, and newborn. One such hospital, St. Elizabeth Medical Center in Dayton Ohio, began to include siblings as an integral part of their program. The first step of their program was a sibling/mother visit in a lounge, followed by a joint visit to the newborn nursery to view the new baby through the window. The nursery nurse unwrapped the baby and allowed the sibling to observe for a short period. The program did not include any hands-on contact by the sibling (Goodman, 1982, p. 52).

A program implemented by Calgary General Hospital included a "birthday party" for the newborn, during which the new brother or sister could actually hold the wrapped infant (Bliss, 1980, p. 43). These programs show how the nursing care plan can include ways to meet the needs of the sibling as well as the rest of the family (Taylor, 1980, p. 9).

Newborn Infection Control

Worries over the new liberality in maternity and infant care have been expressed by physicians. Dr. Alan Andrews, a Newport Beach obstetrician, expressed the fear of "introducing childhood viruses" into the newborn nursery and thus increasing the hospital's liability (Family-centered childbirth, 1977, p. 1). The idea of siblings in the maternity unit departs from the strict guidelines for newborn infection control

taught to nursing students in the 1960s. One nursing text states that children should be excluded because infections and communicable diseases "are so prevalent among them." (Fitzpatrick, Eastman, and Reeder, 1966, p. 366) However, by 1982, great strides in the control of the major communicable diseases have been reported by the Committee on Infectious Diseases of the American Academy of Pediatrics. Much of the success is attributed to improved immunization programs (American Academy of Pediatrics. Report of the committee, 1982, p. 1).

Bacterial Colonization and Infection

As the infant leaves his normally sterile environment at birth, he is bombarded by a host of microorganisms from a variety of sources, including the birth canal, hospital personnel and environment, family members, and other infants (Fahlberg, 1979, p. 39; Korones, 1981, p. 336). This exposure to microorganisms begins the development of resident flora. In spite of this exposure, 98.5 per cent of full term infants emerge from the neonatal period free of infections (Hazuka, 1980, p. 825; Handzel, et al., 1980, p. 494).

The infant's exposure to microorganisms results in bacterial colonization of the umbilical cord stump and nares; colonization also occurs in male infants on the circumcision site. Colonization rates of 40 to 90 per cent are seen by five days of age (Hazuka, 1980, p. 825). The infant's ability to withstand infection is compromised when the number and virulence of the colonized bacteria reaches a certain level (Keay and Simpson, 1977, p. 583).

The colonization of Staphyloccus has been traced primarily to the hands of nursery personnel. Other troublesome organisms such as Klebsi-

ella, Pseudomonae, Proteus, Flavobacterium, Serratia, and Escherichia coli are harbored in nursery equipment and solutions. Attempts to reduce colonization have included applications of alcohol, triple dye, or bacitracin ointment to the umbilical stump, and handwashing routines using Chlorhexidine (Hazuka, 1980, pp. 826-827). Czarlinski, et al., reported a significant reduction in cord colonization rates by application of either triple dye or bacitracin ointment to the cord stump (1979, p. 222). It is known that overcrowding increases infections (Keay and Simpson, 1977, p. 584). California requires the maintance of three feet between bassinets in a central newborn nursery (Title 22, California Administrative Code, Section 70553).

During the hospital stay, infants are observed to assess their well being and to detect signs of possible infection (Brodish, 1981, p. 45), such as poor temperature control, either hyper or hypothermia, lethargy or irritability, skin rashes, cyanosis, poor feeding or vomiting, abdominal distention, and pallor (Klause and Fanaroff, 1973, p. 212).

Studies of Sibling Visitation

There is a paucity of studies on the association of colonization or infection rates of infants with hands-on contact with their siblings. The following reports are on studies by Umphenour, Wranesh, and Kraus.

Study by Umphenour

The first of three known studies on colonization rates in newborns with sibling visits was done in a 25-bed obstetrical unit of a military hospital in Georgia. Siblings were allowed to visit during a two-hour period each evening at the mother's bedside after an iodophor scrub. Gowning was not required. The siblings were allowed hands-on contact

with the newborn.

A control group composed of 214 infants was developed to obtain a baseline before sibling visitation was implemented. Cultures of the cord stump and nares were taken on admission to the nursery and at discharge. The same type of cultures taken of the study group (n = 182) showed no significant difference from the control group in colonization rates. Three weeks after discharge, the charts of babies from both groups who had negative cultures on admission and positive cultures on discharge were reviewed (n = 89). Three cases of infection were revealed: two were monilial diaper rash, and one was Staphylococcus epidermidis conjunctivitis.

Siblings were not screened in this study. Parents were asked not to bring in ill children, but compliance was at their discretion. Inasmuch as the control group data were collected prior to the study data, there is no way to know if colonization rates vary with seasonal changes (1980, pp. 73-75).

Study by Wranesh

This study of a sibling visitation program compared colonization rates between infants who had sibling visits and those who did not. It was carried out in a 32-bed maternity unit in the Midwest. The study and control groups were hospitalized during the same period. Siblings were screened by the nursing staff prior to the visit, which included taking the temperature and observing for visible signs of infection as well as asking questions about recent signs/symptoms and immunization or exposure to communicable diseases. The sample contained 20 infants in the study group and 20 in the control group. Cultures of the umbilicus and nares

for the study and control groups showed no significant difference in the colonization rate between the two groups. Follow-up of the first clinic visit showed no difference in the incidence of actual infection between the two groups. The small sample size weakens this study (1982, pp. 211-213).

Study by Kraus

This study collected demographic data on mothers who had their children visit the new baby, assessed the value these mothers placed on the visit, and determined whether the number of infections in the nursery increased as a result of the visits. Data were obtained by interviewing 30 mothers who had their older children visit. Kraus reports that the infection rate did not increase, but she does not specify how this was determined. The sample was biased toward private patients (as opposed to clinic patients), so the results probably indicate perceptions of a higher socioeconomic group (1979, p. 36).

Summary

The literature of sibling involvement with the newborn infant as a part of family-centered maternity and infant care has been reviewed. The review suggests that there is a trend toward more sibling involvement. However, concern for infection control is the main inhibiting factor. Very few researchers have studied the increase in colonization or infection among infants experiencing visits from their siblings. Those studies cited showed no significant difference in colonization rates between infants who have or have not had sibling hands-on visits.

CHAPTER THREE

Research Methodology and Design

Introduction

The purpose of this study is to observe newborns who have had sibling visits and those who have not for signs and symptoms of infection. This association testing study will have a convenience sample of newborn infants who have had sibling visits during their hospital stay. Registered nurses caring for the newborns in the well-baby nursery will record their usual newborn observations on the Neonatal Health Screen form designed for this study. Follow-up observations of the newborn will be made at their first visit to the pediatrician two to three weeks after discharge. Signs and symptoms observed in the study group will be compared to the same observations of a control group without sibling visits. This chapter gives details of the methodology and design of the study.

Study Design

This study will be an association testing study at the third level of inquiry. As such, it is concerned with testing theory. Association means "that factors occur together or vary together, but no attempt is made to say that one causes the other." (Diers, 1979, p. 144) The design will be a prospective one with initial and follow-up measurements (Diers, 1979, p. 148).

Sample

The subjects will be selected from newborn infants admitted to the newborn nursery. Two hundred infants will be assigned to the study group

and two hundred to the control group. The control group will consist of newborn infants with siblings who have not had contact with their siblings during hospitalization.

Criteria for Selection of Subjects

1. gestational age > 38 weeks, < 42 weeks
2. birth weight > 2600 grams
3. No observation in or admission to the neonatal intensive care unit.
4. Membranes ruptured < 24 hours preceding birth.
5. No suspected congenital infection.
6. Apgar score $\geq$ 7 at 1 minute
   $\geq$ 8 at 5 minutes
7. Sibling visit with hands-on contact.

Recorded Variables

1. age of infant
2. sex
3. breast or bottle fed
4. number of sibling visits
5. number of siblings
6. daily nursery census

Observed Signs of Infection

Poor feeding, vomiting, diarrhea, lethargy, irritability, increased or decreased temperature, cyanosis, pallor, abdominal distention, redness or pus around cord, conjunctivitis, or rash observed in the newborn dur-

ing hospitalization and during the first visit to the pediatrician two to three weeks after discharge.

Confounding Variables

Variables that could confound the study results are viral infections in the sibling that are in the incubation period with symptoms inapparent during the pre-visit screening.

Sampling Plan

The sample will be a convenience sample with the occurrence of sibling visitation being the only independent variable measured. This natural occuring variation will give some approximation of randomness (Diers, 1979, p. 152). See Appendix A for flowsheet of sample selection.

The sample population will consist of about 60 per cent private patients from middle to upper-middle socioeconomic class and 40 per cent Medi-cal patients from low socioeconomic class. This is an average mix representative of the hospital population and of the population served by the hospital.

Parents may drop from the study during the follow-up phase by choosing a different pediatrician for follow-up. Also, families may move. I hope the dropout problem will be minimized by the fact that follow-up will occur relatively soon after the initial measurement. To compensate for possible dropout, the study will continue until the desired number of subjects is obtained.

Setting

The setting for this study will be the Maternity and Infant Unit at a 538-bed teaching hospital in southern California. The nursery has 12

bassinets and an average daily census of 9 infants. Babies are admitted to the nursery after being held by the mother for one to two hours in the recovery room. A registered nurse is assigned to care for these infants on each eight-hour shift; and depending on census, she may be assisted by a licensed vocational nurse or a nursing assistant.

This hospital has had a sibling visitation program for about one year. The criteria for the visit consist of the sibling being up-to-date on immunizations and being free from obvious signs of infections, such as nasal discharge or rash. The specifics of this screening process are presented in Appendix B.

Visits are conducted in a family waiting room adjacent to the maternity and infant unit. The parents are assigned an appointment time to assure that only one family uses the waiting room at a time.

Instrumentation

Data will be collected on each infant by a registered nurse, who will record her observations on the Neonatal Health Screen form (see Appendix C) developed specifically for this study. Her instructions are to record the presence or absence of symptoms that normally indicate possible infections as stated by Klaus and Fanaroff. These symptoms include: poor feeding, vomiting, diarrhea, temperature instability, lethargy, irritability, rash, cyanosis, pallor, abdominal distention, and redness or pus around umbilical stump (1973, p. 212). This list of symptoms was reviewed by Dr. Chul Cha, Neonatologist and Director of the Neonatal Intensive Care Unit. He agreed that the symptoms were those first seen in cases of possible infection. All data can be collected without instrumentation except for temperature data. All observations are part of the usual assess-

ment of all newborn infants and will not incur additional cost for the study or hospital.

Protection of Rights of Subjects

The study will measure events naturally occurring in the setting without any attempt to change or manipulate them. Thus, there is no ethical concern. A consent form is not necessary as the observations are normally made in the routine care of the infants. Observations are currently documented by recording positive findings on the infant's record. This study requires the recording of the absence of signs and symptoms on the data collection form. The data collection forms will be collected and reviewed only by the researcher. Infants will be identified by number to assure confidentiality. The study will be submitted to the Research in Nursing Committee, a subcommittee of the University Institutional Review Board. Permission for the study will be obtained from the hospital Director of Nurses and the Medical Director of the nursery. The Head Nurse of the Maternity and Infant Care Unit will be informed of the study.

Procedure for Data Collection and Recording

The registered nurse on duty during morning shift in the Nursery will make the required observations. The nurses assigned to the newborn nursery will be instructed during an orientation session how to make the observations and to record them. The temperature will be taken before undressing the infant for his morning bath; then the observations for rash, cyanosis, pallor, abdominal distention and cord and eye condition will be made and recorded on the Neonatal Health Screen form. Observa-

tions of lethargy, irritability, diarrhea, and vomiting will be recorded at anytime it occurs by the nurse on duty at that time. Documentation of poor feeding will be made if the infant displays poor feeding on at least two consecutive feedings. Both positive and negative findings will be recorded as yes or no choices after each listed observation. Absence of the signs and symptoms being observed will be recorded at least once every 24 hours at the time of the morning bath. The infants will be observed daily during hospitalization and once just prior to discharge. All infants in the nursery during the study period will be observed, regardless of whether they are admitted to the study. The Neonatal Health Screen form will not become a permanent part of the baby's record as the observations are usually made and recorded on the permanent record as part of routine newborn care. In addition, positive findings are routinely reported to the pediatrician.

At the first visit to the pediatrician, two to three weeks after birth, observations of signs and symptoms of postnatal infections will be made by the pediatrician and recorded on the Neonatal Follow-up Health Screen tool. (see Appendix D) The pediatricians will be instructed to use the follow-up form prior to the study. The pediatricians have agreed to complete the Neonatal Follow-up Health Screen form. The completed Neonatal Health Screen forms will be picked up once a week by the researcher.

Data Analysis

The data listing the frequency of signs and symptoms of infection as recorded on the observation tools will be enumerated and analyzed by computer. Chi square test for significance will be used. This test is the one most appropriate for a two sample, non-paired study using nominal

data.

Methodological Assumptions

Neonatal Health Screen tool is assumed to list all important symptoms that would indicate infection in newborns. It is also assumed that the registered nurses and physicians involved will record their observations accurately.

Limitations of the Study

Because of the natural setting of the study, it is impossible to control other variables that could contribute to infections in newborns. Such variables include nurses and physicians who are infected or who fail to wash their hands correctly and environmental factors such as contaminated supplies and equipment. If the study results show a significant increase in infections among the study group, it would not be possible to determine if sibling visits were the causative factor. However, if the difference between the study and control groups is not significant, I would conclude that the benefits of the sibling visits out-weigh the risks to the infant.

Since the sample is non-random, the results will only be cautiously generalized to other populations.

Summary

This chapter describes the overall study design and methodology. This association testing study will use a convenience sampling of newborns in the newborn nursery at a 538-bed teaching hospital. Observations of signs and symptoms of infection will be made and recorded on a Neonatal Health Screen form and a Neonatal Follow-up Health Screen form. The

specific procedures have been outlined for data collection, recording and analysis. The study will not attempt to manipulate the environment and will require minimal subject protection. The study will be limited by the inability of the researcher to control other variables that are potentially sources of infections.

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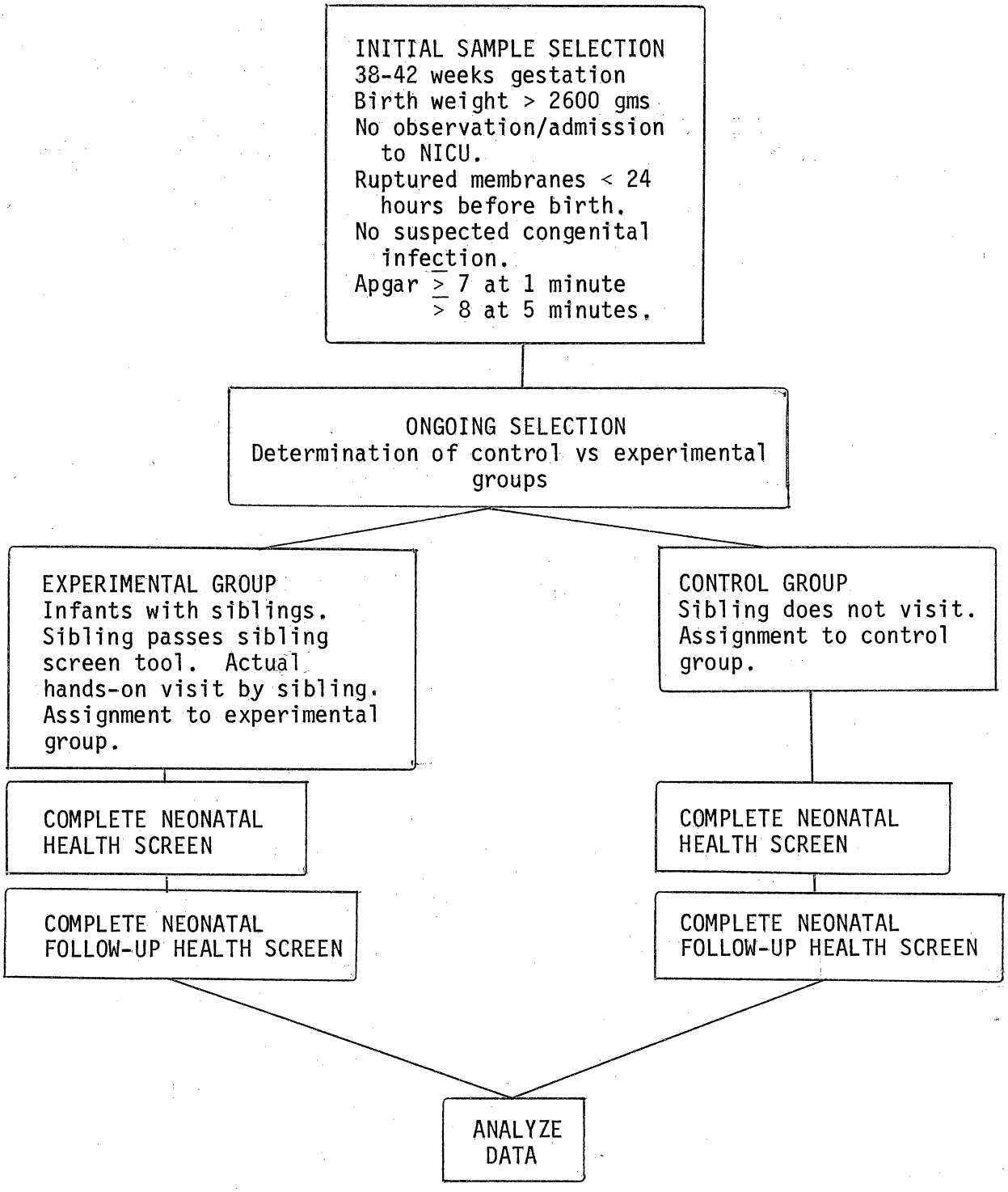
Appendix A

Sampling Flowsheet

Sampling Flowsheet



Appendix B

Big Brother and Sister Visitation Program

G BROTHER & SISTER
ISITATION PROGRAM

Dear Mom and Dad,

We're delighted that you have chosen to have your baby here at Loma Linda University Medical Center (LLUMC)! This letter is to let you known about our exciting BIG BROTHER/SISTER PROGRAM!! LLUMC supports the concept that a new baby's arrival be celebrated by the entire nuclear family — which includes brothers and sisters.

In order to provide this program without increasing the risk of infection and other illness to mother or baby, certain guidelines have been established. Your willingness to comply with these guidelines will ensure the program's continuation and success.

1. The program is designed for the brother(s) and sister(s) of the new baby only.
2. Appointments for visits can be made with the secretary or nurse on our maternity unit (3200), preferably one day in advance. The visits will be for one-half hour during the times listed:

   10:00 am — 12:00 noon
   1:00 pm — 7:00 pm *7 days a week
3. The visit will take place in our Family Room (#3219). No children are allowed in the patient care area.
4. Parts I and II of the screening questionnaire must be completely filled out. If your child's immunizations are not up to date or if he has any sign of infection (such as — rash, fever, cough, runny nose, etc.) your child will not be able to participate in this program.
5. At the time of the visits the nurse will complete Part III of the questionnaire. She will also assist you and your family with handwashing and gowning before bringing your baby to you. The baby will be wrapped in a blanket. Please do not unwrap the blanket during the visit.

Should you have any further questions please call:

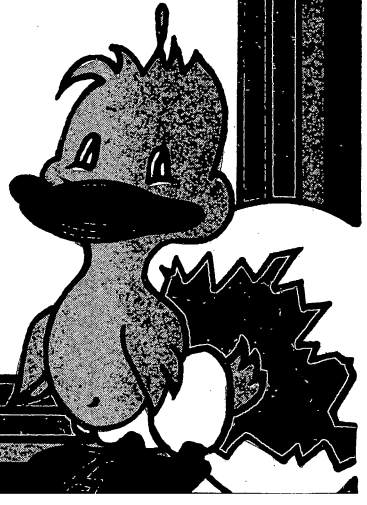
Valerie Eastman, RN, MS
Perinatal Nurse Educator
(714) 824-0800 x 3369

or

Louella Graves-Freeman, RN, MS
Head Nurse/Maternity
(714) 824-0800 x 2214

Best Wishes,

The Maternity Unit
LLUMC



ıe of Child | Age | ☐ Male ☐ Female

ONE FORM PER CHILD. MAY BE FILLED OUT BEFORE MOTHER'S ADMISSION.

Children are required to have one dose of DPT and Polio at approximately 2, 4, 6 and 18 months of age--this means the series is not completed unless the child has had 4 doses by two years of age. Also, the child should have an additional DPT and Polio dose if over 6 years of age-making a total of 5 doses.

IMMUNIZATION RECORD:

Circle the number of immunizations your child has had:

1 2 3 4 5 DPT (Diptheria, pertussis, tetanus)

1 2 3 4 5 Polio

Check regarding the following immunizations:

Yes	No	
☐	☐	Measles (10 day) (at 15 months)
☐	☐	Mumps (at 15 months)
☐	☐	Rubella (German/3 day Measles) (at 15 months)

SKIN TEST RECORD: TB ☐ Yes ☐ No

Please indicate the source of the above information: ☐ Immunization record book (copy) ☐ Clinical record

Physician attending child: _____ Phone: _____

Has your child had:

	Yes	No	If yes, when?
Chickenpox	☐	☐	_____
Measles (10-day)	☐	☐	_____
Rubella (German/3 day measles)	☐	☐	_____
Pertussis (Whooping cough)	☐	☐	_____
Mumps	☐	☐	_____
TB	☐	☐	_____
Other contagious disease	☐	☐	_____

If yes, please specify _____

TO BE FILLED OUT THE DAY BEFORE THE VISIT

Has your child been exposed to any of the infections mentioned in PART I in the past 3 weeks? ☐ Yes ☐ No

If yes, which one? _____ When? _____

Is your child sick in any way now?

Yes	No	
☐	☐	Fever
☐	☐	Cough
☐	☐	Runny nose/congestion
☐	☐	Sore Throat
☐	☐	Skin rash
☐	☐	Diarrhea
☐	☐	Vomiting
☐	☐	Other (if yes,please specify) _____

Family instructions have been read and are fully understood. ☐ Yes ☐ No

Signature of Parent _____ Date _____

FOR OFFICE USE ONLY

Yes	No	Uncertain	
☐	☐	☐	Does child have evidence of contagion?
☐	☐	☐	Does child have a rash?
☐	☐	☐	Does child have objective evidence of infection (cough, coryza, etc.)
☐	☐		Approved for visiting?

Signature _____ R.N. Date _____

LOMA LINDA UNIVERSITY MEDICAL CENTER

BIG BROTHER/SISTER VISITATION SCREENING RECORD

PATIENT IDENTIFICATION

:2 (9-83)

Appendix C

Neonatal Health Screen

I.D. No: _____

Date of Birth: _____

Sex: M F

Feeding: Breast Bottle

No. of Visits: _____

No. of Siblings: _____

LOMA LINDA UNIVERSITY MEDICAL CENTER

NEONATAL HEALTH SCREEN

SIBLING VISITATION STUDY

Please check if there is evidence of:

	Date: Day One	Date: Day Two	Date: Day Three	Date: Day Four	Date: Discharge
POOR FEEDING	YES NO	YES NO	YES NO	YES NO	YES NO
VOMITING	YES NO	YES NO	YES NO	YES NO	YES NO
DIARRHEA	YES NO	YES NO	YES NO	YES NO	YES NO
LETHARGY	YES NO	YES NO	YES NO	YES NO	YES NO
IRRITABILITY	YES NO	YES NO	YES NO	YES NO	YES NO
TACHYPNEA	YES NO	YES NO	YES NO	YES NO	YES NO
↑ or ↓ TEMP					
> 99^{o}	YES NO	YES NO	YES NO	YES NO	YES NO
< 97^{o}	YES NO	YES NO	YES NO	YES NO	YES NO
RASH	YES NO	YES NO	YES NO	YES NO	YES NO
CYANOSIS	YES NO	YES NO	YES NO	YES NO	YES NO
PALLOR	YES NO	YES NO	YES NO	YES NO	YES NO
ABDOMINAL DISTENTION	YES NO	YES NO	YES NO	YES NO	YES NO
REDNESS OR PUS AROUND CORD	YES NO	YES NO	YES NO	YES NO	YES NO
CONJUNCTIVITIS	YES NO	YES NO	YES NO	YES NO	YES NO
Nursery Census	_____	_____	_____	_____	_____

_____RN

If there are any questions regarding this form, please contact: Marilyn Thunquest, RN Director of Parent-Child Nursing Department, extension 2308

6/1/83

Appendix D

Neonatal Followup Health Screen

I.D. No.: _____

Date: _____

Feeding: Breast Bottle

LOMA LINDA UNIVERSITY MEDICAL CENTER

NEONATAL FOLLOW-UP HEALTH SCREEN

SIBLING VISITATION STUDY

Please indicate occurrence of infection following discharge from nursery	YES	NO
Please describe:		

Please circle if there is evidence of:

POOR FEEDING	YES	NO
VOMITING	YES	NO
DIARRHEA	YES	NO
LETHARGY	YES	NO
IRRITABILITY	YES	NO
TACHYPNEA	YES	NO
↑ or ↓ TEMP		
> 99^{o}	YES	NO
< 97^{o}	YES	NO
RASH	YES	NO
CYANOSIS	YES	NO
PALLOR	YES	NO
ABDOMINAL DISTENTION	YES	NO
REDNESS OR PUS AROUND CORD	YES	NO
CONJUNCTIVITIS	YES	NO

_____MD

If there are any questions regarding this form, please contact:
Marilyn Thunquest, RN, Director of Parent-Child Nursing Department, extension 2308.

6/1/83

Addendum

The following are alternate methodological suggestions for carrying out this study:

1. Include a second control group made up of infants without siblings.
2. Divide groups into age ranges that correspond to pre-school age, school age, pre-teenage, and teenage.
3. Monitor effects of sibling visits by the use of viral cultures taken at specified times.

These suggestions may give additional useful information to the researcher. They will however, increase the sample size, length of the study, and the cost.

Also I have added here two historical articles which, because of their contrast with current thinking, emphasize the changes that have occurred in family-centered maternity and infant care.

THE NEWBORN INFANT—A PROBLEM FOR EVERY HOSPITAL*

ALBERT V. STOESSER, M.D. AND ARTHUR MOSS, M.D.

HOW to provide safe care for a large number of newborn infants in a practical and economical way is a problem which confronts administrators, doctors and nurses in every hospital having an active maternity department. In solving this problem it is necessary not only to study the physical set-up of the nursery and analyze the nursing procedures, but also to develop a teaching program for the personnel and, of equal importance, for the mothers of the babies.

The following regulations, procedures and instructions are ones we are using at present, and we hope that in presenting them we may help those who are having difficulty with their setup.

To begin with the nursery, our first consideration was given to its physical arrangement and also its compatibility with the easy performance of isolation or aseptic technique. The entrance to our unit is from a corridor of the maternity section; we feel this is highly preferable to coming in from the main corridor of the hospital which is open to all visitors. As one enters the nursery he comes into a small anteroom where supply cupboards for caps, masks and gowns, wash bowls and paper towels and the desk for records are located. Anyone entering the nursery, must first scrub, gown and mask before handling the infants. Too much emphasis cannot be placed on the fact that the preparation of the personnel must be carried out in a room outside of the general nursery. Records are kept outside of the nursery proper and need never be taken into the nursery for inspection. Furnishings are as simple as possible. Pictures, draperies, both on windows and bassinets, are dust collectors and have no place in the environment of a newly born infant. Our nursery proper contains only row after row of cribs and basin standards with basins containing the antiseptic solution used to rinse hands before the handling of the babies. We were fortunate in the arrangement of our nursery that it afforded a third room conveniently connected with the nursery proper where we can bathe our infants and keep the linen necessary for one day's use. A heated bathing counter was built around two walls of this room so that a number of babies may be taken care of at one time. A convenient shelf for equipment was built above the bathing counter. The room contains all the other bathing equipment necessary but is on the whole very simply furnished. If any infant must be isolated, he is sent over to the pediatric section of the hospital so that we have no need for an isolation or septic nursery in connection with the regular nursery.

The temperature and humidity are important considerations. The maintenance of a proper environment from the moment of birth not only makes the infant comfortable to such an extent that restlessness is greatly reduced, but is also a prophylactic measure against upper respiratory infections. If the temperature and humidity of a room vary greatly during a twenty-four hour period or if the room is consistently too warm or cool or too dry an irritation of the mucous membranes of the nose and throat will result; this, in turn, makes a fertile field for infection. Therefore, we keep the temperature between 76 and 80 degrees F. and the humidity between 45 and 55 per cent saturation.

Temperature and humidity should be carefully watched by the nurses to keep these within the limits that are most comfortable to the new infant. For the premature a simple incubator which functions independently of room temperature and humidity is advisable. Spark-proof controls installed in a simple wooden enamelled box regulate temperature and humidity when the desired levels are set. When necessary, heat is supplied by four electric lights on the floor of the box and hu-

*We are privileged to present this valuable article to nurses through the courtesy of Miss Frances Hoffert, R.N., teaching supervisor in obstetrics at the Minneapolis General Hospital.

The authors

Dr. Stoesser is associate professor of pediatrics, University of Minnesota, and pediatrician in charge of the newborn nursery; Dr. Moss is resident in the pediatric department at the Minneapolis General Hospital.

midity is increased by evaporating water with a shock-proof electric vaporizer.

For full-term infants a cool nursery is desirable during the summer months. A simple ice cooler (two or three if the nursery is large) is all that is needed. The ice can be put in while the cooler is rolled out of the room without contamination and a fan in the cooler, in blowing the air over the ice, provides the necessary coolness. Strangely enough the cooler adds or subtracts water in the room as may be necessary. Another type of window cooler resting on the sill out of the way of nurses is also satisfactory. Its operative unit is similar to that found in electric refrigerators.

Much heat can be kept out of the nursery in hot weather by the use of reinforced aluminum oxide paper insulation which may be attached to the upper part of the window frame and rolled down over the window with the bright side toward the glass.

In winter a dry nursery will cause irritability. Comfort can be restored by administering large amounts of water by mouth but this is quite unnecessary if the humidity of the nursery is regulated. Moisture may be added to the air by first conducting the steam for the radiators through coils of pipe at the bottom of a deep copper pan which is kept filled with water. This prevents the radiator from becoming too warm and gives the needed moisture. Every nursery should be fitted with a guide as to humidity and temperature and nurses should be instructed to record the readings every two hours, day and night. The apparatus should be checked at least every three months with wet and dry bulb apparatus to be assured of its accuracy. It is our experience that hand manipulated apparatus is more inexpensive to operate and less likely to get out of order than automatic apparatus.

We believe that the routine care of the babies should be as simple as possible so that we may avoid excessive handling. The evils of handling an infant excessively are two; first his rest is disturbed; and second, he is exposed to infection. By teaching good observation to the nurses, taking temperatures more than once daily can be eliminated. The babies receive only two baths during their stay, the first is an oil bath to remove the vernix caseosa, and the second is a soap and water bath given on the day of discharge. The daily care consists of a change of clothes and necessary care of the touching skin surface. The infants are made dry and clean before each nursing period and again if necessary when they return from their mothers. They should not be disturbed frequently to be shown to visitors and are therefore shown only a short period of time on visiting days. All visitors except fathers are excluded from the maternity section so that a great deal of disturbance is eliminated.

The newborn infant is not disturbed for feeding for a period of sixteen hours immediately following birth. During this time the baby is kept warm and dry and temperature is checked every four hours. After this rest interval, the infant is put to breast at the next regular feeding period. During the first twenty-four hours following the rest period the baby is permitted to nurse not longer than five minutes to the feeding. On succeeding days the length of the nursing is gradually increased. Eventually the infants remain at breast for a total of twenty minutes. Customarily, this total is made up of ten minutes at each breast per feeding. We have no objection, however, if the mother prefers to limit the entire nursing period to alternate breasts. The mother is instructed to watch and regulate this time. All infants are put to breast every four hours for five successive periods of the twenty-four hours, commencing with the feeding at 5:00 A. M. They do not go to breast at the sixth four hour period of the twenty-four hours.

During the first four days following birth each baby is given sterile water immediately after nursing. Sterile water is given at the sixth period also (the night period), although the infants do not go to the breast at this time. The total amount of water retained in each twenty-four hours is recorded on the chart. If a baby develops an elevated temperature, the water intake is doubled by the expedient of giving water every two instead of every four hours. After the fourth day (beginning with the first feeding period of the fifth day), water is best given at the half way interval between feedings instead of immediately after nursing. When it is evident that the infant is getting a sufficient amount of breast milk and is gaining satisfactorily, the water is discontinued. It is given, however, if the baby is restless.

During the first days of life the infant is not weighed before and after each feeding unless the weight loss totals more than one-tenth of the birth weight. In those instances in which the weight loss does exceed one-tenth

birth weight, the amount of milk that receives at each feeding should be determined by weighing him before and after each feeding. From this data, the necessity of a supplemental or complemental feeding may be determined. This procedure should also be carried out if, regardless of the weight loss, he fails to start recovery of weight by the beginning of the fifth day. If he has once started to gain in weight after the initial physiological loss, then no "ac" and "pc" weighings are necessary unless the weight remains stationary or there is a loss in weight for two consecutive days.

Frequent weighing and too much complemental or supplemental feeding leads to excessive handling of the infants. Simplification of the feeding and weighing schedules definitely reduces the danger of breaks in aseptic technique. The importance of establishing a minimum of handling cannot be too greatly stressed.

No complement feeding is in any instance given without order of the attending staff. A complementary feeding can be more carefully ordered if it is known first how much breast milk the baby has received at each feeding the day before and how well the mother's breasts are secreting milk. When such a feeding is ordered, an accurate and careful record should be kept of the amount obtained. A complementary feeding is to be offered to an infant; it is never forced.

Proper care of the skin is essential for the prevention of cutaneous infections and irritations. The procedure which we have recently adopted is simple, rapid, and economical. It has proven to be far superior to the elaborate methods of the past. Immediately after birth, the excess vernix caseosa is removed with sterile cotton pledgets dipped in baby oil. After this no bath is given with either water or oil until the day of discharge from the hospital (eighth day). The genitalia and anus are cleansed as necessary with sterile water and cotton pledgets. On the day of discharge a soap and water bath is given. The temperature of the bathing room is maintained at 80 to 84 degrees F.

Each hospital has its own methods of teaching the personnel. The routines are slightly different but the facts that the attendants must know are very much the same. Before an observation can be made the nurses must know what is normal and what is abnormal about babies. Beside the normal weight, color, etc., there are a number of general observations in each nursery that the nurses must be able to make. For instance, immediately after birth the temperature of the infant is slightly higher than that of the mother. In the next few hours it drops 1½ to 2 degrees and tends to remain low during the first day. It must be remembered that the body temperature of the newborn baby is easily altered by changes in the temperature of the environment. A common cause of fever during the first five days of life is inanition. This is encountered most commonly during the warmer months when cutaneous fluid loss is at a maximum. An infant with such a condition is noticeably dehydrated, and the temperature may reach a level of 105 degrees F. The response to additional fluids, either orally or parenterally is almost immediate.

Normally, a newborn baby remains asleep throughout the greater part of the day but is easily awakened. A normal infant will remain awake while handled, and, if recently fed and comfortable, will soon return to sleep when placed in his bassinet. The activity of the baby has great significance. If mature, he cries when stimulated, maintains this cry for at least a few minutes, vigorously moves his arms and legs, and then gradually settles back to sleep again. Difficulty in waking him and in making him cry or a feeble and poorly maintained cry are indications of the presence of some abnormality such as immaturity, atelectasis, narcosis, or intracranial injuries.

A crowing cry, not accompanied by any signs of laryngeal obstruction (cyanosis, suprasternal retraction), is probably evidence of so-called congenital laryngeal stridor. It is attributed to looseness or redundancy of the vocal cords and has no pathologic significance. It usually disappears in a few weeks but may persist for several months. Tetany and possibly enlargement of the thyroid gland as causes of the crow are to be considered.

Hiccoughing and sneezing occur rather frequently in the normal infant. It is seldom that the newborn baby yawns or coughs.

Coarse desquamation is often present the first two or three days of life. Jaundice commonly occurs but usually disappears during the first week. If persistent or associated with other abnormal symptoms, attempts are made to determine the presence of the more serious causes of icterus.

Bluish pigmented areas, the so-called Mongolian spots are sometimes found on the back, buttocks, or extremities of certain races, notably Italian, Jewish, Negro and Oriental.

Cutaneous eruptions in the folds of the skin (intertrigo) are not uncommonly encountered during warm weather. They result from the accumulation of secretion, uncleanliness, and excessive warmth. Of prime importance in the treatment is the elimination of the underlying cause.

The appearance of superficial blebs is considered and treated as impetigo until this condition is definitely ruled out. Such treatment consists of exposure of the lesions to air and dry heat and also of the application of either silver nitrate, gentian violet, or Alulotion. Silver nitrate is used as a ten to twenty per cent solution and applied once daily, care being taken to limit application to the individual lesions. Gentian violet is employed as a five per cent solution in seventy per cent alcohol and applied twice daily. Although therapeutically effective, this preparation has the disadvantage of staining the bed clothes. Alulotion is a five per cent solution of ammoniated mercury in kaolin and aluminum hydroxide (John Wyeth and Brother). It is applied three times daily. The skin must be carefully watched for signs of irritation in using this preparation. Prior to the use of any of the three solutions, blebs should be carefully broken and the bases cleansed with seventy per cent alcohol. Subsequently it is not necessary to remove the coatings which result from the continued application of the preparation chosen. Treatment is continued until all lesions are dry and no new ones have appeared for a period of five days. Impetigo spreads rapidly from patient to patient and unless promptly recognized may become the scourge of the nursery.

An irregular swelling of the head may be noticed at birth. This is referred to as a caput succedaneum. It is due to pressure suffered by the infant during his passage through the birth canal. It gradually subsides and disappears during the first week and need not give rise to concern; however, it must be differentiated from a cephalhematoma. In the latter case the swelling will be noticed to appear during the first twenty-four hours of birth and to gradually enlarge. It occurs as a result of bleeding under the external periostium of the scalp. The delayed appearance, the gradual enlargement, and the marked fluctuation make it easily recognized. The only significance attached to it is the not infrequently associated presence of intracranial hemorrhage.

The fontanels vary greatly in size. The size is of no significance if the tension is normal. Fontanels that are level with the surface of the skull or somewhat depressed are normal.

Great variation is found in the sutures of the newborn baby's skull; they may be overlapping, approximated, or gaping. Within twenty-four hours after birth, a suture that was overlapping may become widened. In hydrocephalus, all the sutures are found to be gaping.

A mild conjunctivitis, or a severe one with edema of the upper and lower lids and photophobia or even some purulent discharge, is frequently encountered during the first day of life. This is most often due to irritation of the silver salt which was instilled into the eyes of the infant at birth. The possibility of gonorrheal infection, however, must always be borne in mind, especially if the symptoms first appear on the third day.

A transient strabismus of one or both eyes is often seen. A few coarse lateral jerkings suggesting nystagmus are occasionally seen in the normal infant.

It is important to note the reaction of the pupils and whether they are equal in size. Inequality of the pupils or differences between them in reaction to light have important significance in relation to the central nervous system.

Frame-like subconjunctival hemorrhages are seen in so many babies during the first three days of life that, although not normal, they are more or less physiologic and are probably not significant except as evidence of changes in vascular tension during the process of birth. They disappear rapidly and completely.

Small whitish yellow spots are often seen in the skin over the tip of the nose. These are follicles of the skin filled with sebaceous material and disappear spontaneously.

There is often considerable variation in the width and height of the palate. In the midline of the hard palate, whitish or yellow glistening raised spots may be seen, the so-called Bohn's nodules. They mark the point of fusion of the two halves of the palate.

Thrush is not uncommonly encountered. It is manifested by the appearance on the tongue or mucous membrane of small white flakes which resemble deposits of coagulated milk but which differ in that they cannot be wiped off. If forcibly removed, they usually leave a number of bleeding points. There may be only a few scattered patches, or the entire mouth and pharynx may be covered. To a

sure protection to the other infants, prompt recognition and treatment under isolation are essential. The treatment of thrush consists of swabbing the mouth gently with (1) pure orange juice every two hours, (2) U.S.P. boro-glycerine three times daily, or (3) five per cent aqueous gentian violet solution. The treatment is continued until all evidence of the disease has disappeared.

The sternomastoid muscles are well developed and should be smooth and equal, with the head in the midline. The muscles should be palpated since hematomas are common as a result of trauma at birth. An occasional case may cause permanent torticollis.

Enlargement of the mammary glands sometimes appears in the early neonatal period, even in male babies. The enlargement may be unilateral or bilateral. The breasts may contain a milky fluid. Manipulation should be avoided because of the danger of infection. No treatment is necessary.

The condition of the umbilicus is always noted, as at this point, infections as well as persistence of fetal conditions may first be noted. The cord stump ordinarily drops off on about the seventh or eighth day, leaving a dry scab or scar. A hernia is suspected when the stump is prominent but is diagnosed definitely when bulging takes place during crying and when there is also a palpable defect in that region of the abdominal wall. Mild infection of the umbilicus is manifested by a slight discharge resulting in a granuloma, more severe infection, by redness and purulent discharge and occasionally by enlargement of the blood vessels.

The foreskin of the penis is usually adherent to the glans. The scrotum varies considerably in size from time to time. The scrotal tissue may, during the first day or two, contain a moderate amount of fluid, probably due to trauma and congestion during delivery, especially breech delivery. This condition is not a true hydrocele. The testicles should be palpable in the scrotum, but if the infant is chilled or if he is active, they may ascend toward or into the external inguinal ring. The testicles are usually small, firm, and of equal size, although asymmetry is sometimes observed.

The labia of the newborn female baby are usually prominent. The labia majora are not so close together as in the older child, and the labia minora are relatively large. When the labia minora are separated, a white mucoid discharge is sometimes seen. Slight bleeding may occur in the first few days of life which, if unassociated with bleeding elsewhere, may be considered physiological.

The anal opening normally is closed tightly by the external sphincter. The mucous membrane is smooth and free from venous engorgement except in infants delivered by breech. In the latter cases, submucous hemorrhages may be found at the mucocutaneous junction of the anus. Uncommonly the anus is closed by a membrane. This requires prompt surgical treatment.

Inversion of the feet is not uncommonly encountered. When such a condition is noted, special efforts to rule out the presence of spina bifida should be made. Inversion of the feet requires prompt orthopedic treatment. Eversion is of no significance unless it is very marked. Congenital absence of one or more bones of an extremity is rarely encountered.

Facial paralysis frequently occurs following forceps deliveries. It usually disappears spontaneously.

Paralysis of the upper extremities most often results from injury to the brachial plexus. This condition requires early orthopedic treatment. Paralysis of the lower limbs is most commonly of central nervous system origin. It is important to differentiate paralysis from unwillingness to move an extremity due to the presence of a fracture or dislocation.

Bleeding from the mouth, rectum, cord, into the skin or mucous membranes strongly suggests the presence of a hemorrhagic diathesis and receives immediate attention.

Our responsibility for the baby's care does not end with his stay in the hospital. That responsibility extends to proper care at home. Therefore, a teaching program is carried out for the mothers while they are in the hospital so that they can adequately care for their infants at home. This teaching comes under three important headings — the care of the baby, care of the breast and the mother's care following the birth of her baby. Not only are they told what to do, but demonstrations are given so that every important step is made clear. The baby and mother are discharged on the tenth to the fourteenth day—depending on their general condition. Beyond that time, if the mother requires further hospitalization, the child is kept in the nursery and the routine procedures continued. If it is the condition of the baby which necessitates further hospital care, he is transferred to the pediatric division and cared for accordingly.

When the mother is finally ready to leave the hospital, the following printed instructions are given to her and explained where explanation is necessary:

The importance of regularity in the care of your baby cannot be overemphasized. This applies to everything concerning the baby—bathing, feeding, sleeping hours, etc. Physicians generally agree that babies who are cared for regularly are healthier and better in every way; also, as a result of regularity, the mothers are able to secure more rest. By planning your daily schedule carefully, you will have certain hours given over to yourself and other hours for the care of your baby. We present here some suggestions which may prove of value to you in caring for your child.

Clothes for the baby should be simple, comfortable and washable. For this purpose, cotton shirts are probably the most acceptable. These shirts are used throughout the year. In the summer sleeveless shirts may be worn when the weather is warm. They may be purchased very reasonably, or you may make them yourself from mill ends.

The diaper is a very important part of the baby's apparel. It is easily made of cotton flannel or cotton birdseye. Paper diapers may also be used but are very expensive. Diapers are best applied in the rectangular fashion. The use of soft pieces of cloth or kleenex in the diaper to catch the stool makes your washing easier. Diapers need good care. After you have rinsed the stool off with a stiff brush, the diapers should be placed in a covered pail containing a solution of borax—one tablespoonful to a gallon of water—until you are ready to wash them. This makes them whiter and easier to clean. They should then be washed well with a mild washing soap and thoroughly rinsed. If you have no washer, they should be boiled two or three times a week and hung, whenever possible, in the fresh air and sun to dry. They must never be used more than once without laundering them. Proper care of the diapers will prevent troublesome diaper rashes. Bleaching solutions should never be used.

The other article of clothing that the baby wears is a night gown or kimona. This is best made of flannel and must be comfortable, roomy, and long enough to cover the baby's feet. Stockings need not be worn until the baby is several months old. They rarely fit a small baby and are always getting wet and soiled. For dress up, a little dress of dimity, lawn, or linen may be made.

Adults are able to throw off many germs that cause disease because they have built up a resistance to them. A tiny baby, who has lived outside the uterus only a few days, cannot be expected to do so. That is why we must keep him very clean.

The bath is usually given one hour before the morning feeding. The temperature of the room should be about 72 degrees, but if you do not have a thermometer, remember that a room which is comfortable for you to bathe in is usually comfortable for your baby also. Avoid bathing him near a hot stove or oven as you will both become so over-heated that you may catch cold. Drafts should be avoided. Other children must refrain from running in and out of doors during the baby's bath.

It is best to have everything ready before you begin. First you will need four jars—mayonnaise or jelly glasses may be used. These should be boiled for five minutes to be sure that they are clean. In one, you will need some cotton balls. The baby's cotton should be used just for him. In another jar you will want clean tap water. The third jar is for soap. Any mild unscented soap such as castile may be used. The last jar is for safety pins. It is important to keep this jar covered so that the older children will not see the pins and take them. Safety pins, when new, are hard to get through cloth. This may be facilitated by first pushing them through a bar of soap.

It is best to have a tub just for the baby. The temperature of the water should be 100 degrees F. If you have no bath thermometer, you may test the water with your elbow. A small towel or diaper in the bottom of the tub will keep the baby from slipping. Two soft towels, pieces of linen, or other absorbent material for drying the baby must be at hand. If the cord of the baby is not yet off, he must be given only sponge baths.

Before beginning the tub bath, it is essential that you wash your hands and put on a clean apron. The baby is then placed on a flat surface and covered with a towel. His face is washed first, using clean warm water (no soap) and then patted dry. If his eyes are red, sore, swollen, or if there is "matter" coming from them, you should take him to the doctor or the clinic. If they are clean, it is best to leave them alone. His nose and ears are gently cleansed with soap and water. Do not go any farther than you can see in the baby's nose and ears; it is unnecessary and may cause irritations and infections. It is not necessary to

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cleanse the baby's mouth. The saliva keeps the mouth clean. Of course, you must be sure that everything that goes into the baby's mouth is clean. That is why you must cleanse your nipples with tap water before each nursing. Always dry your nipples thoroughly.

The baby's head is washed only every other day. Make a lather on your hands and apply it to all parts of the scalp including the "soft spot." Do not be afraid of the "soft spot." This may be washed just as any other part of the body. The soap is rinsed off with a soft wash cloth. During this latter procedure the baby is best held with your hand behind his neck and his body resting on your arm and hip. He is thus held quite securely.

A lather is then applied to all parts of the body, getting into all the creases including the navel. If the navel is healed, do not be afraid to wash it. Now put the baby into the tub of water, being careful that he does not slip. He is put into the tub slowly, his feet touching the water first. He may stay in the tub two or three minutes to begin with. The soap is rinsed off during this time. He is then taken out of the tub and patted thoroughly dry. Do not use oil or powder in the creases.

The genitals are cared for next. The penis of the boy should be kept clean and dry. You will be instructed in the clinic on the care of the foreskin covering the penis. In the baby girl, a secretion normally forms between the two lips of the vulva. This should be gently removed with soap and water on a cotton ball. The bath is now completed, and the baby is ready to be dressed. The abdominal binder should not be worn after the cord is healed.

A sponge bath is given in the same manner as the tub bath with the exception that the baby is not placed in the tub. The chest, back, and arm on one side are exposed, cleansed and dried. Then the chest, back, and arm on the other side are cared for. The lower part of the body is bathed in the same manner.

There is nothing so good for the baby as mother's milk. In view of this every effort should be made to keep the breasts secreting. The baby should not be allowed to nurse longer than ten minutes on each breast. The breast is really emptied in the first five to seven minutes, the remaining time being for stimulation. Keep the baby on schedule. If the hospital schedule is satisfactory and fits in with your routine, then maintain that schedule. If not, then gradually shift the baby's feedings to suit yourself. The main thing is to space the feedings at four hour intervals.

It is important to nurse the baby slowly, taking him away frequently and holding him over your shoulder so that he may belch. This is even more essential if the milk comes fast. If you find that your milk supply is diminishing, express your breasts after each nursing.

Water may be given to the baby between feedings. This must first be boiled for five minutes. Bottles as well as nipples must be sterilized before using. For this purpose, a deep kettle is convenient. The bottles and nipples are submerged in water and boiled for five minutes. They are then removed and allowed to drain—do not dry them. Keep them dry in a covered sterilized jar.

When feeding the baby with a bottle, you should hold him in the same position as when nursing. Do not place the bottle on a pillow beside the baby—hold him and hold the bottle for him. Tip the bottle so that the water will fill its neck and nipple, thereby preventing him from swallowing air. He may take as much water as he likes but should not be more than fifteen or twenty minutes in doing so. After he has finished, stand him up in your lap with his head on your shoulder and gently pat him on the back.

Finally, you must observe the following:

(1) Keep all visitors from the baby. Do not allow anyone to hug and kiss him.

(2) Do not pick the baby up every time he cries. See that he is warm and dry, changing the diapers as necessary without lifting him from the crib.

(3) Give no medications or enemas without first consulting the doctor. A baby's bowels move once or twice to three or four times a day without cause for alarm. He may go two days without a bowel movement. As long as he eats and sleeps well, don't fuss about it.

(4) The baby should be gently played with. A good time for this is during the morning bath and before the 5:00 p. m. feeding.

(5) Keep a dressing on the navel until it is completely healed.

(6) Do not have the baby's crib facing the window. A pillow should not be used.

(7) It is not necessary to weigh the baby every day. If there is a scale at home, weigh him once or twice a week. A gain of from four to eight ounces a week is average; if it falls below this or goes much above it, consult your doctor.

(8) Your baby must sleep alone. Never lie down with him.

Fathers in the delivery room —an opposition standpoint

JOHN H. MORTON, M.D., is associate clinical professor, obstetrics and gynecology, at Loma Linda (Calif.) University. He is a fellow of the American College of Surgeons, and of the ACOG. This article is based on a paper presented before the District VIII ACOG conference on obstetric, gynecologic and neonatal nursing in San Diego in 1964, and printed in the Bulletin of the Los Angeles County Medical Association.

Along with the vast majority of obstetricians, we are opposed to the admission of non-medical people, including fathers, to the delivery room—which is an operating room.

The day we are born is the most dangerous one of our lives. Everyone in the delivery room must have a definite duty to perform and do it as well as he can. Anything or anybody who might divert attention from the mother and baby is intolerable. This room is no place for sentimentality, sightseeing, sex gratification, or salesmanship. We believe in a strictly professional approach without any nonsense, and have ever since we saw our first mother die on the table.

The delivery team of obstetrician, assistant, anesthesiologist and a circulating nurse is desirable. When "natural" childbirth is desired, the anesthesiologist may not have heavy duties, but is insurance in case one of the not-infrequent dramatic complications occurs. The complete absence of medication is not a triumph, as indicated in recent press reports, for if something does happen, cardiac arrest is more apt to occur.

The medical proponents of fathers in the delivery room in California have gained their experience in violation of the law, as interpreted until recently, and so they have been most careful in selecting the fathers so allowed. This probably leads to the conclusion that the fathers are always well behaved and always leave the room quietly when asked. I can give many examples of bad behavior, such as attempted assault and fainting at the sight of blood, knocking over equipment and diverting the 110-pound nurse to haul the 180-pound body out of the way.

The advocates of fathers in the delivery room do not use the scientific approach in their arguments but rather that of testimonials, and the language used to describe what I have always felt to be a rather messy event comes from Hollywood advertising. Here are excerpts: "Wonderful"—"Thrilling pleasure"—"Emotional excitement"—"Extreme pleasure"—"A necessary duty"—"Elation"—"Awe"—"Mystery"—"Miraculous"—"Spiritual experience"—"Satisfy curiosity."

Many reasons are given for objecting to the practice of allowing fathers in the delivery room, and I will list some of them.

1. It is an emotional time for the father, and he may be having problems adjusting to fatherhood because of increased responsibility, latent homosexuality, threatened dependency relationships, or unresolved parental attitudes. Serious reactions can and do occur. Even medical fathers are emotionally involved and many obstetricians, of whom I am one, refuse to allow them in the room. (There is an excellent article in Harpers Magazine, July 1964, on "The American Way of Birth" which gives a sensible approach for father and doctor.)

2. Togetherness. Intimacy between two human beings should have limits. We believe in this even to the point of hair curlers. A girl simply is not at her romantic best in a delivery room. As stated before, delivery is a messy business at best. Sometimes when the limits of intimacy are breached it is done selfishly out of an immature desire to shift the burden to the other person. In other words selfish motives often are behind the desire of husband or wife to have the father in the delivery room. We must set limits to intimacy in the interests of those for whom we care.

3. Training programs. Teaching doctors, nurses and other medical personnel is a continuing process, and this is more difficult with fathers present.

4. Extension of the same privileges to other operating rooms.

We must not underestimate the effectiveness of the small group people, including lawyers, public health nurses and nurses who conduct mothers' and fathers' training classes, as well as a few doctors and parents, in having the law against visitors in the delivery room changed. Using the same tactics as this lobby, and with similar reasoning, the idea of having selected laymen attend other operations can be extended.

5. Medico-Legal; The Layman-Witness. Everyone is familiar with the discrepancies that occur in eyewitness accounts of events. The layman witness in the operating room who may also be a plaintiff, could be a plaintiff-lawyer's dream and a nightmare to the defense. The threat of possible malpractice suits should not alter our practice of good medicine, but also we should not permit any unnecessary activity that would make the defense of such suits more difficult. Malpractice suits are not just something that happens to someone else. I have personally been sued for malprac-

tice twice—both times by people I had never seen or treated, and even that sort of suit took much time and expense to me as well as to the insurance carriers before they were dropped.

6. Infections. The visitor to the operating room may be dressed properly, but even so he may be a carrier of pathogenic bacteria capable of causing puerperal infection. Even personnel whose presence in the theater is not essential should be excluded.

Conclusion. We feel that for the best interests of the patient, appropriate committees recommend to their executive medical boards that visitors to the delivery room be barred by formal statement in the bylaws of the hospital and its staff.

Loma Linda University

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April 14, 1983

Marilyn Thunquest
11376 Iris Avenue
Loma Linda, CA 92354

Dear Marilyn:

Thank you for sharing your protocol with the Research in Nursing Committee. Each of us has read with interest the details of your proposed research, and we have voted to share the following observations and recommendations with you.

1. Research Design - Methodology (XI)
   - If sample subjects were matched as closely as possible in both groups (i.e., number and age of siblings, and length of hospital stay), it would make generalizations from this study stronger.

2. Operational Definition of Terms
   - Sibling visitation - might be more specific as to length and number of visits.
   - Colonization - could be deleted
3. A consent form is required as part of this protocol.

If you wish further clarification of the recommendations, the primary reviewer, Mary Waldron, or I would be most happy to discuss them with you.

We hope that at some point you will be able to collect data on your proposed study. You will need to request permission to collect data and submit your finalized protocol to the appropriate IRB at that time.

Sincerely,

Penny Miller

Penny Miller, P.H.N., M.S.
Chair, Research in Nursing Committee

PM:jad
xc: Research Advisor - R. Weber