

Nursing Care of the Newborn Infant

By

Dorothy E. Johnson

The newborn infant's need for nursing care begins long before birth—in truth, even before conception. The fact that the discussion which follows is limited to the care needed during and immediately following birth, does not deny the importance of this opening statement. The degree of the success in neonatal care is directly related to the preconceptional health of the parents; to their feeling about themselves, about parenthood, and about children; and to the environment provided during uterine life and the events of the prenatal period. There is at present a lag between scientific knowledge and its application in the health supervision of girls and young women in general, and in the expectant mother in particular. That lag must be vigorously attacked from all sides and additional theoretical advances must be assimilated in practice, if potential human beings are to be given a fair chance at the time of birth.

The following discussion of the nursing care of the newborn infant is hospital oriented. It is based, however, on principles which can be applied in any situation. Routines, equipment, and supplies may change but adherence to the principles which govern their use will insure the provision of safe substitutes.

Birth demands rapid adjustment to the demands of extra-uterine existence if the newborn is to survive. Maintenance of the baby temperature and the establishment of independent and effective respirations are the two major tasks which the infant faces first. To prevent excessive heat loss, the nurse will have ready to receive the infant, warmed sterile blankets and will assist the physician or the midwife to prevent chilling the infant while the airway is being

cleared and respirations are being established, the cord is being tied, and prophylactic treatment for gonorrheal ophthalmia neonatorum is being administered. It is usually the nurse's responsibility to see that the necessary drugs (vitamin K, silver nitrate, etc.) supplies of linen and instruments, and equipment for administering oxygen, or for resuscitative measures (suction bulb, laryngoscope, tracheal suction catheter, etc.) are available, clean or sterile, and ready for immediate use as needed.

The infant is placed on his side in a heated bed, if possible, which is tilted to a 30° angle, permitting the head to be lower than the lungs and facilitating drainage from the respiratory passages. The initial inspection of the infant is focused on the type and vigour of his cry, his colour, the degree of activity, the respiration—rate, rhythm, and depth, and the presence of obvious congenital anomalies. The temperature is taken, by axilla or by rectum, to note the degree of heat loss and provide additional cover or heating devices as needed. Blood is removed from the face and body, and vernix from the face, with sterile water. In most institutions, it has been found necessary to identify the infant by some means while he and his mother are still in the delivery room and this is often the nurse's responsibility. Various types of necklaces, bracelets, and anklets have been devised which make possible quick verification of the identity of the infant for routine care. An adhesive square on which the infant's name is written before it is applied to the body surface is not satisfactory. It is injurious to delicate skin and it may be lost or the name may be defaced. Many hospitals have found it valuable to record also finger, hand,

or foot prints of the infant, together with the finger prints of the mother so there is absolute legal and moral certainty of the infant's identity. Personnel must be skillful, however, or the results are not valid. The birth record will vary from institution to institution but it is essential that it includes all information that will be helpful to future nursing or medical personnel in understanding the individual infant's needs. It should include a brief maternal history, the pertinent facts of the delivery and the infant's immediate adjustment and care. If the mother is not heavily narcotized, often she will wish to see her infant immediately, know the sex, and be assured of his "normality". Understanding personnel will anticipate her anxiety and assist her to begin her relationship with her newborn infant, free of unnecessary fear.

The 24-48 hours immediately following birth is a most crucial period for the newborn, for it is during this time that the risk to life through failure to adapt to extra-uterine conditions is greatest. It is imperative that nursing observation for all infants be close and continuous during this period, to be sure that the transition to a new way of life is handled without undue difficulty. In addition, Smith suggests that special nursery care be provided for certain infants: "(1) those delivered operatively or with any unusual obstetric complication, (2) those requiring resuscitation in the delivery room, (3) those with any important malformation, (4) those born to toxemic or diabetic mothers, (5) those under suspicion of blood incompatibility disease, and (6) probably those delivered more than 3 weeks after expected confinement". If a special nursery cannot be provided for these infants, it would be helpful to the nurse and insure better care for the infant, if a notation of the problem is made on the birth record, thus calling attention to the need for additional, and more specific, observation for a particular infant. Observations of the physical condition during this period and subsequently can be best related to the functioning of the vital systems of respiration, circulation, digestion, and elimination. Disturbances of the central nervous system will be revealed most

often through these systems as well. Changes in the skin (cyanosis, pallor), in the character of the respirations, in general activity (increased lethargy, twitching or convulsions etc.), in the temperature and the appearance of vomiting, watery stools, bleeding, or jaundice, should be called to the attention of the physician immediately.

Another and different kind of adjustment, but one of life-long significance, begins during this time also. This is the development of mutually satisfying emotional relationships between the newborn and his parents. The contribution that professional personnel can make to this adjustment has not been generally recognized nor has the responsibility been whole-heartedly accepted. The infant, newly born, is usually the culmination of the hopes and dreams of the parents but he is also a source of anxiety. Nurses and physicians can do much to relieve the normal concerns of the period by giving the parents an opportunity to express their fears, their feelings of inadequacy, and even the frustration and anger attached to the uncertainty of the present or future. The very act of expression to an understanding listener is often enough to enable the parents to marshal their resources for more positive feeling and action. We tend, however, to deny the parents the right to feel anything but joy, and in so doing may lead them to more intensely negative feelings. Another form of support is to give needed information at a time when it can be accepted. This usually follows the negative phase and comes when the parents are beginning to say in effect "may be I can handle this". Instruction at this point will support feelings of adequacy, while increasing skill in meeting the baby's physical needs will reinforce the budding emotional interactions and satisfactions.

The practice of one nurse caring for mother and baby as one unit, is more conducive to the kind of care suggested above than is the practice of separation through nursery care. It does not necessarily follow, however, that placing the infant's crib by the mother's bed will

insure that such care is given. Sometimes the argument is heard that placing the baby by the mother and entrusting much of his care to her, saves nursing time. This is a thoughtless and illogical reason for supporting bedside care of the infant since its major value is lost unless nurses have sufficient time and are prepared to offer the kind of nursing which will result in a satisfactory beginning to life, physically and emotionally, for the newborn. Nursery care at its best offers the infant a more protected environment and closer professional observation but these advantages do not outweigh the advantages of bedside care of the healthy infant provided visitors to the mother are limited, the physical facilities permit individual technique, and the need of the mother for emotional support and instruction, is taken into consideration in allotting nursing time.

Respiratory effort and the effectiveness of tissue oxygenation is a continuing concern of the nurse. She can assist the infant in his efforts to maintain respirations by several measures. Placing him in a prone or a sidelying position will promote more adequate drainage of the respiratory passages, and tend to decrease the possibility of the aspiration of mucus or vomitus. If he is active, and the foundation on which he lies is firm and flat, there is no danger of asphyxiation in the highly desirable prone position. The stimulation of frequent changes in position will aid the infant to expand the alveoli of his lungs more completely. If there is excessive secretion of mucus, gentle suction with a rubber tipped bulb syringe may be indicated, while maintaining a 30° tilt in the bed to lower the head will further promote drainage. This position might be contra-indicated, however, if there is suspicion of intracranial bleeding. Rapid, shallow irregular, abdominal respirations are normal and the normally sluggish peripheral circulation results in a dusky hue of hands, feet, and lips—which tend to become pink on increased activity. The appearance of the mucous membranes in infants, whose skin is deeply pigmented, will be more helpful than that of the skin in determining the adequacy

of tissue oxygenation. Until the respirations are well established, the nurse will be alert to any symptom and respiratory distress: increased inspiratory effort (retraction of diaphragm or the intercostals), changes in the rate or rhythm of the respirations (increased periods of apnoea, gasping, grunting) restlessness or lethargy, and finally cyanosis. The newborn infant is particularly susceptible to infections of the respiratory tract. Nurseries and maternity units which house only a limited number of people in any one room (8 infants, or 4 mothers and infants) offer one of the best means of limiting the infant's contacts with airborne or droplet infections. Adequate ventilation without door air further dilutes the concentration of air borne organisms. Visitors to the mother and the newborn infant, under the one unit plan of care, must be strictly controlled and limited to the father and, perhaps, the grandparents. The infant is inevitably exposed to a wide variety of pathogenic organisms capable of causing respiratory infection. Limiting his contacts in so far as possible, reduces both the variety and dosage until such time as he is able to deal with them more adequately. Measures to control dust, such as damp dusting and the use of damp mops instead of brooms, are also essential. **Most important of all is the acceptance of responsibility by hospital personnel who have respiratory infections to avoid contact with newborns and a hospital policy which encourages them to do so without penalty.** Masks give what is often a false sense of security and are not sufficiently dependable to recommend their routine use by nursing personnel. Physicians or others who enter the nursery or otherwise contact the newborn infant infrequently may be required to wear a mask.

The healthy, full term newborn infant does not usually experience any great difficulty in maintaining his body temperature within normal limits. The temperature falls to 96°-97°F in the first few hours and climbs slowly thereafter to the normal range. The use of a heated bed is indicated on admission to the maternity unit for infants with

temperatures below 96°F. The new born's body temperature will reflect environmental temperatures more quickly than does that of the older infant since the mechanisms which insure a balance between heat production and heat loss are developed less completely. Covering and clothing in an uncontrolled environment can best be regulated by the individual infant's response to the room temperature. Because of the sluggish peripheral circulation, the feet are usually cold, often mottled in appearance, and it is not possible to gauge the amount of covering needed on this basis. If the trunk and head are warm and covered by fine perspiration, the covering needs to be reduced; while if they are cool to the touch, more covering may be needed. In extremely hot climates, when the environmental temperature exceeds 100°F the use of the fans blowing over ice to cool, and to keep air stream moving, may be helpful.

The frequency with which the temperature is taken and recorded will depend upon the routine established by the hospital. In general, however, once the temperature has stabilized within normal limits, there is nothing to be gained in taking the temperature more than once, or at most twice, a day unless there are symptoms of illness. *It is most essential in the prevention of infection that there be individual thermometers for each infant.* A number of studies have been made of the efficacy of various methods of cleaning thermometers in use in clinical situations. While the results of these studies reveal differences in the degree of effectiveness, they also reveal that there is no method presently known which can be proved to be safe and effective at all times. Axillary temperatures, properly taken, offer a sufficiently accurate base and are to be preferred to rectal temperatures which introduce the hazards of trauma to delicate mucous membranes, cross infection, and the stimulation of peristaltic action. The last is probably not too important for healthy infants but in the presence of diarrhoea or other acute illness, this offers an additional complication for the infant. To take an axillary temperature, the armpit is patted

dry if necessary and the bulb of a dry thermometer is placed in position with the infant's arm pressed firmly against it and the body for 1½ minutes. When deviations from the normal temperature range occur in otherwise apparently healthy infants, attention to the environmental temperature, the amount of covering, or the fluid intake may reveal the cause, and point to the needed action.

An initial weight loss of 5–10% of the body weight is to be expected in the first few days of life while the body fluid balance is becoming stabilized and the food and fluid intake is limited. In some hospitals, glucose water is offered to the infant in the interim before lactation is established. Sterile water between feedings is probably needed not only during this period when the fluid intake is limited but throughout infancy, particularly when the weather is hot and the loss of body fluid through perspiration is excessive. The addition of glucose to the water, however, has a decided disadvantage in that it will decrease the infant's appetite and depress his desire to nurse at the very time when the act of nursing is of utmost importance in stimulating the secretion of milk in the breast.

The development of food tolerance and the establishment of satisfactory feeding patterns are infant-mother tasks with which the understanding nurse can be very helpful. During the period when lactation is being established, the nurse can assist the mother in her efforts to find a comfortable position for herself and the baby, to recognize the rooting instinct and to help the baby find the nipple, to hold the breast in such a way as to prevent interference with respiration, and to learn when to terminate the feeding. The nipples of the primipara are apt to be tender, particularly in the absence of care in the antenatal period, and during this time the nursing period can be limited so that the nipples are slowly accustomed to the pressure and friction. Later a breast shield may be needed if the tenderness persists. If babies are kept in a central nursery, recogni-

tion of the individual infant's hunger cycle, whether it be a 2, 3, or 4 hour, one, depends upon the nurse's observational ability; while prompt satisfaction of hunger is permitted only when hospital routines are flexible. The majority of newborn infants settle into a 3-4 hour schedule very quickly, so the few who deviate from this pattern over a longer period, should not offer an insurmountable problem in the routine activity of the maternity unit. If the baby is kept at the mother's bedside, the nurse can help the mother to learn to discriminate between the cry that denotes hunger and those which stem from other needs. It is most important that neither the mother nor the infant develop a pattern of using the breast to satisfy the multiplicity of needs which are unrelated to food or feeding. To do so means in a sense that the breast, the suckling, and the body comfort which results for both mother and infant, are endowed with unrealistic values. Encouraging dependency on the act of nursing for all emotional satisfaction may inhibit later the development of more satisfying emotional responses. Healthy infants can be put to breast within the first 8-12 hours after birth, or earlier if needed, and the condition of mother and baby permit. The mother is taught to wash her hands and to clean her breast with sterile cotton and water before receiving the baby for feeding. Coverings used over the breast to absorb excess milk should be sterile to minimize the danger of infection in the presence of small abrasions. The head and body of the infant are held erect during and after the feeding to permit him to expel any air swallowed during the feeding, and to lessen the possibility that milk will be regurgitated in the process. Following the feeding, the infant is placed in his crib on his right side to assist again in the eructation of air without regurgitation, to promote drainage and prevent aspiration in case of vomiting, and to facilitate the emptying of the stomach.

Essentially the same principles apply in the care of the infants whose mother cannot feed him by breast. Deprived of the satisfaction that suckling the human breast brings, this infant needs even more

the body comfort that comes from being held for his feeding. Paladai used for feeding offer the advantage of being cheap and easily cleaned but deny the infant any opportunity to satisfy his sucking reflex except on his fingers. These factors must be weighed with the mother, or the mother substitute, in reaching a decision on the method of feeding. In no case is it permissible to prop a bottle in position in an infant's mouth while he remains in bed. The danger of aspiration in this practice is obvious. Feeding mixtures can be safely prepared if the principles involved in sterilization and asepsis are understood. Standardized formula should be agreed upon by the physicians concerned for use whenever possible to facilitate the work of preparing these mixtures. A separate room must be provided for the preparation of feedings, and, if possible, used for no other purpose. Many excellent publications (2, 3) are available for study by those concerned with the problem. All feeding equipment used for giving oral medications must be sterile to begin with and protected from contamination by hands, flies, dust, etc. in the process of feeding. The nurse will observe, attempt to analyse, and take the necessary action to resolve any difficulty in feeding. Most of these will be related to the normal problems and adjustment but vomiting, choking, cyanosis or refusal to suck occurring during or following a feeding, may indicate more serious problems such as congenital anomalies of the gastro-intestinal tract or of the heart, or intracranial damage, and must be reported at once.

Careful attention to the process and products of elimination is essential in determining the adequacy of functioning of the systems concerned and in the prevention of infection. While the fluid intake is limited, the urine is likely to be concentrated and scanty in amount. Later, in the presence of increased intake, the output is usually more frequent and in greater quantity. The staining of the diaper by pink urates, an indication of the relatively high percentage of nitrogen in the infant's urine, is sometimes an unjustified cause for alarm for the mother, if it is not explained. The diaper of the female

infant is stained also, at times, with a blood tinged vaginal discharge which results from the effect of maternal hormones transmitted through the placenta to the infant. The physician will wish to differentiate this from bleeding due to other causes. The prepuce of the normal male infant is usually tight at birth and should not be forcibly retracted. The nurse will note any apparent interference with urination and report this to the physician. Signs and symptoms of disturbance of urinary function and or anomaly of the genito-urinary tract include: crying on the passage of urine, dribbling, straining, distention of the bladder, excessive frequency or marked infrequency of urination.

Meconium is passed within the first twelve hours and for the next two days. It is followed by transitional stools which are greenish in colour and rather wet on the third and fourth days, and finally by the normal, yellow, soft but formed stools of the milk-fed infant. The consistency, character, and colour of the stool is more important than the frequency in determining its "normality". Delayed passage or difficulty in passage of stools may indicate functional or organic abnormality of the intestinal tract, particularly if this is associated with abdominal distention and vomiting. These symptoms should be reported at once. Occasionally an imperforate anus is discovered through difficulty or failure in passing a rectal thermometer. Many mothers are unduly concerned about bowel function and later difficulty may be avoided if they are given help during the neonatal period to explore their anxieties in this respect and in learning to recognize and accept normal physiological function. Human excreta, even of new born infants, is one of our most dangerous sources of pathogenic organisms. The nurse, who is aware of the mode of transmission of these organisms, will make sure that clean diapers are used on infants and that soiled diapers are handled with caution on the ward and laundered properly before reuse. Careful handwashing after handling diapers or other soiled linen before doing anything else, is essential. In addition to these measures, the maintenance of

techniques which minimize contact, directly or indirectly, between individual infants, will do much to prevent the occurrence or spread of diarrhoea. Infants with diarrhoea must be isolated in a separate room from other infants immediately until such time as the diagnosis releases him to return to the nursery or confirms the presence of a diarrhoea which may be infectious.

The accumulation of evidence in recent years regarding the care of the skin in new born infants, has brought the general concensus of opinion that the least done to the skin the better (4). It is felt also that the vernix may have some protective properties in itself. The tiny invisible abrasions to delicate skin which result from even gentle washing with water and soap present portals of entry to pathogens which are ever present in the surrounding environment. Coating the body with oil may interfere seriously with the excretion of waste products through the skin and with the process of heat regulation. Unsightly amounts of vernix and blood may be removed with sterile water and sterile cotton soon after delivery. Thereafter, sterile cotton and water may be used to clean the buttocks as needed and very small amounts of oil may be applied to the buttock area for protection from excoriation if it is needed. The vernix soon vanishes and after the first week, when the infant has been discharged from the hospital, mild soap and water may be used for the daily bath. An individual supply of cotton wool, and oil together with small sterile cups for use with these, must be kept in the baby's bedside unit. Common containers of oil, water, or cotton are almost invariably contaminated inside as well as out. The appearance of a vesicle or a pustule on the skin of an infant is an indication of infection and of the need for strict isolation for the infant and of a search for the possible source in techniques or supplies. The breasts of new born infant often become enlarged due to transplacental transmission of maternal hormones. The mother's concern about this can be forestalled by an explanation and she can be warned of the dangers of massage. Physiological jaundice, appearing on the

3-5th days, can also be anticipated, although evidence of jaundice must be watched carefully to rule out that which may be pathological. Haemorrhages into the skin must also be watched for. Cotton clothing, preferably only an open backed gown tied with tapes, and diaper, is the choice for the new born.

The care of the umbilicus has become exceeding simple as we have learned that dryness and cleanliness are our most valuable allies in healing. Dressings and binders tend to increase both moisture and contamination and are not recommended for routine use. If the stump oozes, it may be cleaned with alcohol. Any redness, other evidence of infection or bleeding, must be brought to the physicians' attention. Some mothers may be concerned lest the absence of a binder lead to a protruding naval and will need help in accepting the fallaciousness of this idea.

The dependent newborn infant has only one means of communication with others in his world. His cry is his way of telling those who care for him that he is uncomfortable. Whether his discomfort is due to hunger, position, chilliness, heat, distention or disease, to ignore his cry is to ignore a human being in personally unmanageable distress. In the fourth report of a series of studies on the crying of newborn infants, Aldrich and others (5) revealed that changes in nursing and routines so that they were more directly based on infant's needs, and increases in the amount of individual nursing care to infants, reduced the incidence of crying in a newborn nursery by slightly more than 50%. If we can relate the absence of crying directly to happiness, contentment, and met needs in newborn infants, then it becomes obvious that a quiet nursery or maternity unit is one in which good care is being rendered. To neglect the infant's cry is to teach him that the world and the people in it, are untrustworthy. Such attitudes have great psychological significance.

The newborn infant is a very susceptible bit of humanity. He emerges from his rather protected intra-uterine environment with an extremely low

threshold in his body defences against infection. With time in which to build up his defences—immunological, physiological, and mechanical, and with gradual exposure to the hazards of his new life, he becomes increasingly better equipped to handle the normal risks. The dangers inherent in the communal care of newborn infants in institutions, reach their highest level in this area of potential exposure to overwhelming infection. The skin, the respiratory tract, and the gastro-intestinal tract are the more important recipients of the onslaught of micro-organisms to which he is exposed. Prevention of infection has been emphasized throughout this discussion, but it can well be re-emphasized here as additional factors are considered. The keynote of the care which is aimed at prevention of infection in newborn infants in hospitals is in its individual nature. All care for infants must be carried out in their own bassinets. All supplies must be individualized and stored either in the bassinet unit or in an adjoining individual bedside table. Common bathing or dressing tables absolutely have no place in a nursery or maternity unit. The laundry procedure and the care and handling of the clothing and linen subsequently must insure bacteriological safety. Hand-washing is one of the most important single items. The hands and arms are thoroughly soaped and rubbed, paying careful attention to the nails, and rinsed under running water before entering a newborn's unit, before touching anybody, and after attending an infant. Wash basins and running water are an absolute necessity in the unit of any newborn infant. Common towels for hand drying are a source of contamination. If an abundant supply of cloth or paper towels is not available for individual use, the hands may be allowed to air dry. A clean gown should be put on by all who enter a newborn unit (doctors, nurses, visitors, sweepers, *peons* etc.). Nursing personnel caring for newborns may be permitted to wear the same gown for a day unless it becomes soiled. An observation (suspect) nursery for the easy segregation and isolation of infants who

have symptoms suggestive of infectious disease, is essential. Babies are transferred to this unit at the discretion of the nurse since time is of utmost importance. Strict individual isolation technique is observed and the baby is watched closely for further developments. If at the end of 24-48 hours the physician feels the suspicions were unfounded, and if during this time, the infant has not been exposed to known infectious disease, he may be returned to regular Nursery. If the baby is really ill, then he must be transferred again to separate facilities provided for the care of sick newborn infants. This may be to another unit within the maternity and newborn service or to the service provided for ill children.

Constant study of the quantity and quality of nursing care, of procedures and routines, of supplies and equipment, permits a slow evolution of desirable changes in keeping with the unique problems of the institution, and advances in scientific knowledge, which contribute to increased understanding of the needs of the newborn infant and his parents. An objective investigation of all illnesses and deaths among newborns, a practice which has been highly developed in some areas with respect to the relationship to

medical care, could be of equal value in evaluating nursing care. The effect of rigid hospital routines and of the lack of needed help in the form of emotional support and health teaching on future parent-child relationships and child care practices is less easily studied. It is equally important to do so. Only by these means can the risk to life and to happy, healthy childhood be carried to the irreducible minimum.

Bibliography :

1. Nelson, Waldo, ed. *Textbook of Pediatrics*, 5th Ed., W.B. Saunders Co., Philadelphia, 1954 ; Smith, Clement "Care and Protection of the Newborn Infant". pp. 255-258.
2. *Procedures and Layout for the Infant Formula Room*.—American Hospital Association, 18 East Division Street, Chicago 10, Illinois.
- 3 & 4. *Standards and Recommendations for Hospital Care of Newborn Infants, Full Term and Premature*.—American Academy of Pediatrics, 610 Church Street, Evanston, Illinois, 1254.
5. Alrich, C.A. ; Norvall, M.A. ; Knot, C. ; Venegas, F. "IV. The Crying of Newly Born Infants" *Journal of Pediatrics* 28 : 665 (1946).
6. Peto, Marjorie "The Normal Newborn Infant" *American Journal of Nursing* 52 : 1353 (1952).

[Published by Courtsey *Journal of the Stanley Medical College, Madras.*]

Planning of Nursing Studies — (Contd. from page 76)

nurses should take immediately is research work to develop the tools that would measure abstract and qualitative ideas such as attitude, good nursing care etc. It was also pointed out that we should guard against attempting to do complex studies but to work on simpler problems.

Several evenings were engaged with informal talks related either to Conference subject or to nursing in other countries. Many nights were for socials such as a bus trip to see Paris illuminated, reception parties or concerts. Visits to Versailles and Charters were arranged for the first weekend. Almost all of us also managed to go at nights for window shopping, or for a ballet or other theatre shows.

The Conference was closed on 23rd night at an after-dinner sherry party, ending in the song 'Auld Lang Sayne'.

We experienced a painful parting in spite of knowing each other only for two weeks.

Miss Arnstein said that this is the first International workshop conference in Research Studies and that it is worth noting that we, the nurses, are the first ones to do it.

This great historical event should bring abundant fruit—of course, not immediately, but in years to come, for the continuous growth of the profession all over the world. The knowledge gained from the experts and the contracts made with international nursing leaders and experts are of priceless value. Perhaps in many unknown ways at present, but self revealing in the future.

I thank you, the members of the T.N.A.I., for giving me this privilege.