Safe Hospital Care for the Premature Baby

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IN the middle-west and other areas throughout the United States, well populated with hospitals, it is usually deemed advisable to hospitalize the premature infant. The greater percentage of hospitals care for the premature infant born in their own institutions. A small percentage admit premature babies who have been born in homes or in other institutions. Whenever a premature infant is cared for in the hospital, the hospital executives and personnel should be able and willing to assume the responsibility involved in caring for these babies. The safe care of the premature and immature baby in the hospital brings to us the following factors to consider:

Physical set-up
Equipment
Nursing personnel
Aseptic nursing technic
Management of the premature baby
Oxygen
Breast milk

Cooperation with physicians and agencies in the follow-up care of the baby, after the infant's discharge from the hospital

Physical Set-up

The physical set-up depends upon the average number of premature babies cared for in the hospital.

When there is an average of four or more premature infants in the nursery at all times, the hospital should have a separate room adjoining the nursery for these babies. A separate room isolates them from the full-term infants and simplifies room temperature control in that the room for premature babies should have a higher temperature—78-80 degrees F.

When the number of premature babies cared for annually is very small, the babies will naturally be cared for in the nursery for full-term infants. In these instances babies are cared for by the personnel for the normal babies. When possible the supervisor should personally care for them or closely supervise their management. It is well to have the same nurses handle these babies throughout their stay in the hospital.

When the hospital not only cares for the premature infants born in the institution but also those born in homes and in other hospitals, the question of two nurseries arises. Since it is inadvisable to admit babies not born in the hospital to the obstetrical floor, a nursery should be set up on some other floor or in the pediatric division and the premature babies who are born in the hospital admitted directly to this nursery. Where this set-up is used a complete unit should be established.

If the average number of premature babies is fifteen or more, there should be one room for the smaller babies; a second room for the larger or graduate infants; a third as an isolation room; and a fourth as a formula room for the preparation of feedings and sterilization of feeding equipment. In addition there should be a utility room. There also should be a small room which can be used as a place for the doctors to put on their gowns and caps and also as a chart room and a place where the head nurse can talk with the mothers and give them the necessary instruction. If wet nurses are employed a room will have to be equipped as a pumping station.

The value of humidity and temperature control is still a debatable question. While it is definitely not imperative, it is, no doubt, helpful to the progress of the premature baby.

The Author

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Equipment

Some type of incubator or heat tent is required. The price of incubators ranges from $15.00 to $500.00. The choice of an incubator depends upon the amount of money the hospital feels justified in spending. While the commercial type of incubator is to be desired when it can be afforded, it is not absolutely necessary. Too many hospital executives feel that the purchase of expensive incubators solves the care of the premature infant. If funds are limited, it is better to spend a small amount on incubators and use the remainder for nursing personnel. Any type of incubator which is safe, easily regulated as to temperature, and insures minimum and easy handling of the baby is satisfactory.

A heated table which can be used for bathing and for heating the linen is of value.

Other equipment needed:

A gram scale which makes possible a more accurate weighing of the baby

Individual bath basins which should be sterilized daily

Individual rectal thermometers, which will do much to prevent cross infections

Bassinettes in which the baby can be placed when heat is no longer necessary

Wall thermometers for checking the room temperature

A hygrometer so that the humidity can be ascertained

Each incubator equipped with a thermometer

Standard nursery equipment

Closed diaper and linen hampers

Running water with knee, foot, or elbow control, in every room in the nursery—the more accessible the running water, the more apt it is to be used

Plenty of soap and a sufficient number of towels, either paper or cloth, so that a towel is used only once

Incubators and bassinettes should not be placed adjacent to each other. Sufficient space between them will prevent linen from one crib coming in contact with the baby or linen in the next bassinette.

Nursing Personnel

In the physical set-up of any nursery, it is advisable to remember that no set-up will be effective unless there is a sufficient number of nurses. Some hospital executives are willing to spend large sums of money for equipment but refuse to employ enough nurses so that aseptic nursing technic can be carried out. The shortage of nursing personnel is one important reason why newborn babies receive inadequate nursing care and why there are epidemics of diarrhea and impetigo in nurseries. Where there is a large obstetrical service, the obstetrical supervisor should not be expected to be in charge of the nursery also. There should be a nursery supervisor.

When there is a separate unit for premature babies, four graduate nurses especially trained in the care of the premature baby are necessary. This allows for a head nurse during the day, evening, and night. The fourth graduate would assist the day supervisor and relieve the evening and night supervisor when they are off duty. This insures graduate supervision in the nursery at all times. The other help needed can be either student nurses or nursery maids. The graduate nurses will teach and supervise the undergraduate help. There should be at least one nurse to every four to eight babies. We cannot expect one nurse to care for fifteen to twenty babies and use aseptic technic.

The role the nurse plays in the care of the premature infant is of major importance. The technic used, the emergency treatments, the maintenance of a normal body temperature, the methods of feeding, and the close observance of clinical symptoms and the early recognition of any pathological manifestations are all responsibilities of the nurse.

It is the supervisor's responsibility to establish a simple routine which can be carried out by everyone in the nursery. Procedures should be written, and should be carried out in the designated method. In nurseries where each nurse is carrying out her own methods, the result is usually a complete lack of technic and routine.

The supervisor, or her assistant, should see to it that all the nurses are taught the procedures accurately. All procedures should be demonstrated, and this can best be done in the premature nursery, at the bedside of the baby. No nurse should ever be permitted to carry out any procedure without first having witnessed a demonstration, and secondly, without being personally supervised for the first two or three times that she carries out the procedure, or more if necessary. Feeding, diapering, putting nipples on bottles, making beds, scrubbing beds, anything that the new nurse is to do, should first be demonstrated. She should be taught that the most minute detail in the technic used is important.

Since clinical observations are of more diagnostic value than those found on physical examination, conscientious observations are of the

greatest importance and attention must be given to the most minute detail. The nurse must ever be alert and observant of every symptom and be conscientious about reporting her observations to the physician.

Nursing personnel must be impressed with the fact that with them rests the responsibility of infections occurring in the nursery. They must be constantly alert to prevent breaks in technic.

If student nurses are in the nursery, a supervisor should always be present, so that their technic can be checked upon constantly. If permanent nurses are employed, only those who are at all times very conscientious about using good technic should be permitted in the nursery.

The nursing standards must be carried out during the entire 24 hours and technic and observations during the evening and night are as important as those during the day. At no time can there be any relaxing in good technic, nor in intelligent observations and efficient nursery care.

Aseptic Nursing Technic

Morbidity is always potential mortality. It is the responsibility of the hospital to prevent morbidity from occurring either in the premature baby or the full-term baby.

The following breaks in technic are frequently seen in nurseries for full-term and premature infants:

1 Hands are washed infrequently or improperly. Hands and arms should be washed thoroughly up to the elbows, using plenty of soap and running water. They should be washed:

On entering the nursery

Between handling of the babies

After diapering

Before feedings

Following the use of a handkerchief or the adjusting or handling of a mask.



Hess Incubators

2 Babies are being fed and diapered at the same time. Diapering and feeding should be two separate procedures. Soiled diapers must be removed from the nursery before feedings are started.

3 Scale is not draped properly, one draping is used for several babies, or a paper towel or napkin is put in the center of the scale and the sides are left exposed.

4 Where the common bathing table is used, too many babies are bathed at one time and come in too close contact with each other, or the table is not properly cleansed or draped between babies.

5 Nurses carry soiled linen or diapers next to their uniform or gown, and the next instant they carry clean linen and permit this to touch their gown or uniform.

6 Lids on sterile containers are not put on securely and sterile material is exposed or lids are taken off during bathing periods and left off for the duration of the bathing period.

7 The solution in the forcep jar often covers only the bottom of the jar and only the tip of the forcep is in the solution, yet the forcep is used to remove sterile material from a deep container.

8 Bottles are propped and when the nipple on the bottle slips out of the baby's mouth and touches the crib cover, it is again put into the baby's mouth.

9 The nipples on bottles are not kept covered. They may be left uncovered for one-half to one hour before the baby receives its feeding. The feedings may be carried down the hall without having the nipples covered.

10 The diapers may be rinsed in the same sink in which the nursing bottles are washed. If diapers are rinsed, the rinsing should be done outside of the nursery.

11 Formula are often prepared in the nursery.

12 Sterile feedings, oxygen lids, and heat tents are placed on the floor.

13 In bathing or handling of the baby, care is not taken to consider the upper part of the baby and bed clean and the lower part contaminated. The nurse should not handle the upper part of the bed or baby after handling the lower part, without washing her hands.

Masks

When masks are worn in the nursery, the hospital should have a sufficient number so that they

can be changed frequently. Too often they are worn for a period of six to eight hours. When masks are worn they should be changed every two hours, and when removed, should be discarded. Masks should be thoroughly sterilized after use.

The value of masks is very doubtful. They give to the individuals wearing them a sense of false security and they are usually advocated by persons who do not actually wear them. A nurse with a cold or a sore throat should be off duty, not in the nursery with a mask on.

The hesitancy on the part of hospital executives and physicians to isolate infants at the first sign of pathology may cause further instances of infection in the nursery. At the first symptom of infection the baby should be isolated. For any skin infection the hospital should see to it that the nursery is amply supplied with rubber gloves so that the nurse always has a clean pair of gloves to wear whenever she handles the baby. Wearing of gloves, as well as isolation gowns, will do much to prevent impetigo, or other skin condition, from spreading in the nursery.

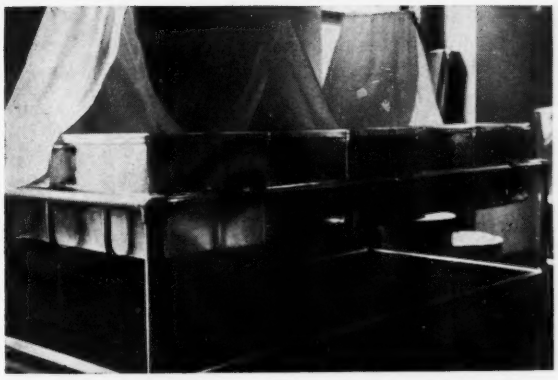
Technic used should be such that every baby is isolated from every other baby in the nursery. When possible, individual set-ups should be used.

Management of the Premature Infant

Maintenance of Body Heat: The nursery personnel should know how to regulate the temperature of the incubator and the room so that the danger of chilling and over-heating of the premature infant will be eliminated. The room temperature is best kept at 78 to 80 degrees F. The incubator should be regulated so that the baby's rectal temperature is between 97 and 99 degrees F. The incubator should always be kept between 80 to 90 degrees F. In order to determine the amount of heat advisable for the individual premature infant, it is necessary to take the baby's temperature rectally every four hours the first 3 to 6 days. After this period the baby's heat regulating center is better stabilized and there will be less fluctuation in the infant's temperature. The nurse will be able to judge the amount of heat necessary to keep the baby's temperature between 97 to 99 degrees F. From then on the temperature is taken every eight hours, if the temperature is normal.

Overheating should be guarded against as it causes dehydration and apathy and sometimes cyanosis. Therefore, the temperature of the room and the incubator should be checked at regular intervals.

Handling of the Baby: The premature infant should be handled as little as possible. Undressing and dressing him in the bassinet, covering him with a small blanket while the temperature is being taken and while he is being weighed will prevent exposure.



Three tin bassinets with an electric bulb inside the hood so that the bassinets can be heated

Warm sterile mineral oil is usually used for the initial bath, otherwise oil is not used unless the baby's skin is very dry. A daily soap and water bath followed by a 40 per cent alcohol rub keeps the infant's skin in good condition. Tub baths may be given after the cord is off and the navel dry.

Minimum handling is of major importance when cyanosis is present. Cyanosis occurs frequently in the premature infant. Whenever cyanosis occurs during feedings, the feeding should be stopped at once. Feedings may have to be withheld for 5 minutes to 24 hours, depending on the baby's condition.

Aromatic spirits of ammonia should be used as an inhalant (5 to 6 drops are put on cotton). The back of the throat should always be inspected and if mucus or milk is present it should be removed gently. The abdomen should be inspected for distention. If present, it should be relieved. Oxygen should be administered. The only safe method of resuscitation is a gentle compression of the chest wall—15 to 20 times per minute.

Clothing: A short woolen shirt, with blind sleeves and an outer shirt of French pique, helps to maintain the body heat. A triangular diaper placed high over the abdomen and a heated diaper wrapped over the lower extremities complete the clothing necessary.

Oxygen

Oxygen is, in the case of many premature infants, as important in decreasing mortality as is breast milk. Frequent need of oxygen is one of

the main reasons why premature infants should be hospitalized. A supply of oxygen should be in every nursery so that it will be available for emergencies.

In the premature baby its use is indicated:

For any baby under 1200 grams, because atelectasis is found frequently in the premature baby

For any infant where cyanosis is noticed

For the baby whose prematurity is either caused by toxemia or placeta praevia

For pneumonia

For precipitate delivery or when the labor has been long or the delivery difficult or when the baby has been delivered by section

For narcosis or asphyxia

Oxygen can best be administered by means of an oxygen chamber or an oxygen therapy unit. At least 45 per cent oxygen should be given. Many pediatricians advise oxygen only, rather than oxygen combined with carbon dioxide. The baby should be given oxygen for as long a period as necessary. It should be administered continuously, not intermittently. Almost all premature babies require oxygen for at least a period of 6 to 48 hours. Others may need oxygen for a period of 8 days to 2 months. The use of the large tank of oxygen is much more economical than the small tank.

Breast Milk

Every effort should be made to obtain breast milk for the premature infant, either from the maternity wards in the hospital or from some outside source. If the breast milk is obtained from an outside source it is well to boil it 3 minutes over a direct flame. The person supplying the milk should have a Wasserman test before the milk is used. The mother should always be encouraged to keep up her breast milk supply. If the baby is delivered in the home the visiting or public health nurse can be requested to teach the mother manual expression of breast milk. It is well to have the mother send her milk to the hospital every day or every other day.

Feeding of the Premature Infant

A sufficient number of nurses should always be in the nursery so that the premature infant can be fed properly. Premature babies are often gavaged because the nurses do not have the time to feed them by dropper which is the preferable method of feeding. All premature infants should be fed by this method for at least 3 days, and if the baby is very small it may be necessary to feed it by dropper for a period of from 6 weeks to 2 months. The dropper should always be protected by soft rubber tubing two inches long. The tubing should not extend beyond the dropper for more than ⅛ to ¼ of an inch. After the baby is strong enough to suck, feedings are usually given by means of a small bottle. A nipple can be made from a dropper top of good quality—one hole is punctured in the center. This bottle should be used until the baby weighs 4 pounds. After this it may be fed either by the ordinary bottle and nipple or allowed to nurse. The average premature baby should not be allowed to nurse until it is at least 5 to 7 days old. The indications for gavage are:

A marked increase in cyanosis when the baby attempts to swallow

Pneumonia

Marked dehydration may necessitate gavaging the baby for a period of 24 to 48 hours

Premature babies should be fed every three hours. Water or weak tea should be given between each feeding to prevent dehydration. Minimum feedings prevent diarrhea and to a large extent vomiting. Feedings should be given slowly and carefully to prevent aspiration and vomiting. If the baby vomits or takes its feedings poorly, half of its feeding is given and the baby is allowed to wait 10 to 15 minutes before the remainder is given.

Formula Room

A hospital caring for premature or new-born babies should have a room where formulae can be prepared. They should not be prepared in either the nursery or the kitchen. The nurse should have time to prepare them without interruption. Sterile equipment and a sterile set-up should be used unless the feedings are to be autoclaved after they are prepared.

Cooperation

If either the public health or visiting nurses are responsible for the follow-up care of the premature infant in the home, the hospital should notify them of the discharge of the baby so that they can go into the home and help the mother.

When possible, it is well to have the mother come to the hospital and either nurse or feed her baby from the bottle before it is discharged. This helps to eliminate some of her fears in handling her baby. Definite written instructions should be given to the mother. A 24-hour supply of formula should be sent home with the infant.

It is not sufficient that the hospital be concerned only about the care which the premature infant receives while in the hospital. If the baby does not have a private physician, the hospital should assume the responsibility of giving to the mother all necessary instructions and should as-

certain if the home facilities are adequate. If not, some agency in the community should be notified. The mother should be instructed as to where she can take her baby for the necessary follow-up care.

Financing Care of Premature Infants

Lastly we come to the financial consideration, which is of vital importance to every hospital, especially to the smaller institution. Taking care of premature infants in almost all instances is a loss financially. Many premature babies come from indigent families and the parents are unable to pay for their care.

Naturally a hospital caring for only a few premature babies a year does not feel that it is warranted in spending money for special equipment. These hospitals may either transfer the baby to another hospital better equipped for the care of the infant, or, if that is not feasible, the institution can depend on excellent nursing care and a minimum amount of equipment.

Heat tents or heated beds should not be considered as special equipment as they are often required for the full-term infant immediately after birth and oxygen too is indicated quite frequently for asphyxia and other pathology in the normal baby.

Often organizations can be interested in financing the hospital care of premature babies or in buying incubators or oxygen units.

Special Pediatric Training Needed for Care of Premature Infant

We should remember that if we wish to establish the highest possible hospital standards for the welfare of the premature baby, we must first raise the standards of care given to the full-term infant.

Nurses caring for either premature or full-term infants should have pediatric training and, if possible, special training in the management of the premature infant. It is only recently that health departments, physicians, hospital executives and nurses have begun to realize the needs of the full-term and the premature baby. Prior to this the infants have been considered a part of obstetrics that needed little or no attention. We have all been too willing to accept morbidity and epidemics in nurseries as something which had to happen at some time or another. Today we realize that aseptic technic, carried out intelligently by a capable and conscientious nursing personnel, will eliminate the danger of epidemics. The nurse familiar with the management of the premature baby is better equipped to care for the full-term infant, as many of the essential nursing factors are applicable to the full-term infant.

When an epidemic occurs, the hospital spares no expense, numerous graduate nurses are employed, nurseries are scrubbed and repainted or 3-4 nurseries are established. The employment of sufficient personnel at all times so that proper technic can always be carried out is, in the long run, much more economical, and can prevent the anxiety which everyone feels when epidemics occur.

The responsibilities of all hospitals in decreasing the morbidity and mortality of full-term and premature babies is indeed great, and a challenge which should be met by all institutions.

Dr. S. R. D. Hewitt Bereaved—War Ace Son Killed in Action

The many friends and associates of Dr. and Mrs. S. R. D. Hewitt of Saint John, New Brunswick, will regret to hear of the death in action of their son, Pilot Officer Duncan Alexander Hewitt, R. A. F., aged twenty. Pilot Officer Hewitt began flying when he was barely sixteen and was studying aeronautics in London when war broke out. On his first aerial engagement he is reported to have brought down a big Heinkel bomber and, in a recent letter, wrote of "bagging" four Nazi bombers in France. A recent movie film portraying R. A. F. activities showed a closeup of Duncan in action during an aerial battle.

Dr. Hewitt, a member of the Editorial Council of *HOSPITALS*, is general superintendent of the Saint John General Hospital. Previously he was superintendent of the Regina General Hospital and, following the last war, was director of the Christie Street Military Hospital at Toronto. Both Dr. and Mrs. Hewitt served at Salonica during the last war, the latter as a nurse. A sister of Pilot Officer Hewitt, Gwyneth, is in charge of one of the wards at the Toronto General Hospital. The sympathy of the entire hospital field goes to the bereaved family.