TENNESSEE PERINATAL CARE SYSTEM

GUIDELINES FOR REGIONALIZATION, HOSPITAL CARE LEVELS, STAFFING AND FACILITIES

(Sixth Edition)

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Tennessee Department of Health
Women's Health / Genetics Section

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Prepared by the
Workgroup on Guidelines Revision and the
Subcommittee on Regionalization and Care Levels
of the
Perinatal Advisory Committee

Web Address:
http://health.state.tn.us/womenshealth/index.htm
(Under the Perinatal Tab)

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TENNESSEE PERINATAL CARE SYSTEM

GUIDELINES FOR REGIONALIZATION, HOSPITAL CARE LEVELS, STAFFING AND FACILITIES

PREFACE

The first edition of these Guidelines appeared in 1978; further editions were published in 1984, 1990, 1997, and 2004. This sixth edition was prepared by a workgroup representing a broad spectrum of health care professionals drawn from throughout the state. It was subsequently adopted by the Perinatal Advisory Committee. As was the case with the five preceding editions, the ultimate goal of these Guidelines is to improve perinatal outcomes in Tennessee by providing quality care to every mother and newborn. The Guidelines describe components of various care levels with the full realization that many of these components are already in place while others are goals which are actively pursued. The document emphasizes the importance of communication and collaboration among all health care professionals who provide perinatal services in Tennessee. It is also important to remember that, because our state's population has grown to include people from all over the world, the services provided to mothers and newborns must be culturally, as well as medically, appropriate.

As described in Tennessee Code Annotated 68-1-802,

(a) The department [of Health] is directed to develop a plan to establish a program for the diagnosis and treatment of certain life-threatening conditions present in the perinatal period.

(b) The program shall assist pregnant women and their fetuses and newborn infants by developing a regionalized system of care, including highly specialized personnel, equipment and techniques that will decrease the existing high mortality rate and the life-long disabilities that currently prevail in surviving newborn infants.

Regionalization of perinatal health care in the State of Tennessee was motivated by an overwhelming need to ease access to contemporary care by as large a segment of the population as was feasible. Since publication of the first edition, the number of providers of perinatal health care has increased remarkably. There has also been an increase in the level of expertise in most institutions in the state. We must continue to provide professional advice and supervision on perinatal health care to health care providers, thereby making quality care available to every woman and child in Tennessee regardless of community size and geographic location.

In order to assure contemporary pertinence of these and subsequent Guidelines, the Perinatal Advisory Committee has limited its approval to a period no longer than five years from the date of approval by the Commissioner of the Department of Health. A revision of this document will be mandatory at that time, unless one becomes necessary at an earlier date.

INTRODUCTION

Professional advice and supervision of health care must be available to every pregnant woman and her newborn child in Tennessee. The vast majority of the newly born are healthy, but intact survival is jeopardized in a substantial number who require complex medical attention. These severe illnesses often can be anticipated and then ameliorated or eliminated by special management of high-risk mothers. In the extreme, this type of medical attention entails recruitment of a variety of specialized professional personnel who are generally more concentrated in densely populated communities. It is in these larger communities that the fullest spectrum of medical consultants, nurse specialists, laboratory capabilities and equipment are usually situated, but complex medical management must be accessible to all patients regardless of community size and geographic location. That perinatal mortality and morbidity can be substantially reduced by contemporary technology has been plainly documented for decades. From this fact alone, there remains a sense of urgency to make such technology available to all mothers and infants in Tennessee, to eliminate existing inaccessibility to complex care, and to assure a high quality of medical attention in every hospital that renders it, complexity of care and location of hospital notwithstanding.

The overall goal is effective care for the State as a whole. Available resources must be appropriately utilized. All levels of care should be available within a given perinatal region, and each level of care, no matter how complicated, should be of optimal quality. The sole determinant of where care will be administered, and by what types of personnel, should be the severity of illness. Although services should be available as close to home as possible, transfer of patients from one hospital to another is inevitable if all levels of care are to be provided. An effective system requires designation of hospitals for provision of care according to their capacity. These Guidelines have been written for that specific purpose. Beyond care levels, consultation and transport of patients should provide functional continuity between hospitals. Fundamental to all these activities is the continuing education of personnel within perinatal regions; without it the effectiveness of care will deteriorate.

Although these Guidelines are addressed to hospitals as institutional providers of perinatal care, the basic emphasis is on the role of physicians, nurses and other health care personnel who directly and personally provide patient care. Hospitals herein described differ from each other in the variety of services performed by their personnel. The institutional components of the Tennessee Perinatal Care System include three hospital categories that indicate their capacities to provide complex care for mothers: Levels I, II, and III. In terms of neonatal care, we have adopted most of the hospital designations recommended by the American Academy of Pediatrics Committee on Fetus and Newborn in its policy statement on Levels of Neonatal Care, which was published in 2004. Adoption of these designations brings Tennessee into compliance with national guidelines. Regional Perinatal Centers are Level III institutions that have been designated by the State to coordinate certain regional activities that relate to professional education, patient transport and inter-hospital functions, as well as care of patients. The general characteristics of each care level are summarized in the paragraphs that follow. Details of these characteristics are set forth in the corresponding service level sections of these Guidelines.

SUMMARY OF
HOSPITAL PERINATAL SERVICE LEVELS

LEVEL I UNITS

Level I units provide basic care for uncomplicated maternity and neonatal patients. All high-risk mothers and neonates must be promptly identified for referral and/or consultation for more specialized care. The Level I unit shall provide equipment and staff to care for maternity patients whose onset of labor occurs on or after the first day of the 35th week of gestation, for neonates whose birthweight is over 2500 grams, or for sick patients pending transfer to another hospital. The Level I unit can also provide care for convalescing neonates who are transferred from other institutions to be closer to home.

LEVEL II UNITS – OBSTETRIC

Level II obstetric units have the capability to provide a broad range of maternal-fetal services for normal patients and for those with mild or moderate obstetric illnesses or complications. These units provide planned delivery services for women whose infants are expected to be >32 completed weeks of gestation and have a birthweight of at least 1500 grams. Additionally, a need for immediate pediatric subspecialty care for these newborns should not be anticipated. Level II obstetric units also provide emergency care for unplanned births of younger, smaller, or sicker babies before transfer to a facility at which newborn intensive care is provided.

LEVEL II-A UNITS – NEONATAL

Level II-A nurseries provide specialty neonatal services. They provide care for infants born at >32 weeks gestation and weighing $\geq$1500 grams who have physiologic immaturity or who are moderately ill with problems that are anticipated to resolve rapidly and are not anticipated to need subspecialty services on an urgent basis. These units also resuscitate and stabilize preterm and/or ill infants before transfer to a facility at which newborn intensive care is provided. In addition, Level II-A units provide care for infants who are convalescing after intensive care.

LEVEL II-B UNITS – NEONATAL

Level II-B nurseries provide specialty neonatal services. They provide care for infants born at >32 weeks gestation and weighing $\geq$1500 grams who have physiologic immaturity or who are moderately ill with problems that are anticipated to resolve rapidly and are not anticipated to need subspecialty services on an urgent basis. Level II-B units also have the capability to provide mechanical ventilation for brief durations (<24 hours) or continuous positive airway pressure.

LEVEL III UNITS – OBSTETRIC

Level III obstetric units have the capability to provide a broad range of maternal-fetal services for normal patients as well as for those with mild, moderate, and severe obstetric illnesses or complications. These units provide planned delivery services for women whose infants are expected to be >28 completed weeks of gestation and have a birthweight of at least 1000 grams. Additionally, a need for advanced respiratory support such as high-frequency ventilation and inhaled nitric oxide should not be anticipated (Level III-A nursery). Level III obstetric units located in facilities with Level III-B or Level III-C nurseries may provide planned delivery services for younger, smaller, or sicker newborns.

LEVEL III-A UNITS – NEONATAL

Level III-A nurseries provide subspecialty care for patients with severe and complicated neonatal disorders, as well as those who require normal or intermediate care. They provide care for infants born at >28 weeks gestation and weighing >1000 grams. Level III-A units also have the capability to provide sustained conventional mechanical ventilation and perform minor surgical procedures.

LEVEL III-B UNITS – NEONATAL

Level III-B nurseries provide subspecialty care for patients with severe and complicated neonatal disorders, as well as those who require normal or intermediate care. They provide comprehensive care for extremely low birth weight infants (≤1000 grams and ≤28 weeks' gestation). Level III-B units have the capability to provide advanced respiratory support such as high-frequency ventilation and inhaled nitric oxide for as long as required. These units also offer access to a full range of pediatric medical subspecialists on site or at a closely related institution, advanced imaging, and pediatric surgical specialists and pediatric anesthesiologists on site or at a closely related institution to perform major surgery.

LEVEL III-C UNITS – NEONATAL

Level III-C nurseries provide subspecialty care for patients with severe and complicated neonatal disorders, as well as those who require normal or intermediate care. They provide comprehensive care for extremely low birth weight infants (≤1000 grams and ≤28 weeks' gestation). Level III-C units have the capability to provide advanced respiratory support such as high-frequency ventilation and inhaled nitric oxide for as long as required. These units also offer prompt and on-site access to a full range of pediatric medical subspecialists, advanced imaging, and pediatric surgical specialists and pediatric anesthesiologists on site or at a closely related institution to perform major surgery. In addition, Level III-C units are located within institutions that have the capability to provide ECMO and surgical repair of complex cardiac malformations that require cardiopulmonary bypass.

LEVEL I FACILITIES

I. SERVICES PROVIDED

The services provided by a Level I facility include education of personnel, education of parents, and uncomplicated maternal and neonatal care. Specifically, the Level I facility should have the capacity to manage uncomplicated pregnancy, labor and delivery; to care for well newborn infants; to identify the signs and symptoms of potential problems in the mother, fetus and neonate; and to stabilize sick mothers and/or infants pending their transfer to a Level II-B or Level III facility.

A. Educational Services

Educational services should include the following:

1. Parent Education: Ongoing perinatal education programs for parents.

2. Nurses' Education: Programs for nurses should conform to the most recent edition of *Tennessee Perinatal Care System Educational Objectives for Nurses, Level I,* published by the Tennessee Department of Health. These courses may be made available periodically at the Level I facility by instructors from a Regional Perinatal Center. The courses may also transpire at a Regional Perinatal Center, or at any other site remote from the hospital, thus requiring that the hospital provide nurses with educational leave for attendance. The Level I hospital is responsible for the necessary arrangements for nurse education.

3. Physicians' Education: A program of educational activities for physicians should be provided in conjunction with the instructional staff of the Regional Perinatal Center.

4. All perinatal care providers should maintain current NRP provider status. All newborn care providers should also maintain current S.T.A.B.L.E. provider status.

B. Maternal-Fetal Care

1. Uncomplicated Patients: Prenatal care for uncomplicated patients should meet criteria published in the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

2. Fetal Evaluation: A capability for continuous electronic fetal monitoring of mother and fetus should be maintained. Ultrasound technology for fetal evaluation should be available.

3. Complicated Patients: Personnel should be capable of identifying and stabilizing maternal-fetal complications that require intervention before transfer to another facility. There should be an ongoing relationship for

consultative services in accordance with EMTALA guidelines. Care of complicated patients requires direct consultation with the referral facility. The availability of anesthesia, radiologic services, and laboratory/blood bank services should be appropriate for effective support of these emergencies.

4. Cesarean Section: Personnel should maintain the capability to perform cesarean section in accordance with the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

5. Postpartum Care: Personnel should provide care for uncomplicated patients during the postpartum period. In the event of complications, consultation and/or referral should be sought when appropriate.

C. Neonatal Care

A Level I facility should provide basic neonatal care as follows (see the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists):

1. Newborn services have the capabilities to:

   Provide neonatal resuscitation at every delivery according to the American Heart Association and American Academy of Pediatrics Neonatal Resuscitation Program.

   Evaluate and provide postnatal care to healthy newborn infants.

   Stabilize and provide care for infants born at 35 weeks or more gestation who remain physiologically stable.

   Stabilize newborn infants who are ill and those born at <35 weeks' gestation until transfer to a facility that can provide appropriate level of neonatal care.

2. Referred Infants:

   Provide continuing care for infants who are back transferred from a referral facility, after their acute problems have been resolved.

D. Support Services

1. Blood and fresh frozen plasma should be available in-house or on-call 24 hours daily.

2. Anesthesia services will be available for obstetric emergencies including cesarean section, consistent with the *Guidelines for Perinatal Care*, jointly

published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

Regional anesthesia should be initiated and maintained only by health care providers who are approved through the institutional credentialing process to administer or supervise the administration of obstetric anesthesia. These individuals must be qualified to manage anesthetic complications.

3. Respiratory therapists who are current Neonatal Resuscitation Program (NRP) providers should be available in-house or on-call 24 hours daily.

4. Radiologic services should be available 24 hours daily, including the capability to perform portable radiologic studies in the nursery.

5. Clinical laboratory services will be available, including a capacity to perform microanalyses listed in Section V (Laboratory Data) that are for the initial care of sick neonates.

6. A registered pharmacist should be immediately available for consultation 24 hours per day. Access to pediatric emergency medications should also be available 24 hours per day, as described in the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

7. Dietary and lactation consultation services should be available as described in the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

E. Social Services

Social services should be available, provided either through the hospital or by utilization of public and private agencies.

F. Maintenance of Data

The following items represent the minimum information that should be in the medical record of each patient:

1. <u>Maternal</u>

- Name, hospital number
- Age, gravidity, parity, etc.
- Date of first prenatal visit
- Gestation (weeks)
- Availability of prenatal records (including prenatal labs) on admission. Prenatal lab results that should be available on admission include: hepatitis B surface antigen, HIV, serology, Group B strep, blood type

and Rh status, rubella, gonorrhea, chlamydia, and other tests as appropriate
- Social history to include alcohol, drug, or tobacco use and/or history or suspicion of domestic violence
- Prior cesarean section
- Electronic fetal monitoring (Yes or No)
- Induction (Yes or No)
- Indications for induction
- Time of membrane rupture
- Presentation
- Type of delivery (cesarean section, type of forceps, vacuum extraction, spontaneous)
- Indication for cesarean section / operative vaginal delivery
- Time of birth
- Birthweight
- Apgar scores (per current NRP guidelines)
- Resuscitation (Yes or No)
- Type of resuscitation
- Maternal-fetal complications
- Anesthesia (type)
- Infant status on leaving delivery room (normal, abnormal, expired)
- Physician's name
- Nurse's name
- Disposition
  Discharged home
  Transferred to a higher level of care / Receiving hospital / Transport service
  Expired

2. <u>Neonatal</u>

- Name, hospital number
- Date of birth
- Birthweight
- Gestational age
- Apgar scores (per current NRP guidelines)
- Maternal complications
- Discharge diagnoses
- Special care administered (specify)
- Documentation of newborn metabolic and hearing screen and immunizations and medications given
- Bilirubin screen (according to American Academy of Pediatrics guidelines)
- Disposition
  Discharged home
  Transferred to a higher level of care / Receiving hospital / Transport service
  Expired

G. Consultation and Transfer

1. Maternal-Fetal: Planned deliveries at gestational ages below 35 weeks should be referred to an appropriate higher level of care. Consultation with an obstetric provider at the higher level facility is indicated if past history, prenatal course, and/or intrapartum or postpartum events indicate that mother or fetus is at risk.

2. Neonatal: Immediate consultation and/or transfer is indicated for infants:

   a. Whose birthweight is 2500 grams or less
   b. Whose gestational age is less than 35 weeks by best obstetrical estimate
   c. Who require other than the routine care that is prescribed for normal neonates, as published in the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

3. Protocols for maternal-fetal and neonatal transport should conform to the most recent edition of the *Tennessee Perinatal Care System Guidelines on Transportation*, published by the Tennessee Department of Health.

II. PERSONNEL: QUALIFICATIONS AND FUNCTIONS

A. Physicians

Co-directors of Level I facilities should be board certified in obstetrics and pediatrics, respectively. Family physicians may serve as co-directors if institutional necessity so indicates, or if board-certified individuals are not available.

B. Nursing

1. Required skills and knowledge for perinatal nurses are listed in the latest edition of *Tennessee Perinatal Care System Educational Objectives for Nurses, Level I*, published by the Tennessee Department of Health. All perinatal staff nurses should have the knowledge and skills that are prescribed in this publication, in addition to maintaining current NRP provider status. All nurses who provide care to newborns should also maintain current S.T.A.B.L.E. provider status.

2. Every Level I facility should have a registered nurse whose primary responsibility is the organization and supervision of nursing services in the labor/delivery area, the newborn nursery and/or the postpartum area.

C. Labor and Delivery

1. The physician or certified nurse midwife should examine the mother at appropriate intervals during labor. He or she should be immediately available during the later stages of labor. The physician should be present when fetal or maternal complications are imminent or apparent. All deliveries should be attended by a physician or certified nurse midwife, and a registered nurse. The physician or nurse midwife and the nurse should be capable of performing resuscitation of the newborn infant.

2. Responsibility for following the course of labor and the status of the fetus may not be delegated by the physician or certified nurse midwife to anyone except a registered nurse (R.N.). The registered nurse is responsible for continuous assessment and evaluation of the course of labor, for the status of the fetus, and for the identification of abnormalities. The nurse should remain in attendance during labor, delivery and the immediate recovery period.

3. Every delivery should be attended by at least one person whose primary responsibility is for the newborn and who is capable of initiating neonatal resuscitation according to the American Heart Association and American Academy of Pediatrics Neonatal Resuscitation Program guidelines. Either that person or someone else who is immediately available should have the skills required to perform a complete resuscitation, including endotracheal intubation and administration of medications. With multiple gestations, a separate team should be organized for each baby.

4. If a high-risk mother is unavoidably delivered at a Level I facility, additional qualified personnel should be present for the management of the baby. A written plan should be devised to set forth in detail the procedures for gathering required additional equipment and personnel in the presence of complications.

D. Postpartum Period

1. Mother: The mother's care following delivery should be supervised by a physician or certified nurse midwife and administered by a registered nurse (R.N.) or a licensed practical nurse (L.P.N.) supervised by a registered nurse (R.N.).

2. Infant: An initial evaluation of every neonate after birth should be performed by the physician responsible for care of the infant or by a registered nurse (R.N.) with education and experience in the recognition of abnormalities. Serial observations should be performed according to a clearly delineated protocol that has been established by the medical and nursing personnel of the nursery.

   The care of infants who require transport to another institution should be directly supervised by the physician. In instances of acute distress a physician or advanced practice nurse should be present. The physician's presence is of paramount importance when the transport team arrives.

Newborn Screening: Hearing and metabolic screening programs should adhere to the most recent State of Tennessee regulations and the most recent edition of *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

III. SPACE AND EQUIPMENT FOR INTRAPARTAL AND POSTPARTAL CARE

A. Physical Facilities and Equipment

Physical facilities and equipment should meet criteria published in the latest edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists. All rooms where babies are delivered should be kept at a temperature of 25 degrees C. (77 degrees F.) or higher to prevent hypothermia in the newborn. Separate facilities should be maintained for obstetric patients, but the obstetric unit may also be utilized for patients with gynecologic problems that do not involve infection.

B. Resuscitation

Provision must be made for resuscitation of infants at delivery. The capability for resuscitation should include assisted ventilation with oxygen administered by bag and mask or bag and endotracheal tube, chest compression, and appropriate intravascular therapy. A treatment station for this purpose should be located in each delivery room with the following: suction apparatus; a source of oxygen from wall outlets; infant resuscitation bags, masks and endotracheal tubes in appropriate sizes; laryngoscope and blades; appropriate drugs; and equipment for umbilical vessel catheterization. Infusion pumps must be immediately available. An optimal thermal environment for the infant should be provided by a radiant warmer that is immediately available.

IV. SPACE AND EQUIPMENT FOR THE NORMAL INFANT

A. Physical facilities and equipment should meet criteria published in the latest edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

B. Minimal equipment for the newborn nursery:

1. A platform scale, preferably with metric indicators.
2. A controlled source of continuous and/or intermittent suction.
3. Incubators and/or radiant warmers for adequate thermal support.
4. Equipment for determination of blood glucose at the bedside.
5. Ability to provide intensive phototherapy.
6. A device for the external measurement of blood pressure from the infant's arm or thigh.

7. Oxygen flow meters, tubing, binasal cannulas for short-term administration of oxygen.
8. A headbox assembly (oxygen hood), an oxygen blending device, and warming nebulizer for short-term administration of oxygen.
9. An oxygen analyzer that displays the ambient concentration of oxygen.
10. A newborn pulse oximeter for non-invasive blood oxygen monitoring.
11. An infusion pump that can deliver appropriate volumes of continuous fluids and/or medications for newborns.
12. A fully equipped neonatal resuscitation cart.
13. A positive pressure bag and mask; endotracheal tubes in all the appropriate sizes for neonates.
14. A laryngoscope with premature and infant size blades.
15. A CO_2 detector.

V. LABORATORY DATA

A. Maternal

In-house laboratory capabilities should include the following procedures:

- Complete blood count
- Major blood groups and Rh typing; blood cross match
- Coombs' test, indirect
- Liver function tests
- Plasma fibrinogen
- Platelet count
- Prothrombin time
- INR
- Partial thromboplastin time
- Serum glucose
- Serum sodium, potassium, chloride, bicarbonate, creatinine, BUN, magnesium, and calcium
- Serum protein and albumin
- Urinalysis
- Drug screen
- Serologic test for syphilis
- Bacterial cultures (aerobic and anaerobic); sensitivities
- Group B strep screening and /or rapid Group B strep screening
- Rapid HIV testing
- Hepatitis B surface antigen

B. Neonatal

In-house laboratory capabilities should include the following procedures, utilizing microvolume samples, when possible. In most instances, abnormal results will indicate a need for consultation and/or transfer of the baby.

- Complete blood count
- Major blood group and Rh typing; blood cross match
- Coombs' test (direct and indirect)
- Serum glucose
- Serum bilirubin (total and direct)
- Blood gas/pH
- Urinalysis
- Drug screen
- Bacterial cultures and antibiotic sensitivities
- Serum sodium, potassium, chloride, bicarbonate, creatinine, BUN, magnesium, and calcium

LEVEL II FACILITIES - OBSTETRIC

I. SERVICES PROVIDED

There is no distinction in level of service provided, from an obstetric perspective, in hospitals with nurseries designated as Level II-A or Level II-B. Both are considered Level II obstetric units. Level II obstetric units have the capability to provide a broad range of maternal-fetal services for normal patients and for those with mild or moderate obstetric illnesses or complications. The level of obstetric care provided by a hospital is determined, in large part, by the level of neonatal care available at that facility. In other words, Level II obstetric units located in a hospital with a Level II-A nursery should not provide planned delivery services for women whose infants are expected to require newborn intensive care.

Specifically, Level II units have the capabilities to provide:

- Planned delivery services for women whose infants are expected to be >32 completed weeks of gestation and have a birthweight of at least 1500 grams. Additionally, a need for immediate pediatric subspecialty care for these newborns should not be anticipated.

- Emergency care for unplanned births of younger, smaller, or sicker babies before transfer to a facility at which newborn intensive care is provided.

A. Educational Services

Educational services should include the following:

1. Parent Education: Ongoing perinatal education programs for parents.

2. Nurses' Education: Programs for nurses that conform to the latest edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses, Level II,* for obstetric nurses, published by the Tennessee Department of Health. These courses should be made available periodically at Level II facilities by instructors on the staff of that institution and/or the staff from a Regional Perinatal Center. Courses may also transpire at a Regional Perinatal Center or at another site remote from the Level II hospital, thus requiring that the hospital provide nurses with educational leave for attendance. Level II hospitals are responsible for the necessary arrangements for nurse education.

3. Physicians' Education: A program of courses for physicians should be provided by the instructional staff of the Regional Perinatal Center and by qualified individuals on the staff of the Level II institution.

4. All perinatal care providers should maintain current NRP provider status.

B. Antepartum Care

1. Uncomplicated Patients: Prenatal care for uncomplicated patients should meet criteria published in the latest edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

2. Identification and Planning for High-Risk Patients: Identification of the mother and fetus at high risk and multispecialty planning of management and therapy through the postpartum and neonatal periods should be routine. This planning should include consultation with, or transfer to, a Level III facility.

3. Medical and Surgical Complications: Facilities must be available for patients with complications of pregnancy.

4. Laboratory Services: In-house or readily accessible laboratory services should be available.

5. Fetal Evaluation: A capability for continuous electronic fetal monitoring of mother and fetus should be maintained. Ultrasound technology for fetal evaluation should be available. The ultrasound unit should be immediately available for use in Labor and Delivery. Proper data storage and documentation are essential.

6. Social Services: Social services should be available, provided either through the hospital or by utilization of public and private agencies.

7. Home Nursing: Nursing services provided in patients' homes should be available if needed.

8. Dietary and Lactation Consultation: Dietary and lactation consultation services should be available as described in the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

9. Pharmacy: A registered pharmacist should be immediately available for consultation 24 hours per day. Access to pediatric emergency medications should also be available 24 hours per day, as described in the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

C. Intrapartum Care

1. Physical Facilities and Equipment: Physical facilities and equipment should meet the criteria outlined in the latest edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists, and any additional criteria as herein outlined.

2. Labor and Delivery Area: Labor and delivery rooms should occupy a clearly and specifically designated area in the hospital.

3. Complicated Intrapartum Care: Personnel should be capable of identifying and stabilizing maternal-fetal complications that require intervention before transfer to another facility. There should be an ongoing relationship for consultative services in accordance with EMTALA guidelines. Care of complicated patients requires direct consultation with the referral facility.

4. Cesarean Section: Personnel should maintain the capability to perform cesarean section in accordance with the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists, or sooner if indicated.

5. Anesthesia: Anesthesia services should be available for obstetric emergencies including cesarean section, consistent with the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

6. Blood Bank Services: Blood bank services should be maintained at all times. An appropriately trained technician should be in-house 24 hours daily. All blood components must be available on an emergency basis, either on the premises or by pre-arrangement with another facility.

7. Imaging: Imaging services, including portable studies, should be available 24 hours daily.

8. Fetal Monitoring: A capability for continuous electronic monitoring of mother and fetus should be maintained. Ultrasound technology for fetal evaluation should be available. The ultrasound unit should be immediately available for use in Labor and Delivery. Proper data storage and documentation are essential.

9. Laboratory Services: Clinical laboratory services should be available to fully support clinical obstetric functions.

D. Postpartum Care

1. Space and Personnel: There should be an area specifically designated for high-risk postpartum care. In this area, nursing care must be administered by a registered nurse. A protocol for clinical observations is required. The care of low-risk mothers during the immediate recovery period must be administered or supervised by a registered nurse. A protocol for clinical observations is required.
2. Discharge Planning and Education: Specific personnel should be assigned this responsibility.

3. Interconceptional Health Care: Information on interconceptional health care issues should be provided, such as nutrition, folic acid use, lifestyle choices, and child spacing.

E. Consultation and Transfer

Level II facilities should maintain active relationships with a Level III facility in the region for consultation and transfer. Protocols for maternal-fetal transport should conform to the most recent edition of the *Tennessee Perinatal Care System Guidelines on Transportation*, published by the Tennessee Department of Health. Unless emergency circumstances require otherwise, Level II-A facilities cannot receive transferred patients with maternal, fetal or neonatal illnesses.

The transport of mothers should be individually arranged by the Level II and Level III facilities involved. If delivery is anticipated at a gestational age of less than 32 completed weeks or an estimated fetal weight of 1500 grams or less, or need for immediate pediatric subspecialty care is anticipated, transfer to a Level III facility which provides the required services should be initiated.

F. Maintenance of Data

The following items represent the minimum information that should be in medical records maintained at Level II facilities:

- Name, hospital number
- Age, gravidity, parity, etc.
- Date of first prenatal visit
- Gestation (weeks)
- Availability of prenatal records (including prenatal labs) on admission. Prenatal lab results that should be available on admission include: hepatitis B surface antigen, HIV, serology, Group B strep, blood type and Rh status, rubella, gonorrhea, chlamydia, and other tests as appropriate
- Social history to include alcohol, drug, or tobacco use and/or history or suspicion of domestic violence
- Prior cesarean section
- Electronic fetal monitoring (Yes or No)
- Induction (Yes or No)
- Indications for induction
- Time of membrane rupture
- Presentation
- Type of delivery (cesarean section, type of forceps, vacuum extraction, spontaneous)
- Indication for cesarean section / operative vaginal delivery
- Time of birth
- Birthweight
- Apgar scores (per current NRP guidelines)
- Resuscitation (Yes or No)
- Type of resuscitation
- Maternal-fetal complications
- Status of prenatal testing such as Group B strep, hepatitis B, etc.

- Anesthesia (type)
- Infant status on leaving delivery room (normal, abnormal, expired)
- Physician's name
- Nurse's name
- Disposition
  Discharged home
  Transferred to a Level III facility / Receiving hospital / Transport service
  Expired

II. PERSONNEL: QUALIFICATIONS AND FUNCTIONS

Requirements for adequate staffing are based upon the assumption that patients will be transferred to a Level III facility when their illnesses necessitate a level of care that exceeds the capability of Level II facilities.

A. Physicians

1. At a hospital with a Level II nursery, a board-certified obstetrician-gynecologist with special interest, experience, and, in some situations, a subspecialty in maternal-fetal medicine, should be chief of the obstetric service.

2. The chiefs of the obstetric and neonatal services should coordinate the hospital's perinatal care services and, in conjunction with other medical, anesthesia, nursing, respiratory therapy, and hospital administration staff, develop policies concerning staffing, procedures, equipment, and supplies. These physicians are responsible for setting the hospital's standard of perinatal care by working together to incorporate evidence-based practice patterns and nationally recognized care standards.

3. Regional anesthesia should be initiated and maintained only by health care providers who are approved through the institutional credentialing process to administer or supervise the administration of obstetric anesthesia. These individuals must be qualified to manage anesthetic complications.

4. Normal deliveries should be attended by a physician or a certified nurse midwife, and a registered nurse.

5. Every delivery should be attended by at least one person whose primary responsibility is for the newborn and who is capable of initiating neonatal resuscitation according to the American Heart Association and American Academy of Pediatrics Neonatal Resuscitation Program guidelines. Either that person or someone else who is immediately available should have the skills required to perform a complete resuscitation, including endotracheal intubation and administration of medications.

6. Deliveries of high-risk fetuses should be attended by an obstetrician and at least two other persons qualified in neonatal resuscitation whose only responsibility is the neonate. With multiple gestations, each newborn

should have his or her own dedicated team of care providers who are capable of performing neonatal resuscitation according to the American Heart Association and American Academy of Pediatrics Neonatal Resuscitation Program guidelines.

B. Nurses

1. The Nurse Manager (R.N.) is responsible for all obstetric nursing activities. The nurse manager in a hospital with a Level II-A nursery must complete the Level II obstetrics course prescribed in the most recent edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses, Level II*, published by the Tennessee Department of Health. If the hospital has a Level II-B nursery, the nurse manager should complete the Level III obstetrics course.

2. Staff nurses in obstetrics working in facilities with Level II-A nurseries must complete the Level II obstetrics course outlined in the most recent edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses, Level II*, published by the Tennessee Department of Health. In hospitals with Level II-B nurseries, the nurses should complete the Level III obstetrics course. Nurses should maintain institutional unit-specific competencies. In addition, all nurses should be NRP providers.

3. Recommended Registered Nurse (R.N.) / Patient Ratios for Perinatal Care (refer to the 6th edition, *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists):

Ratio	Care Provided
1:2	Patients in labor
1:1	Patients in second stage of labor
1:1	Patients with medical or obstetric complications
1:2	Oxytocin induction or augmentation of labor
1:1	Coverage for initiating epidural anesthesia
1:1	Circulation for cesarean delivery
1:6	Antepartum and postpartum patients without complications
1:2	Patients in postoperative recovery
1:3	Antepartum and postpartum patients with complications but in stable condition
1:3-4	Normal mother-newborn couplet care or breastfeeding care

4. The mother's care immediately following delivery must be supervised by a registered nurse. An institutional protocol for clinical observation is required.

5. A registered nurse is primarily responsible for the organization of care in the postpartum unit.

C. Social Services / Case Management

Personnel experienced in dealing with perinatal issues, discharge planning and education, follow-up and referral, home care planning, and bereavement support should be available to perinatal unit staff members and families.

D. Nutritionist / Dietitian / Lactation Consultant

The staff must include at least one dietitian or nutritionist who has special training in perinatal nutrition and can plan diets that meet the special needs of high risk antepartum and postpartum women. Lactation services and consultation should be available. Staffing ratios for lactation consultants should be based on the number of births and/or the number of admissions to the neonatal intensive care unit at the facility. According to the *Journal of Human Lactation* (2006), the hospital's Mother/Baby unit should be staffed with one full-time equivalent (FTE) lactation consultant for every 783 breastfeeding couplets. In addition, there should be one full-time equivalent (FTE) lactation consultant for every 235 infants admitted to the neonatal intensive care unit.

III. SPACE AND EQUIPMENT FOR LEVEL II FACILITIES

Physical facilities and equipment should meet criteria published in the latest edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

LEVEL II-A AND LEVEL II-B FACILITIES - NEONATAL

I. INTRODUCTION

Level II nurseries provide specialty neonatal services. They are subdivided into two categories (Level II-A and Level II-B) based on their ability to provide assisted ventilation, including continuous positive airway pressure.

Level II-A units have the capabilities to:

- Resuscitate and stabilize preterm and/or ill infants before transfer to a facility at which newborn intensive care is provided;

- Provide care for infants born at >32 weeks' gestation and weighing ≥1500 grams (1) who have physiologic immaturity such as apnea of prematurity, inability to maintain body temperature, or inability to take oral feedings, or (2) who are moderately ill with problems that are anticipated to resolve rapidly and are not anticipated to need subspecialty services on an urgent basis; and

- Provide care for infants who are convalescing after intensive care.

Level II-B units have the capabilities of Level II-A nurseries:

- And the additional capability to provide mechanical ventilation for brief durations (<24 hours) or continuous positive airway pressure.

- Level II-B units must be directed by a board-certified neonatologist.

II. SERVICES PROVIDED

A. Educational Services

Educational services should include the following:

1. Parent Education: Ongoing perinatal education programs for parents.

2. Nurses' Education: Programs for nurses that conform to the latest edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses, Level II,* for neonatal nurses, published by the Tennessee Department of Health. These neonatal courses should be made available periodically at Level II-A and Level II-B facilities by instructors on the staff of that institution and/or the staff from a Regional Perinatal Center. Courses may also transpire at a Regional Perinatal Center or at another site remote from the Level II-A or Level II-B hospital, thus requiring that the hospital provide nurses with educational leave for attendance. Level II-A and Level II-B hospitals are responsible for the necessary arrangements for nurse education. Nurses caring for infants on

mechanical ventilatory support in Level II-B units must be educated according to the guidelines specified for Level III, Neonatal.

3. Physicians' Education: A program of courses for physicians should be provided by the instructional staff of the Regional Perinatal Center and by qualified individuals on the staff of the Level II institution.

4. All neonatal care providers should maintain both current NRP and S.T.A.B.L.E. provider status. The S.T.A.B.L.E. Cardiac Module is also recommended.

B. Neonatal Care

Level II facilities should provide specialty neonatal care as follows (See the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists):

1. A specialty care nursery has the capabilities to:

   - Provide care for preterm infants with birth weight ≥1500 grams.

   - Provide resuscitation and stabilization of preterm and/or ill infants before transfer to a facility at which newborn intensive care is provided.

2. Level II-A nurseries do not have the capability to provide assisted ventilation, except on a limited basis until the infant can be transferred to a higher-level facility. These units also cannot provide parenteral nutrition.

3. Level II-B nurseries can provide mechanical ventilation for brief durations (less than 24 hours) or continuous positive airway pressure.

   Level II-B nurseries must have the personnel (e.g., physicians, specialized nurses, respiratory therapists, radiology technicians, laboratory technicians) and equipment (e.g., portable chest radiograph, blood gas laboratory) continuously available to provide ongoing care as well as to address emergencies. When the unit has an infant on a ventilator, specialized personnel should be available on site to manage respiratory emergencies.

4. Laboratory Services: Laboratory capabilities should include the following determinations on microvolume samples, when possible:

   a. Routine Availability

      - Clotting factors
      - Serum total protein
      - Serum albumin
      - Serum IgM

- Serum triglycerides (for parenteral nutrition)
- Metabolic screen
- Liver function tests
- Serologic test for syphilis
- Serology for hepatitis
- Screening for HIV
- TORCH titers
- Viral cultures

b. Available 24 Hours - 7 Days Per Week

- Hematocrit
- Hemoglobin
- Complete blood count
- Reticulocyte count
- Blood typing: major groups and Rh
- Cross match
- Minor blood group antibody screen
- Coombs' test
- Prothrombin time
- Partial thromboplastin time
- Platelet count
- Fibrinogen concentration
- Serum sodium, potassium, chloride
- Serum calcium
- Serum phosphorus
- Serum magnesium
- Serum or blood glucose
- Therapeutic drug levels
- Serum bilirubin, total and direct
- Blood gases/pH
- Blood urea nitrogen
- Serum creatinine
- Serum/urine osmolalities
- Urinalysis
- Cerebrospinal fluid: cells, chemistry
- Bacterial cultures and sensitivities
- C-reactive protein (CRP)
- Gram stain
- Toxicology
- Group B strep screening

5. Blood Bank Services: Blood bank services should be maintained at all times. An appropriately trained technician should be in-house 24 hours daily. All blood components must be available on an emergency basis, either on the premises or by pre-arrangement with another facility.

C. Consultation and Transfer

The Level II-A and Level II-B facilities should maintain active relationships with a Level III facility in the region for consultation and transfer. Protocols for transport should conform to the most recent edition of the *Tennessee Perinatal Care System Guidelines on Transportation*, published by the Tennessee Department of Health. Unless emergency circumstances require otherwise, Level II-A facilities cannot receive transferred patients with neonatal illnesses.

Neonatal Consultation and Transport: When the severity of an illness requires a level of care that exceeds the capacity of the Level II-A or Level II-B facility, the infant should be transferred to a Level III institution capable of providing required care. Transport of these infants should be provided after consultation with the receiving Level III unit. Refer to the most recent edition of the *Tennessee Perinatal Care System Guidelines on Transportation*, published by the Tennessee Department of Health, for more information.

D. Maintenance of Data

The following items represent the minimum information that should be in medical records maintained at Level II-A and Level II-B facilities:

- Name, hospital number
- Date of birth
- Birthweight
- Gestational age
- Apgar scores (per current NRP guidelines)
- Maternal complications
- Discharge diagnoses
- Special care administered (specify)
- Documentation of newborn metabolic and hearing screen and immunizations and medications given
- Bilirubin screen (according to American Academy of Pediatrics guidelines)
- Disposition
  Discharged home
  Transferred to Level II-B or Level III facility / Receiving hospital / Transport service
  Expired

III. PERSONNEL: QUALIFICATIONS AND FUNCTIONS

Requirements for adequate staffing are based upon the assumption that patients will be transferred to a Level III facility when their illnesses necessitate a level of care that exceeds the capability of Level II-A or Level II-B facilities.

A. Physicians

1. At a hospital with a Level II nursery, a board-certified obstetrician/gynecologist with special interest, experience, and, in some

situations, a subspecialty in maternal-fetal medicine, should be chief of the obstetric service.

2. In a Level II-A hospital, a board-certified pediatrician should be chief of the neonatal care service. In a Level II-B hospital, a board-certified pediatrician with subspecialty certification in neonatal-perinatal medicine should be chief of the neonatal care service.

3. These physicians should coordinate the hospital's perinatal care services and, in conjunction with other medical, anesthesia, nursing, respiratory therapy, and hospital administration staff, develop policies concerning staffing, procedures, equipment, and supplies. The chiefs of obstetrics and neonatology are responsible for setting the hospital's standard of perinatal care by working together to incorporate evidence-based practice patterns and nationally recognized care standards.

4. Normal deliveries should be attended by a physician or a certified nurse midwife, and a registered nurse.

5. Every delivery should be attended by at least one person whose primary responsibility is for the newborn and who is capable of initiating neonatal resuscitation according to the American Heart Association and American Academy of Pediatrics Neonatal Resuscitation Program guidelines. Either that person or someone else who is immediately available should have the skills required to perform a complete resuscitation, including endotracheal intubation and administration of medications.

6. Deliveries of high-risk fetuses should be attended by an obstetrician and at least two other persons qualified in neonatal resuscitation whose only responsibility is the neonate. With multiple gestations, each newborn should have his or her own dedicated team of care providers who are capable of performing neonatal resuscitation according to the American Heart Association and American Academy of Pediatrics Neonatal Resuscitation Program guidelines.

B. Nurses

1. The nurse manager (R.N.) is responsible for all nursing activities in the nurseries of Level II-A or Level II-B facilities. The nurse manager of a Level II-B unit must complete the Level III neonatal course prescribed for nurses in the most recent edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses*, published by the Tennessee Department of Health. Nurse managers of Level II-A units must complete the prescribed Level II neonatal course.

2. All staff nurses (R.N.) must be skilled in the observation and treatment of sick infants. For Level II-A facilities, they should complete the Level II neonatal course for nurses outlined in the most recent edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses*, published by the Tennessee Department of Health. For Level II-B facilities they should complete the Level III neonatal course for nurses. Nurses

should maintain institutional unit-specific competencies. In addition, all nurses should be current NRP and S.T.A.B.L.E. providers.

3. Recommended Registered Nurse (R.N.) / Patient Ratios for Newborn Care (refer to the 6th edition, *Guidelines for Perinatal Care*):

Ratio	Care Provided
1:6-8	Newborns requiring only routine care
1:3-4	Newborns requiring continuing care
1:2-3	Newborns requiring intermediate care
1:1-2	Newborns requiring intensive care
1:1	Newborns requiring multisystem support
1:1 or greater	Unstable newborns requiring complex critical care

C. Respiratory Therapists

Respiratory therapists who can supervise the assisted ventilation of neonates with cardiopulmonary disease should be available.

D. Social Services / Case Management

Personnel experienced in dealing with perinatal issues, discharge planning and education, follow-up and referral, home care planning, and bereavement support should be available to intermediate and intensive care unit staff members and families.

E. Nutritionist / Dietitian / Lactation Consultant

The staff must include at least one dietitian or nutritionist who has special training in perinatal nutrition and can plan diets that meet the special needs of high risk neonates. Lactation services and consultation should be available. Staffing ratios for lactation consultants should be based on the number of births and/or the number of admissions to the neonatal intensive care unit at the facility. According to the *Journal of Human Lactation* (2006), the hospital's Mother/Baby unit should be staffed with one full-time equivalent (FTE) lactation consultant for every 783 breastfeeding couplets. In addition, there should be one full-time equivalent (FTE) lactation consultant for every 235 infants admitted to the neonatal intensive care unit.

F. Pharmacist

A registered pharmacist with expertise in compounding and dispensing medications, including total parenteral nutrition (TPN) for neonates (for Level II-B), must be available 24 hours per day.

IV. SPACE AND EQUIPMENT FOR LEVEL II-A AND LEVEL II-B FACILITIES

A. Physical facilities and equipment should meet criteria published in the latest edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

B. Minimal equipment for care of the normal infant includes:

1. A platform scale, preferably with metric indicators.
2. A controlled source of continuous and/or intermittent suction.
3. Incubators and/or radiant warmers for adequate thermal support.
4. Equipment for determination of blood glucose at the bedside.
5. Ability to provide intensive phototherapy.
6. A device for the external measurement of blood pressure from the infant's arm or thigh.
7. Oxygen flow meters, tubing, binasal cannulas for short-term administration of oxygen.
8. A headbox assembly (oxygen hood), an oxygen blending device, and warming nebulizer for short-term administration of oxygen.
9. An oxygen analyzer that displays the ambient concentration of oxygen.
10. A newborn pulse oximeter for non-invasive blood oxygen monitoring.
11. An infusion pump that can deliver appropriate volumes of continuous fluids and/or medications for newborns.
12. A fully equipped neonatal resuscitation cart.
13. A positive pressure bag and mask; endotracheal tubes in all the appropriate sizes for neonates.
14. A laryngoscope with premature and infant size blades.
15. A CO_2 detector.

C. Intermediate Care Nursery

Additional equipment needed for intermediate care newborns includes:

1. A servo-controlled incubator or heated open bed for each infant who requires a controlled thermal environment.
2. Cardiorespiratory monitors that include pressure and waveform monitoring.
3. Oxygen analyzers, blenders, heaters, and humidifiers sufficient for anticipated census.
4. A sufficient number of headbox assemblies (oxygen hoods).
5. Modes of respiratory support: binasal cannulas, conventional mechanical ventilator, mechanism to deliver nasal CPAP.
6. A resuscitation bag and mask for each infant.
7. An adequate supply of endotracheal tubes and other intubation supplies.
8. A device for viewing x-rays in the infant area.

LEVEL III FACILITIES - OBSTETRIC

I. INTRODUCTION

There is no distinction in level of service provided, from an obstetric perspective, in hospitals with nurseries designated as Level III-A, Level III-B, or Level III-C. All are considered Level III obstetric units. Level III obstetric units have the capability to provide a broad range of maternal-fetal services for normal patients as well as for those with mild, moderate, and severe obstetric illnesses or complications. The level of obstetric care provided by a hospital is determined, in large part, by the level of neonatal care available at that facility. In other words, Level III obstetric units located in a hospital with a Level III-A nursery should not provide planned delivery services for women whose infants are expected to require care in a Level III-B or Level III-C nursery.

Specifically, Level III units have the capabilities to provide:

- Planned delivery services for women whose infants are expected to be >28 completed weeks of gestation and have a birthweight of at least 1000 grams (Level III-A nursery). Additionally, a need for advanced respiratory support such as high-frequency ventilation and inhaled nitric oxide should not be anticipated.

- Emergency care for unplanned births of younger, smaller, or sicker babies before transfer to a facility with a Level III-B or Level III-C nursery.

The responsibilities and capabilities that are prescribed for these facilities are solely concerned with the level of patient care. Designation as a Level III facility does not imply designation as a Regional Perinatal Center. The additional responsibilities of Regional Perinatal Centers are described elsewhere in these Guidelines.

II. SERVICES PROVIDED

A. Educational Services

Educational services should include the following:

1. Parent Education: Ongoing perinatal education programs for parents.

2. Education of Personnel: Level III units are required to provide ongoing educational programs for their nurses that conform to the latest edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses, Level III,* published by the Tennessee Department of Health. Outreach educational activities are not required.

3. Physicians' Education: Level III units are required to provide ongoing educational programs for physicians practicing in that institution. Outreach educational activities are not required.

4. All perinatal care providers should maintain current NRP provider status.

B. Antepartum Care

A complete range of prenatal care for normal and complicated patients will be provided as follows:

1. Uncomplicated Patients: Prenatal care for uncomplicated patients should meet standards published in the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

2. Identification of High-Risk Mothers: Identification and multispecialty planning for management and therapy of the mother and the fetus at high risk must be ongoing.

3. In-patient Care of Complications: A designated antenatal area must be available for patients with complications of pregnancy.

4. Laboratory Services: In-house or readily accessible laboratory services to assess fetal and maternal well-being must be available. Appropriate turnaround time for laboratory results is indispensable.

5. Evaluation of Fetus: The full range of antepartum surveillance techniques must be available in house 24 hours a day. Genetic consultation and invasive fetal procedures (PUBS, CVS, others) should be available.

6. Social Work: Full-time perinatal social workers must be on the staff of the hospital.

7. Home Nursing: Nursing services provided in patients' homes should be available if needed.

8. Dietary and Lactation Consultation: Dietary and lactation consultation services should be available as described in the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

9. Pharmacy. A registered pharmacist should be immediately available for consultation 24 hours per day. Access to pediatric emergency medications should also be available 24 hours per day, as described in the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists.

C. Intrapartum Care

1. Medical Personnel: An obstetrician and an anesthesiologist must be in-house 24 hours daily in order to provide an acceptable level of patient care. Sufficient resources should be available to support this staffing pattern. Consultation with a maternal-fetal medicine specialist must be immediately available.

2. Physical Facilities and Equipment: Physical facilities and equipment should meet the standards in the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists, and any additional criteria as herein presented.

3. Labor and Delivery Area: Labor and delivery rooms must occupy a clearly and specifically designated area in the hospital.

4. Intensive Care Area: Intensive intrapartum care will be rendered in a clearly designated area. Nursing care of high-risk patients must be administered by qualified registered nurses who possess both critical care and obstetrical care knowledge and skills.

5. Cesarean Section: Personnel should maintain the capability to perform cesarean section in accordance with the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists, or sooner if indicated.

6. Anesthesia: Anesthesia services must be immediately available in-house 24 hours daily.

7. Blood Bank Services: Blood bank services must be maintained at all times. An appropriately trained technician should be available in-house 24 hours daily. All blood components must be obtainable on an emergency basis, either on the premises or by pre-arrangement with another facility.

8. Imaging: Imaging services must be available 24 hours daily, including the capacity to perform portable studies. Personnel who perform these services must be available 24 hours daily.

9. Fetal Monitoring: A capability for continuous electronic monitoring of mother and fetus should be maintained. Ultrasound technology for fetal evaluation should be available. The ultrasound unit should be immediately available for use in labor and delivery. Proper data storage and documentation are essential.

10. Laboratory Services: Clinical laboratory services must be available to fully support clinical obstetric functions.

D. Postpartum Care

1. Postpartum Area: There must be specifically designated areas for postpartum care.

2. Intensive Care: Space, equipment and personnel for intensive care in the postpartum period must be provided. Nursing care of high-risk patients must be administered by qualified registered nurses who possess both critical care and obstetrical care knowledge and skills.

3. Discharge Planning and Education: Specific personnel should be assigned responsibility for assuring that mothers are given helpful preparation for the care of their newborns at home.

4. Counseling for Complications: Personnel who are specifically qualified should be assigned responsibility for fully discussing with parents the complications of pregnancy and their implications for future pregnancies and fetal outcomes. Special attention should be given to families who experience fetal or neonatal death. Bereavement support is essential. Counseling consults / referrals should be made as necessary.

5. Interconceptional Health Care: Information on interconceptional health care issues should be provided, such as nutrition, folic acid use, lifestyle choices, and child spacing.

E. Consultation and Transfer

1. Maternal-Fetal Transport: If the Level III facility chooses to accept referred patients, it should supervise the transport of mothers who are referred by any institution. The logistics and mode of transport of each maternal patient should be individually determined by the Level III facility and the referring institution, conforming to the most recent edition of the *Tennessee Perinatal Care System Guidelines on Transportation*, published by the Tennessee Department of Health. Transport should also conform to regulations prescribed by the State of Tennessee for emergency transport of other types of patients, but only when such conformity does not impair management of the pregnant woman in transport. Detailed records of the maternal transport system should be maintained by the Level III facility.

F. Maintenance of Data

A systematic ongoing compilation of data should be maintained to reflect the care of sick patients, in addition to the listing of minimal data that is specified for Level I and Level II facilities.

III. PERSONNEL: QUALIFICATIONS AND FUNCTIONS

A. Physicians

1. Co-directors: The director of the maternal-fetal medicine service of a hospital providing subspecialty care should be a full-time, board-certified obstetrician with subspecialty certification in maternal-fetal medicine. The director of the newborn intensive care unit should be a full-time, board-certified pediatrician with subspecialty certification in neonatal-perinatal medicine. As co-directors of the perinatal service, these physicians are responsible for maintaining practice guidelines and, in cooperation with nursing and hospital administration, are responsible for developing the operating budget; evaluating and purchasing equipment; planning,

developing, and coordinating in-hospital and outreach educational programs; and participating in the evaluation of perinatal care.

2. Obstetricians: Board-certified obstetricians, whose qualifications and appointments have been approved by the appropriate hospital committee, may assume primary responsibility for the hospital care of high-risk patients. However, the institution is responsible for development of a protocol that prescribes circumstances in which the obstetrician will consult the maternal-fetal specialist.

3. Normal deliveries should be attended by a physician or a certified nurse midwife, and a registered nurse.

4. Every delivery should be attended by at least one person whose primary responsibility is for the newborn and who is capable of performing neonatal resuscitation according to the American Heart Association and American Academy of Pediatrics Neonatal Resuscitation Program guidelines. Either that person or someone else who is immediately available should have the skills required to perform a complete resuscitation, including endotracheal intubation and administration of medications.

5. Deliveries of high-risk fetuses should be attended by an obstetrician and at least two other persons qualified in neonatal resuscitation whose only responsibility is the neonate. With multiple gestations, each newborn should have his or her own dedicated team of care providers who are capable of performing neonatal resuscitation according to the American Heart Association and American Academy of Pediatrics Neonatal Resuscitation Program guidelines.

6. Anesthesiologists: Obstetric anesthesia services should be directed by a board-certified anesthesiologist who has a special interest and an expertise in obstetric anesthesia.

7. Sub-specialty Consultants: Sub-specialty consultants for obstetric patients should include, at a minimum, a perinatal sonologist, hematologist, cardiologist, and other appropriate sub-specialists in internal medicine, such as infectious diseases and surgery. A geneticist for obstetric and newborn patients should maintain an ongoing service program, either as a member of the active staff of the hospital, or as a consultant whose responsibility for the hospital's genetic program is clearly identifiable.

B. Nurses

1. The nurse manager in a maternal-fetal unit should have completed education according to the most recent edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses, Level III*, for obstetric

nurses, published by the Tennessee Department of Health. A baccalaureate degree is required.

2. In Level III facilities, staff nurses (R.N.) in obstetrics who are responsible for Level II or Level III care should have completed Level III education according to the most recent edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses, Level III*, for obstetric nurses, published by the Tennessee Department of Health. Nurses should maintain institutional unit-specific competencies. In addition, all nurses should be current NRP providers.

3. The Level III obstetric unit should have at least one obstetric nurse on its full-time staff who is responsible for staff education. This nurse should either be masters' prepared or actively pursuing an advanced degree.

4. Recommended Registered Nurse (R.N.) / Patient Ratios for Perinatal Care (refer to the 6th edition, *Guidelines for Perinatal Care* jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists):

Ratio	Care Provided
1:2	Patients in labor
1:1	Patients in second stage of labor
1:1	Patients with medical or obstetric complications
1:2	Oxytocin induction or augmentation of labor
1:1	Coverage for initiating epidural anesthesia
1:1	Circulation for cesarean delivery
1:6	Antepartum and postpartum patients without complications
1:2	Patients in postoperative recovery
1:3	Antepartum and postpartum patients with complications but in stable condition

In-house minimal staffing for care of antepartum and postpartum patients should be adequate to handle possible emergencies. Sufficient staff skilled in obstetrics should be immediately available and free to respond to these emergencies without decreasing the unit staffing below safe levels as described above.

C. Social Workers

The services of social workers should be made available by the hospital 24 hours daily. These services should be provided by a staff that is qualified in perinatal social work. This requires that social workers be educated according to the most recent edition of the *Tennessee Perinatal Care System Educational Objectives in Medicine for Perinatal Social Workers,* published by the Tennessee Department of Health.

D. Case Manager / Discharge Coordinator

Personnel experienced in dealing with discharge planning and education, follow-up and referral, and home care planning must be available to antepartum, intrapartum, and postpartum unit staff members, patients, and families.

E. Nutritionist / Dietitian / Lactation Consultant

The staff must include at least one dietitian or nutritionist who has special training in perinatal nutrition and can plan diets that meet the special needs of high risk antepartum and postpartum women. Lactation services and consultation should be available. Staffing ratios for lactation consultants should be based on the number of births and/or the number of admissions to the neonatal intensive care unit at the facility. According to the *Journal of Human Lactation* (2006), the hospital's Mother/Baby unit should be staffed with one full-time equivalent (FTE) lactation consultant for every 783 breastfeeding couplets. In addition, there should be one full-time equivalent (FTE) lactation consultant for every 235 infants admitted to the neonatal intensive care unit.

LEVEL III-A, LEVEL III-B, AND LEVEL III-C FACILITIES-NEONATAL

I. INTRODUCTION

Level III facilities provide subspecialty care for patients with severe and complicated neonatal disorders as well as those who require normal or intermediate care. Level III neonatal facilities are subdivided into three categories, Level III-A, Level III-B, and Level III-C, based on services provided.

Level III-A units have the capabilities to:

- Provide comprehensive care for infants born at >28 completed weeks of gestation and weighing >1000 grams;
- Provide sustained life support limited to conventional mechanical ventilation; and
- Perform minor surgical procedures such as placement of central venous catheter or inguinal hernia repair.

Level III-B units have the capabilities to provide:

- Comprehensive care for extremely low birth weight infants (≤1000 grams and ≤28 weeks' gestation);
- Advanced respiratory support such as high-frequency ventilation and inhaled nitric oxide for as long as required;
- Access to a full range of pediatric medical and surgical subspecialists on site or at a closely related institution;
- Advanced imaging, with interpretation on an urgent basis, including computed tomography, magnetic resonance imaging, and echocardiography; and
- Pediatric surgical specialists and pediatric anesthesiologists on site or at a closely related institution to perform major surgery such as ligation of patent ductus arteriosus and repair of abdominal wall defects, necrotizing enterocolitis with bowel perforation, tracheoesophageal fistula and/or esophageal atresia, and myelomeningocele.

Level III-C units have the capabilities of Level III-B units and, in addition, are located within an institution that has the capability to provide ECMO and surgical repair of complex congenital cardiac malformations that require cardiopulmonary bypass.

The responsibilities and capabilities that are prescribed for these facilities are solely concerned with the level of patient care. Designation as a Level III-A, Level III-B, or Level III-C facility does not imply designation as a Regional Perinatal Center. The additional responsibilities of Regional Perinatal Centers are described elsewhere in these Guidelines.

II. SERVICES PROVIDED

A. Educational Services

Educational services should include the following:

1. Parent Education: Ongoing perinatal education programs for parents.

2. Nurses' Education: Level III units are required to provide ongoing educational programs for their nurses that conform to the latest edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses, Level III,* for neonatal nurses, published by the Tennessee Department of Health. Outreach educational activities are not required.

3. Physicians' Education: Level III units are required to provide ongoing educational programs for physicians practicing in that institution. Outreach educational activities are not required.

4. All neonatal care providers should maintain both current NRP and S.T.A.B.L.E. provider status. The S.T.A.B.L.E. Cardiac Module is also recommended.

B. Neonatal Care

A Level III facility accommodates normal infants (unless located in a free-standing children's hospital), moderately ill, and severely ill infants who are either inborn or are transferred from other hospitals. The care of normal neonates should conform to the standards published in the most recent edition of the *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists. The principal commitment of all Level III facilities is the care of sick neonates in an intensive care unit that is staffed and equipped to treat the most severe and complex neonatal disorders.

1. Resuscitation: Provision must be made for resuscitation of infants immediately after birth. Resuscitation capabilities should include assisted ventilation with blended oxygen administered by bag or T-piece resuscitator with mask or endotracheal tube, chest compression, and appropriate intravascular therapy. Refer to the most recent edition of the American Heart Association and American Academy of Pediatrics *Neonatal Resuscitation Program Guidelines* for a complete list of resuscitation equipment and supplies. An optimal ambient thermal environment for the infant should be provided, using a radiant warmer, food grade plastic, and/or a polyethylene wrap or bag, when indicated.

2. Transport from Delivery Room to the Special Care Nursery: Transport to a special care nursery requires a capacity for uninterrupted support. An appropriately equipped prewarmed transport incubator, with blended oxygen, should be used for this purpose.

3. Transitional Care: Recurrent observation of the neonate should be

performed by personnel who can identify and respond to the early manifestations of neonatal disorders.

4. Care of Sick Neonates: The care of moderately and severely ill infants entails the following essentials:

   a. Continuous cardiorespiratory monitoring.
   b. Serial blood gas determinations and non-invasive blood gas monitoring.
   c. Periodic blood pressure determinations (intra-arterial when necessary).
   d. Portable diagnostic imaging for bedside interpretation.
   e. Availability of electrocardiograms and echocardiograms with rapid interpretation.
   f. Laboratory data in accordance with the listing in paragraph B-7.
   g. Fluid and electrolyte management and administration of blood and blood components.
   h. Phototherapy and exchange transfusion.
   i. Administration of parenteral nutrition through peripheral or central vessels.
   j. Provision of appropriate enteral nutrition and lactation support.

5. Mechanical Ventilatory Support: The Level III unit must be qualified to provide mechanical ventilatory support. The essential qualifications are as follows:

   a. Continuous in-house presence of personnel experienced in airway management, endotracheal intubation, and diagnosis and treatment of air leak syndromes.
   b. A staff of nurses (R.N.) and respiratory therapists (R.T.) who are specifically educated in the management of neonatal respiratory disorders.
   c. Blood gas determinations and other data essential to treatment must be available 24 hours daily.
   d. Level III-A nurseries should be able to provide sustained conventional mechanical ventilation. High frequency ventilation and inhaled nitric oxide are provided by Level III-B and Level III-C units.

6. Radiology: In-house diagnostic imaging services should be maintained 24 hours daily.

7. Laboratory Services: Laboratory capabilities should include the following determinations on microvolume samples when possible:

   a. Routine Availability

      - Coagulation profile
      - Specific clotting factors
      - Serum total protein
      - Serum albumin

- Serum IgM
- Metabolic screen
- Liver function tests
- Serologic test for syphilis
- Serologic test for hepatitis
- Screening for HIV
- TORCH titers
- Virus cultures
- Chromosome analysis

b. Availability 24 Hours - 7 Days Per Week

- Hematocrit
- Hemoglobin
- Complete blood count, reticulocyte count
- Blood typing; major groups and Rh
- Cross match
- Minor blood group antibody screen
- Coombs' test
- Ammonia level
- Methemoglobin levels (when nitric oxide is in use)
- Prothrombin time
- Partial thromboplastin time
- Platelet count
- Fibrinogen concentration
- Serum sodium, potassium, chloride
- Serum calcium
- Serum phosphorus
- Serum magnesium
- Serum or blood glucose
- Therapeutic drug levels
- Serum triglycerides
- Serum bilirubin, total and direct
- Blood gases/pH
- Blood urea nitrogen
- Serum creatinine
- Serum/urine osmolalities
- Urinalysis
- Cerebrospinal fluid: cells, chemistry
- Bacterial cultures and sensitivities
- C-reactive Protein (CRP)
- Toxicology screen
- Group B strep screening
- Gram stain

8. Blood Bank Services: Blood bank services must be maintained at all times. An appropriately trained technician should be available in-house 24 hours daily. All blood components must be obtainable on an emergency basis, either on the premises or by pre-arrangement with another facility.

C. Consultation and Transfer

1. Neonatal Transport:

   a. The Level III facility that operates a transport service is required to maintain equipment and a trained team of personnel for the transport of newborn patients. The team and equipment must be available at all times. The Level III facility is responsible for transport of referred infants with its own equipment, or alternatively, with equipment from a commercial source.

   b. The Level III facility that operates a transport service should originate a protocol that describes procedures, staffing patterns, and equipment for the transport of referred infants. The protocol should conform to the most recent edition of the *Tennessee Perinatal Care System Guidelines on Transportation*, published by the Tennessee Department of Health.

   c. The Level III facility that operates a transport service is required to maintain records of its activities. (See the most recent edition of the *Tennessee Perinatal Care System Guidelines on Transportation*.)

D. Maintenance of Data

A systematic ongoing compilation of data should be maintained to reflect the care of sick patients, in addition to the listing of minimal data that is specified for Level I and Level II facilities. All Level III programs should participate in a state or national continuous quality improvement initiative that includes ongoing data collection and review for benchmarking and evaluation of outcomes.

III. PERSONNEL: QUALIFICATIONS AND FUNCTIONS

A. Physicians

1. Co-directors: The director of the maternal-fetal medicine service of a hospital providing subspecialty care should be a full-time, board-certified obstetrician with subspecialty certification in maternal-fetal medicine. The director of the newborn intensive care unit should be a full-time, board-certified pediatrician with subspecialty certification in neonatal-perinatal medicine. As co-directors of the perinatal service, these physicians are responsible for maintaining practice guidelines and, in cooperation with nursing and hospital administration, are responsible for developing the operating budget; evaluating and purchasing equipment; planning, developing, and coordinating in-hospital educational programs; and participating in the evaluation of perinatal care.
2. Neonatologists: The attending physician for sick neonates must be fellowship-trained and board-certified or eligible to take the board certification exam in neonatal-perinatal medicine.

3. Pediatricians: A board-certified neonatologist must have primary and ultimate responsibility for infants who receive intensive care. Board-certified pediatricians, whose qualifications and appointments have been approved by the appropriate hospital committee, may have primary responsibility for infants who require other than routine care under the supervision of a neonatologist.

4. In-House Coverage: In-house physician consultation and coverage should be provided 24 hours per day by a board-certified neonatologist or a neonatal nurse practitioner. However, when in-house coverage does not include a board-certified neonatologist, he/she must be on-call and available to be on-site within 30 minutes of request.

5. Normal deliveries should be attended by a physician or a certified nurse midwife, and a registered nurse.

6. Every delivery should be attended by at least one person whose primary responsibility is for the newborn and who is capable of performing neonatal resuscitation according to the American Heart Association and American Academy of Pediatrics Neonatal Resuscitation Program guidelines. Either that person or someone else who is immediately available should have the skills required to perform a complete resuscitation, including endotracheal intubation and administration of medications.

7. Deliveries of high-risk fetuses should be attended by an obstetrician and at least two other persons qualified in neonatal resuscitation whose only responsibility is the neonate. With multiple gestations, each newborn should have his or her own dedicated team of care providers who are capable of performing complete neonatal resuscitation according to the American Heart Association and American Academy of Pediatrics Neonatal Resuscitation Program guidelines.

8. Anesthesiologists: Pediatric anesthesia services should be directed by a board-certified anesthesiologist who has a special interest and an expertise in pediatric anesthesia.

9. Radiologists: A radiologist must be available on-call at all times.

10. Sub-specialty Consultants: For Level III-B and Level III-C units, qualified pediatric consultants should be readily available. At a minimum, these board-certified pediatric sub-specialists should include a radiologist, cardiologist, surgeon, neurologist, hematologist, and pathologist. Consultation should also be available for problems in pulmonology, renal function, metabolism, endocrinology, gastroenterology, hospital epidemiology, infectious diseases, and ophthalmology. Surgical sub-specialists such as cardiovascular surgeons, plastic surgeons, and neurosurgeons, as well as orthopedic, urologic, and ear-nose-throat surgeons, should be regularly available for consultation and for continuous patient management.

B. Nurses

1. The nurse manager of the Level III nursery should have completed education according to the most recent edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses, Level III*, Neonatal, published by the Tennessee Department of Health. A baccalaureate degree is required.

2. Staff nurses (R.N.) must have received courses as outlined in the most recent edition of the *Tennessee Perinatal Care System Educational Objectives for Nurses, Level III*, for neonatal nurses, published by the Tennessee Department of Health. Nurses should maintain institutional unit-specific competencies. In addition, all nurses should be current NRP and S.T.A.B.L.E. providers.

3. The Level III nursery should have at least one neonatal nurse on its full-time staff who is responsible for staff education. This nurse should either be masters' prepared or actively pursuing an advanced degree.

4. Recommended Registered Nurse (R.N.) / Patient Ratios for Newborn Care (refer to the 6th edition, *Guidelines for Perinatal Care*, jointly published by the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists):

Ratio	Care Provided
1:2-3	Newborns requiring intermediate care
1:1-2	Newborns requiring intensive care
1:1	Newborns requiring multisystem support
1:1 or greater	Unstable newborns requiring complex critical care

C. Social Workers

The services of social workers should be made available by the hospital 24 hours daily. These services should be provided by a staff that is qualified in perinatal social work. This requires that social workers be educated according to the most recent edition of the *Tennessee Perinatal Care System Educational Objectives in Medicine for Perinatal Social Workers,* published by the Tennessee Department of Health.

D. Case Manager / Discharge Coordinator

Personnel experienced in dealing with discharge planning and education, follow-up and referral, and home care planning should be available to neonatal intensive care unit staff members and families.

E. Respiratory Therapists

Dedicated respiratory therapists who can supervise the assisted ventilation of neonates with cardiopulmonary disease must be available. The nursery's respiratory therapy director must be a registered respiratory therapist (R.R.T.).

F. Nutritionist / Dietitian / Lactation Consultant

The staff must include at least one nutritionist/dietitian who is knowledgeable in the management of parenteral and enteral nutrition of low birthweight and other high-risk infants. A lactation consultant should be available to support nursing mothers of newborns with prolonged hospitalization or special needs. Staffing ratios for lactation consultants should be based on the number of births and/or the number of admissions to the neonatal intensive care unit at the facility. According to the *Journal of Human Lactation* (2006), there should be one full-time equivalent (FTE) lactation consultant for every 235 infants admitted to the neonatal intensive care unit.

G. Pharmacist

A registered pharmacist. with expertise in compounding and dispensing medications for neonates must be included on staff. Registered pharmacists with expertise in dispensing neonatal medications, including total parenteral nutrition (TPN), must be available 24 hours a day.

H. Occupational Therapist / Physical Therapist / Speech Therapist

At least one occupational therapist or physical therapist and speech therapist with neonatal expertise must be included on staff. These disciplines will work collaboratively with the medical and nursing staffs to provide developmentally appropriate care.

I. Neonatal Follow-up Services

Neonatal intensive care unit graduates who are considered high risk and those with birthweights <1500 grams should be enrolled in an organized follow-up program that tracks and records medical and neurodevelopmental outcomes to allow later analysis.

IV. EQUIPMENT FOR THE INTENSIVE CARE NURSERY

Equipment in the intensive care nursery of a Level III facility should be adequate for the care of moderately and severely ill infants in accordance with contemporary standards. The quantities of all items of equipment should be sufficient to support the management of the maximum number of infants that are anticipated at times of peak census loads. An in-house Bioengineering Department should have an active program for preventive maintenance and rapid repair.

REGIONAL PERINATAL CENTERS

I. REGIONS DEFINED

There are five perinatal regions in Tennessee: Northeast, East, Southeast, Middle, and West. Each region is comprised of a group of contiguous counties. The perinatal regions and the counties comprising them are listed on page 46. Each region contains one Regional Perinatal Center, which has been so designated by the Commissioner of the Tennessee Department of Health.

II. REGIONAL PERINATAL CENTERS LISTED

Each of Tennessee's five Regional Perinatal Centers is capable of providing Level III obstetric and neonatal care. The Regional Perinatal Centers are:

Northeast Tennessee Regional Perinatal Center
Johnson City Medical Center Hospital
Johnson City, Tennessee
Perinatal Center office: (423) 431-6640
L&D: (423) 431-5437
Referrals: 1-800-365-5262
Neonatal Consult/Transport: (423) 431-6671
NICU: (423) 431-6671

East Tennessee Regional Perinatal Center
The University of Tennessee Medical Center at Knoxville
Knoxville, Tennessee
L&D: (865) 305-9830
Maternal Referrals: 1-800-422-9301 or 865-305-9300
Neonatal Consult/Transport: 1-800-732-7295 or (865) 305-9834
NICU: (865) 305-9834

Southeast Tennessee Regional Perinatal Center
Erlanger Health System/T.C. Thompson Children's Hospital
Chattanooga, Tennessee
L&D: (423) 778-7956
OB Consults / Referrals: (423) 778-8100 or 1-866-4HI-RISK
Neonatal Consult/Transport: (423) 778-6438
NICU: (423) 778-6438

Middle Tennessee Regional Perinatal Center
Vanderbilt University Medical Center/Monroe Carell, Jr. Children’s Hospital at Vanderbilt
Nashville, Tennessee
L&D: (615) 322-2555
OB Consults/Referrals: 1-888-636-8863 (1-888-MFM-VUMC)
Neonatal Consult / Transport: 1-800-288-8111
NICU: (615) 322-0963

West Tennessee Regional Perinatal Center
Regional Medical Center at Memphis
Memphis, Tennessee
L&D: (901) 545-7345
OB Inpatient Transport: (901) 545-8181
Neonatal Consult/Transport: (901) 545-7366
NICU: (901) 545-7366

III. SERVICES PROVIDED

Tennessee's Regional Perinatal Centers must provide the following services:

A. Consultation and Referral

1. If no other appropriate facility is available to manage significant high-risk conditions, the Regional Perinatal Center must accept all such patients regardless of financial status.

2. Telephone consultation by obstetric and newborn sub-specialists must be available to physicians and nurses within the region 24 hours daily.

B. Professional Education

1. For the Staff of the Regional Perinatal Center: A program of professional education must be maintained for the staff of the Regional Perinatal Center. These programs should satisfy the educational requirements for physicians, nurses, social workers, and others who function in the administration of Level III care.

2. For the Staff of Other Hospitals in the Region: The Regional Perinatal Center must maintain a program of professional education for hospitals within its region. These programs of instruction require a staff of qualified educators to present ongoing courses to Level I, II, and III hospitals. These courses must satisfy the educational objectives set forth in the series of publications for the education of nurses and social workers published by the Tennessee Department of Health.

C. Maternal-Fetal and Neonatal Transport

The Regional Perinatal Center is responsible for maternal-fetal and neonatal transport described for Level III facilities elsewhere in these Guidelines. Whereas the provision of these transport services is an option for Level III units that do not function as Regional Perinatal Centers, transport services are required of a Regional Perinatal Center. Transport for the purpose of admission to the Regional Center must be made available to all patients within the region regardless of their financial status, and to patients referred from other Regional Perinatal Centers. Protocols for transport should conform to the most recent edition of the *Tennessee Perinatal Care System Guidelines on Transportation*, published by the Tennessee Department of Health.

D. Site Visits

The Regional Perinatal Center staff will engage in site visits upon request within its region.

E. Post-neonatal Follow-up

Follow-up evaluation of selected infants who are discharged from the Regional Perinatal Center should be performed. Neonatal intensive care unit graduates

who are considered high risk and those with birthweights <1500 grams should be enrolled in an organized follow-up program that tracks and records medical and neurodevelopmental outcomes to allow later analysis.

F. Data Collection

The Regional Perinatal Center must compile data (Program Objectives Report [POR]) on patients according to requirements prescribed by the Tennessee Perinatal Care System. These data will be forwarded to a central facility on a regular basis. All Regional Perinatal Centers should participate in a state or national continuous quality improvement initiative that includes ongoing data collection and review for benchmarking and evaluation of outcomes.

PERINATAL REGIONS

NORTHEAST TENNESSEE (Johnson City)

Carter
Greene
Hancock
Hawkins
Johnson
Sullivan
Unicoi
Washington

EAST TENNESSEE (Knoxville)

Anderson
Blount
Campbell
Claiborne
Cocke
Cumberland
Fentress
Grainger
Hamblen
Jefferson
Knox
Loudon
Monroe
Morgan
Pickett
Roane
Scott
Sevier
Union

SOUTHEAST TENNESSEE (Chattanooga)

Bledsoe
Bradley
Grundy
Hamilton
McMinn
Marion
Meigs
Polk
Rhea
Sequatchie

MIDDLE TENNESSEE (Nashville)

Bedford
Cannon
Cheatham
Clay
Coffee
Davidson
Dekalb
Dickson
Franklin
Giles
Hickman
Houston
Humphreys
Jackson
Lawrence
Lewis
Lincoln
Macon
Marshall
Maury
Montgomery
Moore
Overton
Perry
Putnam
Robertson
Rutherford
Smith
Stewart
Sumner
Trousdale
Van Buren
Warren
Wayne
White
Williamson
Wilson

WEST TENNESSEE (Memphis)

Benton
Carroll
Chester
Crockett
Decatur
Dyer
Fayette
Gibson
Hardeman
Hardin
Haywood
Henderson
Henry
Lake
Lauderdale
McNairy
Madison
Obion
Shelby
Tipton
Weakley