











Standards for Professional Registered Nurse Staffing for Perinatal Units

AWHONN
PROMOTING THE HEALTH OF WOMEN AND NEWBORNS

Association of Women's Health,
Obstetric and Neonatal Nurses

STANDARDS FOR PROFESSIONAL REGISTERED NURSE STAFFING FOR PERINATAL UNITS



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WOMEN AND NEWBORNS

These professional standards are intended for those who budget for, plan, and implement perinatal registered nurse staffing. Registered nurse staffing in perinatal units is challenging because of the dynamic nature of the patients and clinical situations encountered. The greater context of state, community, and institutional needs, resources, and regulatory requirements may influence the application of these standards and may justify variations from them in some instances. The purpose of these standards will be served if they provide a basis for planning adequate registered nurse staffing that results in safe and effective perinatal nursing care. The information presented here is not intended to define rules for liability, employment law, regulatory compliance or other purposes.

About AWHONN

Headquartered in Washington, DC, the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) is a leader among the nation's nursing associations, serving more than 23,000 health care professionals in the United States, Canada, and abroad and representing more than 350,000 nurses in our specialty.

AWHONN advances the nursing profession by providing nurses with critical information and support to help them deliver the highest quality care for women and newborns. Through its many evidence-based education and practice resources, legislative programs, research, and coalition work with other organizations and associations, AWHONN has firmly established itself as the leading association for women's health, obstetric, and neonatal nurses.

AWHONN members strive to deliver superior health care to women and newborns in hospital, home health, and ambulatory care settings. The rich diversity of members' skills and experience make AWHONN *the* voice for women's health and neonatal nursing. It is through their dedication, knowledge, skill, and expertise that we create resources aimed at achieving our mission to promote the health of women and newborns.

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AWHONN could not have produced the *Standards for Professional Registered Nurse Staffing for Perinatal Units* without the contributions of more than 1,800 AWHONN members who shared their understanding of current staffing challenges and the need to promote safe perinatal nurse staffing in the United States. The task force members carefully reviewed all of the comments from AWHONN member survey participants and, as in 2010, used these data as part of the revision of the *Standards for Professional Registered Nurse Staffing for Perinatal Units* by providing updated evidence, clarification, and tools for perinatal nurses in all aspects of hospital care from the bedside nurse to nurse managers, directors, and administrators.

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Standards for Professional Registered Nurse Staffing for Perinatal Units

EXECUTIVE SUMMARY

These updated nurse staffing standards from the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) are the result of more than three decades of evidence that appropriate nurse staffing based on acuity and census supports high-quality nursing care and positively influences patient outcomes. Since its founding in 1969, AWHONN (formerly known as the Nurses' Association of the American College of Obstetricians and Gynecologists until 1992) has set the standard of care for women's health, obstetric, and neonatal nursing in the United States. The staffing standards reflect AWHONN's continued responsibility and leadership in standard setting.

Since 2010, when the first edition of the AWHONN nurse staffing guidelines was published, there has been an extensive amount of nursing research disseminated about nurse staffing and patient outcomes, building on and supporting previous studies. There is strong and consistent evidence that inadequate nurse staffing has an adverse effect on inpatient hospital morbidity and mortality. The business case for adequate nurse staffing to meet the needs of the patient is robust (American Nurses Association, 2018; Begley et al., 2020). Attention to nurse well-being is critical to the safety and quality of hospital care and the financial strength of health care organizations.

A summary of the nurse staffing standards is presented in Table 1. A detailed background and rationale for each of the standard nurse-to-patient ratios for professional registered nurse staffing for perinatal units based on acuity (i.e., the dose of nursing care required for safe and effective care) and all of the associated aspects of care recommended by professional and regulatory associations are presented in Table 2.

Hospitalization for labor, birth, and postpartum is the most concentrated activity-intense part of the childbirth continuum, with significant implications for immediate and future health. Childbirth and newborn care in the hospital setting deserve careful attention to appropriate nurse staffing based on individual patient characteristics and clinical situations to promote safe, high-quality nursing care and optimal patient outcomes. The context for the hospital portion of contemporary perinatal care includes the following:

- Being born, giving birth, and having complications of childbirth remain the most common diagnoses for national inpatient hospital stays in the United States, with liveborn being nearly double that of the next common diagnosis, accounting for more than 10% of all U.S. hospital stays.
- Cesarean birth continues to be the most common surgery by far in the United States; the third-most common is perineal muscle laceration repair at birth.
- Conditions related to pregnancy and childbirth accounted for 4 of the top 20 most expensive conditions paid for by Medicaid.
- There is increased need for support related to social determinants of health, including social and economic disadvantages, drug and alcohol use, and language barriers.
- There must be recognition of the impact of long-standing structural racism embedded in the health care system on perinatal outcomes and the need for comprehensive changes.
- In 2019, 9.3% of babies born in the United States were admitted to a neonatal intensive care unit.
- Maternal morbidity and mortality in the United States are higher than other peer countries and disproportionately affect minoritized women.
- Delays in recognition and diagnosis are associated with failure to rescue and preventable maternal deaths. There are a number of nursing interventions that have the potential to save lives that require adequate nurse staffing to promote bedside presence for patients who need more attention for a variety of reasons during the childbirth hospitalization. For example, enough nurses to timely recognize and initiate appropriate treatment for patients experiencing evolving severe maternal morbidity in the inpatient setting and to allow sufficient time for a thorough discussion of early maternal and newborn warning signs during hospital discharge teaching with confirmation of patient understanding are essential aspects of safe, high-quality perinatal nursing care.

Classification of patients and clinical situations help determine the adequacy of nurse staffing by establishing the nursing effort required for safe and effective care and are based on acuity. For example, the frequent required assessments and documentation of maternal and fetal status and the administration of a high-alert medication are the basis for the standard nurse-to-patient ratio of 1 nurse to 1 woman (2 patients, woman and fetus) receiving oxytocin for induction or augmentation of labor. The multiple and ongoing required assessments and documentation of maternal and newborn status and associated interventions, critical support, and teaching during the postpartum and newborn stay are the basis for the standard nurse-to-couplet ratio of 1 nurse to no more than 3 mother–baby couplets (1 couplet is 2 patients, mother and newborn; 3 couplets are 6 patients).

Historically, the fetus and newborn have been somewhat invisible patients, not considered or counted in patient acuity, yet they account for a significant amount of nursing care and documentation. When calculating the number of licensed beds and patient census reported by hospitals, well-baby bassinets and healthy newborns are not included, yet newborns require an enormous amount of close assessment, screening, feeding support, medical record documentation, and discharge teaching for the parents. Continuing as per the 2010 AWHONN nurse staffing standards, the fetus and the newborn must be considered when determining patient acuity and nurse staffing requirements.

As per the nurse staffing standards published by our colleagues (American Academy of Pediatrics [AAP] & American College of Obstetricians and Gynecologists [ACOG], 1983–2007) in consultation with AWHONN, it is presumed that there are ancillary personnel to perform nonnursing duties as well as provide support and comfort to perinatal patients. Adding licensed practical nurses, licensed vocational nurses, doulas, obstetric technicians, or nurses' aides to the staffing numbers does not preclude requirements to meet staffing standards for registered nurses. Other personnel, including those who provide clerical support, are necessary for indirect patient care activities (AAP & ACOG, 1983–2007). Without ancillary support personnel, more nurses may be needed than are indicated in these standards.

Quality improvement is a vital part of keeping patients and team members safe (AAP & ACOG, 2017; Centers for Disease Control and Prevention, 2016; U.S. Department of Health and Human Services, 2021). Central to the success of perinatal quality improvement is allocated nursing time and funding to develop, conduct, and participate in quality improvement projects; analyze results; and make changes as needed based on the findings (CDC, 2016). Quality improvement activities should be included in the unit staffing budget and acknowledged as an essential part of unit operations to support participation of clinicians, including nurses, to promote perinatal patient safety (American Nurses Association, 2020; Begley et al., 2020).

Adequate staffing is critical to providing safe, high-quality nursing care for all those who give birth and their babies. Staffing needs in perinatal units are dynamic, consistent with the various types of patients and clinical situations encountered in a perinatal service. Included are two tables that detail the appropriate nurse-to-patient ratio in each phase of care during the perinatal hospital stay, from obstetric triage through antepartum, labor, vaginal birth, and cesarean birth; postanesthesia recovery; mother–baby care; and the neonatal intensive care unit. An appendix is included with sample staffing grids that can be applied to units with maternal levels of care (I–IV); suggestions for contingency planning, patient surges, gaps in nurse staffing, and disaster events; and tools for predicting nurse staffing levels.

Health care leaders are responsible for ensuring that adequate nurse staffing is budgeted and resourced to promote the best outcomes for all those who give birth and their babies. Ultimate outcomes are best optimized by making sure that childbearing women are well cared for and supported and that their babies at the beginning of life have the best start we can provide. Our vision for the care of childbearing women and their babies includes making sure that all patients in the perinatal setting are provided with safe and appropriate nurse staffing to promote high-quality nursing care and the best possible outcomes.

TABLE 1 STANDARDS FOR PROFESSIONAL REGISTERED NURSE STAFFING FOR PERINATAL UNITS[a]

Nurse-to-Woman or Nurse-to-Baby Ratio	Patient Type/Clinical Situation
Antepartum	
1 to 2–3	Women during nonstress testing
1 to 1	Woman presenting for initial obstetric triage
1 to 2–3	Women in obstetric triage after initial assessment and in stable condition
1 to 3	Women with antepartum complications in stable condition
1 to 1	Woman with antepartum complications who is unstable
1 to 1	Continuous bedside attendance for woman receiving IV magnesium sulfate for the first hour of administration for preterm labor prophylaxis and no more than 1 additional couplet or woman for a nurse caring for a woman receiving IV magnesium sulfate in a maintenance dose
1 to 2	Women receiving pharmacologic agents for cervical ripening
Intrapartum	
1 to 1	Woman with medical (such as diabetes, pulmonary or cardiac disease, or morbid obesity) or obstetric (such as preeclampsia, hypertensive crisis, multiple gestation, fetal demise, some indeterminate and all abnormal FHR patterns, women having a trial of labor attempting vaginal birth after cesarean birth) complications during labor
1 to 1	Woman receiving oxytocin during labor
1 to 1	Woman laboring with minimal to no pain relief or medical interventions
1 to 1	Woman whose fetus is being monitored via intermittent ausculation
1 to 1	Continuous bedside nursing attendance to woman receiving IV magnesium sulfate for the first hour of administration; ratio of 1 nurse to 1 woman during labor and until at least 2 hours postpartum and no more than 1 additional couplet or woman in the patient assignment for a nurse caring for a woman receiving IV magnesium sulfate during postpartum
1 to 1	Continuous bedside nursing attendance during initiation of regional anesthesia until condition is stable (at least for the first 30 minutes after initial dose)
1 to 1	Continuous bedside nursing attendance to woman during the active pushing phase of second-stage labor
1 to 2	Women in labor without complications
2 to 1	Birth; 1 nurse responsible for the mother and 1 nurse whose sole responsibility is the baby
Postpartum and Newborn Care	
1 to 1	Continuous bedside nursing attendance to woman in the immediate postoperative recovery period (for at least 2 hours)
1 to 3	Mother–baby couplets after the 2-hour recovery period (with consideration for assignments with mixed acuity rather than all recent postcesarean cases)
1 to 2	Women on the immediate postoperative day who are recovering from cesarean birth as part of the nurse-to-patient ratio of 1 nurse to 3 mother–baby couplets
1 to 5	Women postpartum without complications (no more than 2–3 women on the immediate postoperative day who are recovering from cesarean birth as part of the nurse-to-patient ratio of 1 nurse to 5 women without complications); their newborns are cared for by another nurse
1 to 3	Women postpartum with complications who are stable
1 to 5	Healthy newborns in the nursery requiring only routine care whose mothers cannot or do not desire to keep their baby in the postpartum room; their mothers are cared for by another nurse
1	At least 1 nurse physically present at all times in each occupied basic care nursery when babies are physically present in the nursery

(continued on next page)

Nurse-to-Woman or Nurse-to-Baby Ratio	Patient Type/Clinical Situation
1 to 1	Newborns undergoing circumcision or other surgical procedures during the immediate preoperative, intraoperative, and immediate postoperative periods
1 to 3–4	Newborns requiring continuing care
1 to 2–3	Newborns requiring intermediate care
1 to 1–2	Newborns requiring intensive care
1 to 1	Newborn requiring multisystem support
1 or more to 1	Unstable newborn requiring complex critical care
1	At least 1 nurse available at all times with skills to care for newborns who may develop complications and/or need resuscitation
2	Situations involving neonatal specialty care for fewer than 6 intermediate-care babies or 4 or fewer intensive care babies require a minimum of 2 registered nurses with neonatal expertise and training
Minimum Staffing	
2	A minimum of 2 nurses in the hospital as minimum staffing, even when there are no perinatal patients. Two nurses are needed to be able to safely care for a woman who presents with an obstetric emergency that may require cesarean birth (1 nurse circulator and 1 baby nurse, one or both of whom should have obstetric triage, labor, and fetal assessment skills; the baby nurse must be skilled in neonatal resuscitation as per the American Academy of Pediatrics and the American Heart Association neonatal resuscitation program). A scrub nurse or surgical tech should be available in the hospital or on call such that an emergency birth can be accomplished in a timely manner consistent with the patient's clinical situation. Another labor nurse should be called in to be available to care for any other pregnant woman who may present for care while the first 2 nurses are caring for the woman undergoing cesarean birth and during postanesthesia recovery.

Note. See the full text for presumptions and conditions that may affect the stated ratios in each instance. FHR = fetal heart rate; IV = intravenous.
[a]It should be recognized that these staffing ratios represent minimal staffing, require further consideration based on acuity and needs of the service, and presume that there will be ancillary personnel to support the nurse.

INTRODUCTION

Background

The first standards for perinatal nurse staffing were published in 1983 in the inaugural edition of the *Guidelines for Perinatal Care* (American Academy of Pediatrics [AAP] & American College of Obstetricians and Gynecologists [ACOG], 1983) in consultation with the Nurses' Association of the American College of Obstetricians and Gynecologists (NAACOG; now known as the Association of Women's Health, Obstetric and Neonatal Nurses [AWHONN]) and included in each edition up to the sixth edition (AAP & ACOG, 2007). In September 2010, AWHONN released *Guidelines for Professional Registered Nurse Staffing for Perinatal Units*, which built on and updated the recommendations for ratios of registered nurses to patients in various perinatal clinical situations published previously by AAP and ACOG. In the eighth edition of the *Guidelines for Perinatal Care*, the summary table from the AWHONN (2010) nurse staffing guidelines was included by our AAP and ACOG colleagues (AAP & ACOG, 2017). Since 1983, the recommended nurse-to-patient ratios have been considered standards for nurse staffing in perinatal units and are the foundation on which hospital administrators and leaders of perinatal services plan for personnel and financial resources. In this revised edition of the document, the term "guidelines" has been changed to "standards" to reflect this long-standing concept.

There have been changes in how perinatal care is delivered and the characteristics of patients seeking care over the past few decades that require clarification and additional details in *Standards for Professional Registered Nurse Staffing for Perinatal Units*. These include but are not limited to the following:

- increases in medical interventions, elective procedures, and prevalence of comorbidities (e.g., chronic hypertension, diabetes, morbid obesity) among the childbearing population; medical complications associated with advanced maternal age; obstetric (OB) triage needs; antenatal testing techniques; labor inductions; preterm births; cesarean births; and requirements for maternal and fetal assessments;
- recognition of the prevalence of maternal mental health conditions such as anxiety and depression;
- rise in severe maternal morbidity and preventable maternal deaths;
- increased need for support related to social determinants of health, including social and economic disadvantages, drug and alcohol use, and language barriers;
- recognition of the impact of long-standing structural racism embedded in the health care system on perinatal outcomes and the need for comprehensive changes;
- the time required to make sure everyone who gives birth and their families and support persons have sufficient time to ask questions and share their concerns and are given enough information, at the appropriate literacy level and in understandable language, so they can make decisions and be full partners in their care;
- increase in use of pharmacologic agents for cervical ripening and labor induction;
- designation of oxytocin and magnesium sulfate as high-alert medications;
- increase in births of late-preterm infants and early-term infants, who require closer monitoring because they are at risk for more complications than term infants;
- increase in the number of newborns with neonatal abstinence syndrome or neonatal opioid withdrawal syndrome as the prevalence of opioid use disorders has risen;
- advances in neonatology allowing care for more fragile preterm babies;
- decreased lengths of inpatient stay for childbirth, resulting in higher acuity of hospitalized mothers and babies;
- decreased lengths of inpatient stay for childbirth, allowing less time for comprehensive education before discharge for parents and families about infant care, breastfeeding, postpartum care, and potential maternal and newborn warning signs for when to contact the primary care provider or emergency services;
- proliferation of electronic medical record (EMR) systems that require more nursing time;
- increases in patient data required to be part of the medical record based on regulatory and accreditation standards, including admission screening for multiple nonobstetric conditions, social and health risks, medication reconciliation, discharge processes, checklists, and double-check systems for patient safety; and
- recognition that plans for emergency staffing are needed for disaster events such as floods, hurricanes, tornados, earthquakes, fires, power outages, infectious disease outbreaks, pandemics, protests, strikes, mass shootings, bombings, and terrorist attacks.

Being born, giving birth, and complications of childbirth remain the most common diagnoses for national inpatient hospital stays in the United States, with liveborn being nearly double that of the next common diagnosis, accounting for more than 10% of all U.S. hospital stays (Agency for Healthcare Research and Quality [AHRQ], 2021c; B. E. Hamilton et al., 2021; Liang et al., 2020). In 2019, the last year for which detailed U.S. natality data are available, 3,685,028 (98.4%) births occurred in the hospital (Martin

et al., 2021). Of the approximately 6,000 hospitals in the United States (American Hospital Association, 2021a), approximately 2,800 are birthing hospitals (American Hospital Association, 2019). This is a decrease since the first edition of the AWHONN nurse staffing standards was published, when there were 3,265 birthing hospitals (Simpson, 2011). This number fluctuates often, generally downward, and has disproportionately affected rural areas (American Hospital Association, 2021b; Centers for Medicare and Medicaid Services [CMS], 2019; March of Dimes, 2020; Rural Health Research Gateway, 2019). Cesarean birth continues to be the most common surgery by far in the United States; the third-most common is perineal muscle laceration repair at birth (AHRQ, 2021d). In 2019, 9.3% of babies born in the United States were admitted to a neonatal intensive care unit (NICU; Martin et al. 2021). Hospital care for those who give birth and their babies is a major health care expenditure in the United States (National Academies of Sciences, Engineering, and Medicine [NASEM], 2020). The majority of births (53.7%) are covered by private health insurance, military health insurance, or the Indian Health Service, with patients contributing by paying insurance premiums and copays; 42.1% by Medicaid; and 4.2% by "self-pay" or "charity" (Chua et al., 2021; Martin et al., 2021). Conditions related to pregnancy and childbirth accounted for 4 of the top 20 most expensive conditions paid for by Medicaid in 2017 (Liang et al., 2020). A little more than 33% of those who gave birth in 2019 enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (Martin et al., 2021). Hospitalization for labor, birth, and postpartum is the most concentrated activity-intense part of the childbirth continuum, with significant implications for immediate and future health. Childbirth and newborn care in the hospital setting deserve careful attention to appropriate nurse staffing based on individual patient characteristics and clinical situations to promote safe, high-quality nursing care and optimal patient outcomes.

In July 2019, AWHONN members were invited via email to respond to a survey about nurse staffing. The survey included one open-ended question with no limit on amount of response text: "The AWHONN (2010) *Guidelines for Professional Registered Nurse Staffing for Perinatal Units* are being updated. During their initial development, feedback from nearly 900 AWHONN members was extremely helpful in providing specific details for the nurse staffing guidelines. We'd really like to hear from you again. Please give the writing team your input. What should AWHONN consider when updating the AWHONN nurse staffing guidelines?" More than 1,800 AWHONN members responded. Consistent themes were identified, and specific areas of concern raised by AWHONN members are clarified and updated in these new nurse staffing standards. An appendix of tools for implementation that should be helpful are included. A detailed analysis of these data and the efforts of the AWHONN Nurse Staffing Task Force to address recommendations of members who responded to the survey was published in *Nursing for Women's Health* (Simpson et al., 2021).

The original staffing standards (AAP & ACOG, 1983–2007) included both *types of patients* (e.g., patients in labor and antepartum and postpartum patients with complications but in stable condition) and *types of clinical situations* (e.g., oxytocin induction or augmentation of labor, coverage for initiation of epidural anesthesia, and second stage of labor) but did not specifically delineate the two patients that a pregnant woman represents (the mother and the fetus in a singleton pregnancy). Historically, the fetus and newborn have been somewhat invisible patients, not considered or counted in patient acuity, yet they account for a significant amount of nursing care and documentation. The sheer amount of continuous assessment and medical record documentation related to fetal monitoring during labor is remarkable, as are those related to intrauterine measures as needed to promote fetal well-being. When calculating the number of licensed beds and patient census reported by hospitals, well-baby bassinets and healthy newborns are not included, yet newborns require an enormous amount of close assessment, screening, feeding support, medical record documentation, and discharge teaching for the parents. The fetus and the newborn must be considered when staffing ratios are designated for care of those who give birth. For clarity, and as per the AWHONN (2010) staffing standards, when discussing *nurse-to-patient ratios* in the standards section of Tables 1 and 2, we have continued to specify the number and type of individuals requiring care in the ratio (e.g., someone who is pregnant, in labor, or postpartum and the fetus or newborn) rather than using the generic term "patient."

There are a variety of ways to describe the childbearing patient population including women, mothers, and those who are pregnant, in labor, giving birth, or postpartum. Some individuals who give birth do not want to be described as women or mothers because that is not their gender. Based on recent Gallup data, approximately 3.1% of adults in the United States identify as bisexual, 1.4% as gay, 0.7% as lesbian, and 0.6% as transgender (J. M. Jones, 2021). To be inclusive of all those who give birth and acknowledge that childbearing is not gender identity–specific, we use language that is gender inclusive (e.g., all those who give birth) and gender neutral (e.g., patients, parents) periodically in these standards. We recognize that members of various groups who are capable of giving birth are not monolithic and do not share consensus on the "right" or "best" language that should be used. Nurses should always ask patients what words they use to describe themselves, their

bodies, and their health care practice and use those words so they are providing culturally appropriate, respectful, and sensitive maternity nursing care (AWHONN, 2021d). In discussing research findings, we use the language that was reported. Race is a social construct that has no biological meaning or causative physiologic factors for those who give birth; however, long-standing and ongoing systemic and structural racism embedded in health care and society have known negative effects on outcomes of minoritized individuals. Classifications that have been used in various studies, including natality data and other vital statistics that at times warrant inclusion of race or ethnicity to report findings and understand disparities, are noted. For example, Black or African American, White, Native American or American Indian, Native Alaskan, Asian American, non-Hispanic, and Hispanic are used in the document as appropriate when describing what has been reported by others, including vital statistics data from the U.S. Department of Health and Human Services.

Ancillary and Unlicensed Assistive Personnel

The nurse staffing standards published by our colleagues (AAP & ACOG, 1983–2007) in consultation with NAACOG, now known as AWHONN, presumed that there were ancillary personnel to perform nonnursing duties as well as provide support and comfort to perinatal patients. *Adding licensed practical nurses, licensed vocational nurses, doulas, OB technicians, or nurses' aides to the staffing numbers does not preclude requirements to meet staffing standards for registered nurses.* Other personnel, including those who provide clerical support, are necessary for indirect patient care activities (AAP & ACOG, 1983–2007). This presumption was incorporated into the AWHONN (2010) staffing guidelines and continues in this document. Absence of ancillary support personnel must be considered in modifying these nurse staffing standards since the standards as written account for their presence. Without ancillary support personnel, more nurses may be needed than are indicated in these standards (American Nurses Association [ANA], 2015, 2020). For the purposes of this document, "nurse" means "registered nurse."

Standards and Guidelines From Professional Organizations That Influence Perinatal Care

Along with AWHONN, ACOG, AAP, and the Society for Maternal–Fetal Medicine, (SMFM), professional organizations such as The Joint Commission (TJC), ANA, National Association of Neonatal Nurses (NANN), Association of PeriOperative Registered Nurses (AORN), American Society of PeriAnesthesia Nurses (ASPAN), American Society of Anesthesiologists (ASA), Institute for Safe Medication Practices (ISMP), the U.S. Lactation Consultant Association (USLCA), and CMS of the U.S. Department of Health and Human Services (e.g., the Emergency Medical Treatment and Labor Act and the Hospital Inpatient Quality Reporting Program) have staffing and other standards and clinical recommendations that affect nurse staffing. They support the nurse staffing standards set forth here.

PRINCIPLE-BASED STAFFING

Adequate staffing is critical to providing safe, high-quality nursing care for all those who give birth and their babies. Staffing needs in perinatal units are dynamic and consistent with the various types of patients and clinical situations encountered in a perinatal service. In 1999, ANA developed a framework for evaluating the adequacy of nurse staffing (ANA, 1999) and updated it most recently in 2020 (ANA, 2020). Principles for nurse staffing and criteria for determining the staffing needs for care settings are based on the following:

> characteristics and consideration of the healthcare consumer or patient; characteristics and considerations of registered nurses and other interprofessional team members and staff; the context of the organization and workplace culture in which nursing services are delivered; the overall practice environment that influences delivery of care; [and] evaluation of staffing plans, overall costs, effectiveness, and resources expended for nursing care. (ANA, 2020, p. 5)

Core Components of Appropriate Nurse Staffing

ANA (2020) outlines the core components of appropriate nurse staffing, "defined as a match of registered nurse expertise with the needs of the recipient of nursing care services in the context of the practice setting and situation" (p. 6). Registered nurses, in full partnership with administrative and clinical health care leaders at all levels within a health care system, must consider a wide range of factors to achieve interprofessional provision of safe, high-quality health care.

> Registered nurses . . . must have a substantive and active role in staffing decisions to assure availability of the necessary time with patients to meet care needs and overall nursing responsibilities. Staffing needs must be determined based on an analysis of . . . [patient] status (e.g., degree of stability, intensity, and acuity) and the environment in which the care is provided. Other considerations include professional characteristics; competencies, experience, and skill set; staff mix; and previous staffing patterns that have been shown to improve care outcomes. Appropriate nurse staffing should be based on allocating the appropriate number of competent practitioners to a care situation, meeting. . . [patient]-centered and organizational outcomes, pursuing quality of care indices, meeting federal and state laws and regulations, and assuring a safe, high-quality work environment. (ANA, 2020, p. 6)

Appropriate nurse staffing matched to patient needs is necessary for safe, high-quality nursing care and optimal patient outcomes.

Nurse Staffing Based on Acuity

Classifications of *patients* and *clinical situations* help determine the adequacy of nurse staffing by establishing the nursing effort required for safe and effective care and are based on acuity. As in the original nurse staffing standards (AAP & ACOG, 1983–2007) and those updated by AWHONN (2010), requirements for registered nurse staffing here have been classified based on the acuity that is linked to common types of patients and clinical situations in perinatal units in the United States. Table 2 provides detailed rationales for each of the standard nurse-to-patient ratios for professional registered nurse staffing for perinatal units based on acuity (i.e., the dose of nursing care required for safe and effective care) and all of the associated aspects of care recommended by professional and regulatory associations. For example, the frequent required assessments and documentation of maternal and fetal status, administration of a high-alert medication, and associated nursing care are the basis for the standard nurse-to-patient ratio of 1 nurse to 1 woman (2 patients: woman and fetus) receiving oxytocin for induction or augmentation of labor. The multiple and ongoing required assessments and documentation of maternal and newborn status, critical support, breastfeeding assistance, teaching, and associated nursing care during the postpartum and newborn stay are the basis for the standard nurse-to-couplet ratio of 1 nurse to no more than 3 mother–baby couplets (1 couplet is 2 patients: mother and newborn; 3 couplets are 6 patients).

Some hospitalized patients with pregnancy or medical complications require frequent and intense monitoring and associated nursing care. This may include hourly vital signs, blood glucose assessment, cardiac monitoring, continuous electronic fetal monitoring (EFM), twice-daily nonstress testing, and/or multiple intravenous (IV) lines administering blood products or high-alert medications such as insulin or magnesium sulfate. They may have a central line or a peripherally inserted central catheter (PICC). They may need supplemental oxygen and/or or be experiencing vaginal bleeding, uterine contractions, fetal heart rate (FHR) decelerations or other abnormalities. They may have a contagious disease. Personal protective equipment may be necessary before each patient encounter. Patients who have psychosocial concerns or mental health conditions such as anxiety or depression, who are grieving, or who are non–English-speaking may require extra nursing attention. Some neonatal clinical situations are nursing-resource intensive, including infants receiving continuous positive airway pressure, who require meticulous monitoring of their physiologic status to minimize risk of adverse outcomes such as pneumothorax or nasal trauma, and late-preterm infants, who may require considerable attention related to feeding (NANN, 2021). Each of these factors individually and collectively contributes to patient acuity over the course of the hospitalization for childbirth and must be considered in the dose of nursing care required for safe and effective care that supports optimal outcomes. Nurse staffing assignments must reflect that acuity. Some patients are quite complex such that a ratio of 1 nurse to 1 woman or 1 nurse to 1 newborn is most appropriate given their nursing care needs.

A patient classification system based on acuity is only one part of a plan for adequate nurse staffing. Professional judgment is critical in evaluating staffing requirements when using a classification system, in light of the nursing needs of the patients on any given unit. See Appendix A for sample acuity grids and associated nurse staffing needs for various types of perinatal units in the United States (Simpson, 2013). Some types of patients and clinical situations may require more nurses than suggested, based on specific conditions (ANA, 2015, 2020). Census and acuity are dynamic features of perinatal services, at times significantly varying hour by hour and day of the week. Appendix B is a tool based on the AWHONN nurse staffing standards that can be used in real time to assess unit staffing needs. A nurse staffing plan, with evidence that its resources are adequate and that it is actively managed, is essential to patient safety.

Models of staffing that may be appropriate for medical–surgical units are not applicable to perinatal care. Staffing plans for perinatal units should include estimates of patient volume that count patient presentations for care that are considered observation, admissions, discharges, and "less than full day" patients such as those who present for OB triage. "Hours per patient day" and/or "midnight census" models are not applicable in planning perinatal nurse staffing because they are not appropriately adjusted for risk and do not consider the dynamic nature of caring for patients during labor and birth; the frequent admissions and discharges assigned to one nurse on a shift that influence workload; or the large volume of triage patients, OB emergency department (ED) patients, and outpatients who often present to the perinatal unit for care. Available evidence does not support a specific nurse staffing model, method, or nurse staffing needs assessment tool such as nursing hours per patient day, case mix indices, or nurse intensity weights (ANA, 2020). A validated model for calculating average nursing hours needed per birth based on acuity, number of births per day, and day of the week that works in sync with the AWHONN nurse staffing standards for labor, birth, and recovery units is included in Appendix C (Simpson, 2015).

Predicting Nurse Staffing Requirements Using Unit Data

Predictions of nurse staffing needs can be developed by perinatal nurse leaders after thoroughly evaluating critical aspects of the workforce and historical unit operations (Simpson, 2015). For example, the clinical experience of nurses; the presence, number, or absence of support personnel; typical patient characteristics (e.g., percentage of high-risk patients, those desiring a minimal intervention labor and birth); common procedures (e.g., cervical ripening, induction of labor) and associated length of stay in hours (e.g. for cervical ripening, induction of labor); average number of births per day (i.e., weekdays, weekends); average length of stay for OB triage or OB ED patients, antepartum patients, labor patients, and mother–baby couplets based on vaginal or cesarean birth; workflow; seasonal trends; and provider practices are critical to planning nurse staffing needs for each perinatal unit (see Appendix C for a worksheet for these types of calculations). Collection of objective data on historical patient characteristics and their influence on unit operations can take some effort; however, they are requisite to ensuring safe, high-quality perinatal nursing care (Simpson, 2015). The EMR can be used to integrate nurse staffing data with historical patient data to make staffing decisions in real-time and project nurse staffing needs that are consistent with the AWHONN nurse staffing standards (L. W. Jones & Hall, 2022). These data from the EMR can be used to support flexible staffing patterns and increases in the unit staffing budget if persistent gaps between patient care needs and available nurses are identified (L. W. Jones & Hall, 2022).

Natality data indicate births in the United States are more likely to occur between 6:00 a.m. and midnight and on weekdays, with the highest percentage of births between noon and 6:00 p.m. (Martin et al., 2021). August, September, and July (in that order) are the months with the highest number of births (Martin et al., 2021). Nurse leaders in many perinatal services use their electronic database of prenatal records of patients who register their intent to give birth at the hospital to forecast nurse staffing needs months ahead. Evaluation of scheduled procedures by each day of the week and flexibility are needed in moving procedures to days that have adequate staffing rather than clustering procedures such as elective induction of labor and scheduled cesarean birth for convenience or preference on days when there are not enough nurses to safely handle the artificial surge in patient census and acuity. Unit policies for the slots for number of scheduled procedures per day and their associated acuity should match the number of nurses that will be staffed and available to provide safe, high-quality nursing care as described in these standards.

Physical Design of Perinatal Units

The physical design of a unit and patient volume influence staffing requirements. For example, a unit may be configured for single-room maternity care with labor–delivery–recovery–postpartum (LDRP) rooms; have labor–delivery–recovery (LDR) rooms and a separate mother–baby unit; or include a separate well-baby nursery, a special care nursery, or neonatal intensive care nursery, OB triage unit, OB emergency unit, antepartum testing unit, antepartum care unit, labor and birth unit, and/or postpartum unit. Those physical configurations may or may not reflect how nursing care is actually provided, such as one nurse caring for mother and baby through all aspects of care, each aspect of care assigned to a different nurse, or a combination of both (NASEM, 2020). High-volume perinatal services may have separate units for each aspect of care for logistic and space reasons, and nurses may specialize in the care of patients in one or more of these separate units. These staffing standards are based on the premise that mothers and babies should remain together as their conditions allow.

Nonobstetric Patients

In times of low census, some perinatal units may accept nonobstetric patients, usually patients with gynecologic conditions, although in some cases, other patients representing clean surgical cases or medical conditions may be admitted (AAP & ACOG, 2017). Under all circumstances, perinatal patients must take precedence over nonobstetric patients when considering admission to a perinatal unit and the availability of nurses to care for perinatal patients (AAP & ACOG, 2017). Designation of nurse-to-patient staffing ratios for such patients should be similar to other medical–surgical patients and based on acuity and skill level of nurses expected to care for a nonobstetric population. Adequate education and competence validation related to the care of such patients should be provided.

Impact of the Electronic Health Record

Nearly all labor and birth units have electronic documentation systems associated with their electronic fetal surveillance systems; however, interoperability of fetal monitoring systems with other clinical information systems remains a challenge for many hospitals, often requiring documentation of the same patient data in different electronic systems (Gleave & Paxman, 2015; Ivory, 2015). Electronic medical records (EMRs) in all clinical units linked to admission, laboratory, radiology, pharmacy, outpatient services, and billing systems with nurse, physician, and other health care provider data entry and order entry are nearly universal in U.S. hospitals (Healthcare Information and Management Systems Society, 2020; Ivory, 2015; Kharrazi et al., 2018; Office of the National Coordinator for Health Information Technology, 2021; Tate & Warburton, 2021). While EMRs have many benefits, they require more nursing time. Many perinatal nurses consider the uniform EMR format a barrier to contextualizing and synthesizing information, communicating with other health care professionals, and organizing patient care (Wisner et al., 2019, 2021). Nurses consistently noted that excessive EMR documentation and requirements (many of which are duplicative, related to regulatory issues, and lack perceived value) are burdensome and impede safe, high-quality nursing care at the bedside (Simpson et al., 2012, 2016, 2021). Suboptimal EMR usability has been associated with a number of adverse patient and nurse outcomes including higher surgical inpatient mortality and readmission rates after surgery, and nurse burnout, job dissatisfaction, and intention to leave (Kutney-Lee et al., 2021).

Experience and Skill Mix

The experience and skill mix of nurses on each unit, on each shift, is an essential factor in determining safe nurse staffing (ANA, 2020). There is very little research specifically evaluating patient outcomes related to the years or level of experience of nurses; however, years of experience appears to be a positive factor in the quality of nursing care (Hickey et al., 2013; Higgs et al., 2020). As a general principle, staffing plans that include experienced perinatal nurses on each shift are recommended. More nurses will be needed if the experience and skill mix of the nurses assigned on a shift are predominately new graduates, nurses new to the perinatal nursing specialty, or nurses without adequate experience. For the purposes of this document, the nurse-to-patient ratio staffing standards presume that the nurse with primary responsibility for each type of patient and clinical situation listed has been adequately oriented to the clinical unit and has demonstrated at least entry-level competence in the area of practice.

Charge Nurses

A nurse should be designated as being "in charge" on each shift. Charge nurses ideally should not have patient assignments so they can oversee clinical and unit operations and mentor nurses with less experience in perinatal nursing. In times of high census, short-term patient assignments, such as acting in the role of baby nurse at birth or caring for a woman who presents for OB triage, are ideal to allow charge nurses to fulfill their supervisory responsibilities. It is acknowledged that charge nurses without patient care assignments may not be possible for small-volume perinatal services.

Nonproductive Time Allocation for Orientation, Education, Interdisciplinary Drills, Teamwork, and Quality Improvement

Budgeting for nurse staffing of perinatal units should include "nonproductive time" for a thorough orientation to the units and regularly scheduled continuing education. Ongoing learning is fundamental to patient safety and therefore should be budgeted for and scheduled routinely. Interdisciplinary team training in perinatal units is recommended by The Joint Commission (Joint Commission on Accreditation of Healthcare Organizations [JCAHO], 2004) to educate clinicians on how to work together and communicate more effectively. Clinical drills for high-risk events, such as shoulder dystocia, emergency cesarean birth,

maternal hemorrhage, and neonatal resuscitation, are recommended (ACOG, 2014, reaffirmed, 2016; AAP & ACOG, 2017; AAP & American Heart Association [AHA], 2021; JCAHO, 2004; TJC, 2019; Main et al., 2015). Debriefings should be held after drills, near-miss events, and events in which patients are harmed or almost harmed to evaluate team performance, identify areas for improvement, and make plans to change practice and protocols as needed (AAP & ACOG, 2017; AAP & AHA, 2021; JCAHO, 2004). Interdisciplinary fetal monitoring education should be offered regularly (JCAHO, 2004).

Quality improvement is a vital part of keeping patients and team members safe (AAP & ACOG, 2017; Centers for Disease Control and Prevention [CDC], 2016; U.S. Department of Health and Human Services, 2021). Quality improvement processes and reporting of quality measures are required by CMS (2021c) and TJC (2021a, 2021d) and are critical to perinatal patient safety (AAP & ACOG, 2017). In response to the "maternal health crisis" in the United States, CMS has initiated a maternal morbidity structure measure (U.S. Department of Health and Human Services, 2021, p. 558) for inpatient maternity services. To promote safer maternity care, standardize clinical protocols for maternal conditions for which there is sufficient evidence to guide practice, and decrease maternal morbidity and mortality, hospitals are required to report their involvement in statewide and national perinatal quality improvement collaborative programs focused on inpatient care during labor, birth, and postpartum and whether they have implemented patient safety practices or bundles for maternal complications, including, but not limited to, hemorrhage, severe hypertension, preeclampsia, or sepsis (U.S. Department of Health and Human Services, 2021). Central to the success of perinatal quality improvement is allocating nursing time and funding to develop, conduct, and participate in quality improvement projects; analyze results; and make changes as needed based on the findings (CDC, 2016). Quality improvement activities should be included in the unit staffing budget and acknowledged as an essential part of unit operations to support participation of clinicians, including nurses, to promote perinatal patient safety (ANA, 2020; Begley et al., 2020).

NURSE STAFFING GUIDELINES BY STATES

There are 13 states that have requirements for staffing by law or regulated by the Department of Health as of May 2021. California, the only state to directly address perinatal staffing, implemented required staffing ratios in the Nursing Staffing Standards for Patient Safety and Quality Care Act of 2004 (California Code of Regulations [CCR], 2004, § 70217). The New York State Nurses Association (2018) is advocating for mandated staffing ratios in the Safe Staffing for Hospital Care Act (S.3330/A.1532; New York State Senate, 2021). Massachusetts has mandated staffing for intensive care units only (191st General Court of the Commonwealth of Massachusetts, 2014). Connecticut, Illinois, Oregon, Texas, and Washington require a nurse-staffing committee with mandated staff nurse involvement, which is reported to the state (Connecticut General Statute, 2016, § 19a-89e; Illinois General Assembly, 2008, S.B. 0867 210 ILCS 85/10.10; Oregon Legislative Assembly, 2015, S.B. 469; Texas Health and Safety Code, 2009; Washington State Legislature, 2017, RCW 70.41.420). New Jersey, Nevada (ED only), Ohio, Rhode Island, and Vermont require health department and/or public reporting of their staffing levels (General Assembly of the State of Ohio, 2008, § 3727.54; Nevada State Legislature, 2015, S.B. 362; State of New Jersey Department of Health, 2020, P.L. 1971, c.136 [C26:2H-1 et seq.]; State of Rhode Island General Assembly, 2005, § 223-17.17.8; Vermont General Assembly, 2007, 18 V.S.A., § 1854). The Minnesota Department of Health (2015, p. 18) created a report for the legislature that indicated review of the extensive literature found "strong evidence linking lower nurse staffing levels to higher patient mortality, failure to rescue and falls in the hospital." It also found strong evidence that "other care process outcomes such as drug administration errors, missed nursing care and patient length of stay are linked to lower nurse staffing levels" (Minnesota Department of Health, 2015, p. 18) and called for more Minnesota-specific data. ANA tracks state-mandated staffing law; an updated list can be found at https://www.nursingworld.org/practice-policy/nurse-staffing/nurse-staffing-advocacy/.

While nurses must be compliant with these state regulations as applicable, the regulations fail to quantify the rapidly changing clinical situations and acuity factors that are part of ensuring appropriate staffing in the perinatal setting. The required staffing ratios in the Nursing Staffing Standards for Patient Safety and Quality Care Act of 2004 (California Code of Regulations, 2004, § 70217) have not been updated since 2004. These AWHONN staffing standards provide a framework beyond state regulations.

NURSE STAFFING AND PATIENT OUTCOMES

A comprehensive review of the literature on nurse staffing and patient outcomes is beyond the scope of this document; however, it is important to recognize there is a substantial body of evidence that indicates appropriate registered nurse staffing is associated with lower hospital-related morbidity and mortality and fewer failure-to-rescue events, hospital readmissions, health care–associated infections, patient falls, medication errors, and other adverse patient events; better patient satisfaction; and shorter inpatient stays when compared to outcomes of patients in units that are understaffed (ANA, 2015, 2018, 2020; Begley et al., 2020). Since 2010, when the first edition of the AWHONN nurse staffing guidelines was published, there has been an extensive amount of nursing research disseminated about nurse staffing and patient outcomes, building on and supporting previous studies. *There is strong and consistent evidence that inadequate nurse staffing has an adverse affect on inpatient hospital morbidity and mortality*. Representative studies for selected outcomes are discussed briefly.

Inpatient Morbidity and Mortality

Researchers began studying inpatient mortality and nurse staffing over 20 years ago (Aiken et al., 2002; Kane et al., 2007; Needleman et al., 2011). The initial findings about the relationship between inpatient mortality and inadequate nurse staffing have been substantiated by numerous studies in the last several years across many inpatient settings (Aiken et al., 2017; Ball et al., 2018; Bourgon Labelle et al., 2019; A. Driscoll et al., 2018; Griffiths et al., 2016, 2018; Harrison et al., 2019; Lasater, Aiken, Sloane, French, Anusiewicz, et al., 2021; Lasater, McHugh, et al., 2021; Lasater, Sloane, et al., 2021; McHugh et al., 2016, 2021; Needleman et al., 2020; Rochefort et al., 2020; Silber et al., 2016; Wieczorek-Wójcik et al., 2020), including the NICU (Beltempo et al., 2018; Callaghan et al., 2003; K. E. Hamilton et al., 2007; Watson et al., 2016).

Research linking inadequate nurse staffing with adverse patient events such as falls, health care–associated infections, failure to rescue, and other types of morbidity has been recently published, confirming earlier findings (Chen et al., 2019; Cho, Chin, et al., 2016; Cho, Lee, et al., 2016; Johnston et al., 2015; Kiekkas et al., 2019; Mitchell et al., 2018; Nogueira et al., 2017; Recio-Saucedo et al., 2018; Shang et al., 2019; Sloane et al., 2018; Twigg et al., 2015; Zhu et al., 2019). Neonatal morbidity in the NICU is likewise adversely affected by inadequate nurse staffing (Beltempo et al., 2018; Kaempf et al., 2019; Küng et al., 2019; Lee et al., 2020; Leistner et al., 2013; Rogowski et al., 2013; Sink et al., 2011; Tawfik et al., 2020). There is an adverse effect on hospital readmission rates (Blume et al., 2021; Flanagan et al., 2016; Giuliano et al., 2016; Lasater & McHugh, 2016; Lasater, McHugh, et al., 2021; Ma et al., 2015; McHugh et al., 2013) and on patient satisfaction (Aiken et al., 2018; Blume et al., 2021; Bridges et al., 2019; Bruyneel et al., 2015; Dabney & Kalisch, 2015; Lasater, Aiken, Sloan, French, Martin, et al., 2021; Recio-Saucedo et al., 2018; Zhu et al., 2019) when nurse staffing is inadequate.

Missed Nursing Care

In the context of inadequate nurse staffing, when there are not enough nurses available to meet the needs of patients based on census and acuity, nurses must prioritize which aspects of care are most critical and then are often forced to delay, partially perform, or entirely miss other essential aspects of care. This concept has been described as missed nursing care (Kalisch et al., 2009) and implicitly rationed care (T. L. Jones et al., 2015) and has generated a considerable body of nursing research linking missed nursing care to nurse staffing and various patient and nurse outcomes. Depending on the clinical setting, aspects of care that are missed due to short-staffing include patient vital signs; regular and comprehensive assessments; repositioning; ambulation; oral care; pain management; timely medication administration; communication with patient and family; patient education; physical, psychological, and emotional support; and discharge planning and teaching, all of which are essential to safe, high-quality nursing care and optimal patient outcomes (Aiken et al., 2018; Ausserhofer et al., 2014; Ball et al., 2014, 2016, 2018; Bruyneel et al., 2015; Cho, Chin, et al., 2016; Dabney & Kalisch, 2015; Griffiths et al., 2018; Higgs et al., 2020; Kalisch & Xie, 2014; Lake et al., 2017; Lasater, Aiken, Sloan, French, Martin, et al., 2021; Verrall et al., 2015; Wakefield, 2014; Zhu et al., 2019). Missed nursing care is associated with adverse patient outcomes such as pressure ulcers, medication errors, hospital-acquired infections, falls, and readmissions (Brooks Carthon et al., 2015; Kalánková et al., 2020; Kalisch et al., 2014). *One of the most consistent predictors of missed nursing care is nurse staffing levels* (AHRQ, 2019).

Missed nursing care and nurse staffing have been studied in the perinatal and neonatal settings; the majority of this research has focused on outcomes in NICUs. Consistent findings include a negative effect of missed care related to inadequate nurse

staffing or high workload on infant feeding, breastfeeding, routine assessments, pain management, and parent comfort, counseling, emotional support, teaching, and discharge planning (Gathara et al., 2019; Hallowell et al., 2014, 2016; Lake et al., 2017, 2018, 2020; Ogboenyiya et al., 2020; Rochefort & Clarke, 2010; Rochefort et al., 2016; Tubbs-Cooley, Pickler, & Meinzen-Derr, 2015; Tubbs-Cooley, Pickler, Younger, & Mark, 2015; Tubbs-Cooley et al., 2017, 2019), very similar to the effects on adult patients in other hospital settings.

More recently, missed nursing care in perinatal units has been studied. When units are short-staffed, perinatal nurses miss important aspects of care such as prenatal record review; initial assessments; conducting a thorough history; timely maternal and fetal assessments including progress of labor; labor support; bedside attendance; repositioning, comforting, and "being with" the patient; timely response to answering patient requests; administration of medications and pain control; EMR data entry; communication with patients and other team members; breastfeeding support; skin-to-skin positioning after birth; safety checks; teaching; and timely discharge (Lake et al., 2019; Lyndon et al., 2022; Roth et al., 2020; Simpson et al., 2016, 2019a, 2019b, 2020; Simpson & Lyndon, 2017). Many of the commonly missed aspects of care in the context of inadequate perinatal nurse staffing have significant implications for patient safety (Roth et al., 2020; Simpson, 2020b; Simpson et al., 2016; Simpson & Lyndon, 2017). Childbearing women especially appreciate and value many of these aspects of care, such as labor support, emotional support, bedside attendance, communication, advocacy, and help to avoid a cesarean and to initiate breastfeeding (Attansasio et al., 2013; Bohren et al., 2017; Breman & Neerland, 2020; Lyndon et al., 2017; Nikula et al., 2015; Sosa et al., 2018); thus, they are substantial omissions that can affect patient safety, patient satisfaction with the hospital stay, and the childbirth experience in general.

Maternal Morbidity and Mortality

Maternal morbidity and mortality in the United States are higher than other peer countries and disproportionately affect minoritized women (Aspen Health Strategy Group, 2021; Hoyert, 2021; Hoyert & Mininno, 2020; NASEM, 2020; National Quality Forum, 2020; Oot et al., 2021; SMFM et al., 2021; Tikkanen et al., 2020). There are too many maternal deaths in the United States; however, their relatively low number when compared to other adult patients admitted to medical–surgical units and intensive care units, as well as deaths that occur in the outpatient setting, makes achieving sufficient statistical power to link maternal deaths directly to nurse staffing methodologically challenging. Identifying and counting maternal deaths in the United States has been hampered by variations in reporting and inconsistencies in coding in vital records data (Hoyert & Mininno, 2020). In the absence of large-scale studies that include perinatal service–appropriate hospital nurse staffing measures with links to birth and death vital statistics data, perinatal nurse researchers have used missed essential aspects of safe nursing care in the context of inadequate nursing staffing to highlight lack of critical attention to patients when there are not enough nurses based on census and acuity. Delays in recognition and diagnosis are associated with failure to rescue and preventable maternal deaths (Bajaj et al., 2021; Guglielminotti et al., 2021; SMFM et al., 2021). There are a number of nursing interventions that have the potential to save lives that require adequate nurse staffing to promote bedside presence for patients who need more attention for a variety of reasons during the childbirth hospitalization (Simpson, 2022). For example, having enough nurses to timely recognize and initiate appropriate treatment for patients who experience evolving severe maternal morbidity in the inpatient setting and enough nurses to allow sufficient time for a thorough discussion of early maternal and newborn warning signs during hospital discharge teaching with confirmation of patient understanding are essential aspects of safe, high-quality perinatal nursing care. Listening to women, responding to their needs, and providing respectful maternity nursing care for everyone who gives birth and their families promotes trust and partnership and can improve outcomes (Aspen Health Strategy Group, 2021; AWHONN, 2022; NASEM, 2020). Following the AWHONN nurse staffing standards is one strategy to improve maternity outcomes in the hospital setting in the United States (NASEM, 2020).

NURSE STAFFING AND NURSE OUTCOMES

The business case for adequate nurse staffing to meet the needs of the patient is robust (ANA, 2018; Begley et al., 2020). Attention to nurse well-being is critical to the safety and quality of hospital care and the financial strength of health care organizations (American Association of Critical Care Nurses [AACN], 2016; Begley et al., 2020). Appropriate nurse staffing is one of the six essential standards for establishing and sustaining healthy work environments (AACN, 2016). In the most recent American Hospital Association (2021c) survey on patient safety culture in hospitals, 32% of respondents indicated

there were not enough staff to handle the workload. Nursing outcomes such as fatigue, burnout, job satisfaction, and retention are negatively affected by inadequate nurse staffing (ANA, 2015; Begley et al., 2020; Choi & Miller, 2018; Lasater, Aiken, Sloan, French, Martin, et al., 2021; NASEM, 2019; Roth et al., 2020; Shin et al., 2018; Simpson et al., 2016). Nurses in chronically understaffed hospitals tend to give their hospitals unfavorable safety grades and not recommend their hospitals to others (Lasater, Aiken, Sloan, French, Martin, et al., 2021). Perinatal nurses in good work environments are more likely to rank the quality of care given in their units as high compared to nurses in poor work environments (Clark & Lake, 2020). The ability of perinatal nurses to practice according to AWHONN (2019d) nursing standards depends in part on the employer providing a healthy work environment that includes optimal nurse staffing (AACN, 2016).

The nursing workforce constitutes a major portion of hospital budgets: one third to one half of the labor budget and approximately 17% to 25% of the total hospital budget (Begley et al., 2020). Therefore, nurse satisfaction and nurse retention are important issues for hospital administrative leaders. Costs of registered nurse turnover are substantial based on recent data from the *2021 NSI National Health Care Retention & RN Staffing Report*: the average cost of turnover for a hospital-based registered nurse is $44,400, with a range of $28,400 to $51,700 (NSI Nursing Solutions, 2021). The average annual hospital cost of nurse turnover is approximately $3.6 million to $6.5 million. It has been estimated that each percent change in registered nurse turnover rates can either save or cost hospitals an extra $270,800 per year. Registered nurse turnover rates in perinatal and women's services averaged 15% in 2020 (NSI Nursing Solutions, 2021). AWHONN estimates there are more than 350,000 perinatal nurses in the United States. Reductions in nurses as measured by full-time equivalents to cut costs have the opposite effect because quality of patient care is negatively affected, and risks of being penalized for excess readmissions or other reported adverse patient events increase (Begley et al., 2020; Flanagan et al., 2016; Giuliano et al., 2016; Lasater & McHugh, 2016; Lasater, McHugh et al., 2021; Ma et al., 2015; Martsolf et al., 2014; McHugh et al., 2013).

HIGH-QUALITY EVIDENCE SUPPORTS NURSE STAFFING STANDARDS

Safe, effective, high-quality nursing care requires adequate nurse staffing based on patient acuity and census. The majority of the research on nurse staffing and outcomes has been conducted in medical–surgical units, general nursing units, and intensive care units. However, there is substantive and growing evidence on the relationship between nurse staffing and patient outcomes in the neonatal and maternity care settings, and the findings to date are remarkably similar to results of research conducted outside these settings. There are close parallels because so many aspects of care that occur on inpatient perinatal units such as OB triage, high-risk medical conditions, obstetric complications, support and comfort care, neuraxial analgesia, cesarean surgery, emergency surgery, postanesthesia care, postoperative care, family care, administration of high-alert medications, special care, and intensive care are the same or quite similar to care offered on other nursing units where research has repeatedly shown that inadequate nurse staffing has a negative affect on hospitalized patients' morbidity and mortality. *The foundation of the AWHONN nurse staffing standards is an extensive amount of high-quality evidence.*

STANDARDS FOR PROFESSIONAL REGISTERED NURSE STAFFING FOR PERINATAL UNITS BASED ON PATIENT TYPE AND CLINICAL SITUATION

Table 2 contains a detailed summary of the background, rationale, existing applicable professional standards, and nurse staffing standards for various types of patients and clinical situations commonly encountered in the perinatal setting that promote safe care for pregnant women, mothers, others who give birth, and their fetuses and babies. Each recommended standard nurse-to-patient ratio is based on acuity (i.e., the dose of nursing care required for safe and effective care) for that type of patient and/or clinical situation and all of the associated aspects of care recommended by professional and regulatory associations.

TABLE 2 STANDARDS FOR PROFESSIONAL REGISTERED NURSE STAFFING FOR PERINATAL UNITS BASED ON PATIENT TYPE AND CLINICAL SITUATION

Patient Type or Clinical Situation: *OB Triage*

Background

OB triage is a process that occurs in the ED and/or the perinatal unit. Many perinatal services have OB triage units or OB ED units designed specifically to evaluate pregnant women who present to the hospital for care. While labor at term, scheduled labor induction, or scheduled cesarean birth are the more common reasons pregnant women come to the hospital, many women present earlier in pregnancy with a variety of obstetric or medical complications (Angelini & Howard, 2014). There are no standards or guidelines for weeks of pregnancy that delineate whether a pregnant patient who presents for care at the hospital is seen in the OB triage unit or ED. Some units have policies and protocols for a greater than or equal to 20 weeks gestation time frame, while others will see women very early in pregnancy. Leaders in each institution determine the location for the OB triage process based on consideration of capacity, workflow, physical space, and staffing. Requirements for the OB triage process are the same regardless of the location in the hospital where it takes place. Ideally, there are written guidelines developed in collaboration with nurse and physician leaders of other departments that outline the appropriate unit to evaluate maternity patients based on obstetric and medical conditions, gestational age, labor status, presenting symptoms, and available health care personnel, including perinatal nurses (AAP & ACOG, 2017).

Women who present for OB triage represent an appreciable amount of patient volume and nurse staffing hours in many perinatal services. This number can range from a ratio of 1.2 to 1.5 to the overall birth volume (e.g., a perinatal center with 100 births per month can expect to see 120–150 women presenting for OB triage per month; a perinatal center with 500 births per month can expect to see 600–750 women presenting for OB triage per month). These numbers do not include patients scheduled for antepartum testing; however, some perinatal units also function as antepartum testing/procedure units caring for patients requiring nonstress tests, limited ultrasounds, and/or external versions. Some perinatal units do not have gestational age limits on patients who can be seen, so patients in early pregnancy are included, such as in an OB ED. In such situations when the OB triage unit functions as an antepartum testing/procedure unit or an OB ED and/or pregnant patients are seen earlier than 20 weeks gestation, the ratio of OB triage patients to births is much higher.

The Emergency Medical Treatment and Labor Act, also known as EMTALA (CMS, 2021b), requires a medical screening examination to determine whether a medical emergency exists. For pregnant women, the process requires assessment of both the mother and the fetus (AAP & ACOG, 2017; AWHONN, 2015). Triage criteria used in main hospital EDs are generally not applied to women who present for OB triage to perinatal units. A Maternal Fetal Triage Index has been developed by AWHONN as a tool that can be helpful in assessing pregnant women who present to the hospital for care and in making sure they are seen and treated in a timely manner based on maternal and fetal condition. Patients are assigned a priority score according to their presenting conditions and concerns. The tool has been tested for validity and reliability in a number of hospitals in the United States (Ruhl et al., 2015a, 2015b) and is suggested by AAP and ACOG (2017) and ACOG (2016, reaffirmed 2020) as a viable option that may improve quality and efficiency of care for assessing pregnant women who present to the hospital for care and could serve as a template for individual hospital OB triage units.

Obstetric triage and general ED triage *differ in significant ways*. When a patient presents to the main hospital ED, triage involves a brief interview and assessment, which are the basis for assigning the next step in patient care based on acuity or patient condition and the availability of personnel and beds. The patient in the main hospital ED may be sent to the waiting room, an ED room, or a trauma room. Unless there is a change in the patient's condition while in the waiting room that prompts further interaction with the triage nurse, triage is essentially completed. When a pregnant woman presents to the OB triage unit or OB ED, a similar initial process occurs. However, once the patient is assigned to an OB triage nurse and an OB triage room, care is ongoing until patient disposition is determined, typically to the labor and birth unit, antepartum unit, antenatal testing unit, back to the main hospital ED, or home. In obstetrics, triage generally refers to the initial interview and assessment as well as care in the triage unit for several hours before patient disposition. *OB triage care therefore involves much more than the initial triage interview and assessment in general ED triage.*

Existing Applicable Professional Standards and Guidelines	Staffing Standards
• The Emergency Medical Treatment and Labor Act (EMTALA) imposes specific obligations on health care providers who offer triage care (a) to perform a medical screening examination to determine whether an emergency medical condition exists (including both the mother and the fetus); (b) to provide necessary stabilizing treatment when an emergency medical condition exists; and (c) to	• **The initial triage process (10–20 minutes) requires 1 nurse to 1 woman presenting for care. This ratio may change to 1 nurse to 2–3 women as maternal–fetal status is determined to be stable, until patient disposition.**

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stabilize the patient or, if the health care provider certifies that the benefits of transfer outweigh the risks, arrange for proper transfer to another hospital.

(Emergency Medical Treatment and Labor Act [EMTALA]; CMS, 2021b; available at https://www.cms.gov/Regulations-and-Guidance/Legislation/EMTALA)

- Pregnant women may come to a hospital's labor and delivery area not only for obstetric care but also for evaluation and treatment of nonobstetric illness. Departments should agree on the conditions best treated in the labor and delivery area and those that should be treated in other hospital units. A pregnant woman who presents for care should be evaluated in a *timely* (not currently defined by AAP and ACOG) fashion. They should be cared for according to triage acuity rather than time of arrival. Minimally, the evaluation by an obstetric nurse or health care provider during the first encounter should include assessment of maternal vital signs, FHR, uterine contractions, reason for presentation, status of labor (presence of contractions, vaginal bleeding, membrane status), woman's perception of fetal movement, and any high-risk medical or obstetric condition as identified by a review of history or the woman's report. Further evaluation includes assessment for and to rule out vaginal bleeding, acute abdominal pain, temperature of 100.4 °F or higher, abnormal maternal heart rate or respiratory rate, preterm labor, preterm premature rupture of membranes, hypertension, indeterminate or abnormal FHR pattern, signs of imminent birth, and inability to detect FHR. If these findings are present or suspected, the responsible obstetric care provider should be promptly informed.

(*Hospital-based Triage of Obstetric Patients* [Committee Opinion No. 667]; ACOG, 2016, reaffirmed 2020)
(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Any patient suspected to be in labor or who has ruptured membranes or vaginal bleeding should be evaluated *promptly* (not currently defined by AAP and ACOG) in an obstetric service area. Minimally, the following should be assessed: estimated due date; maternal vital signs; frequency and duration of uterine contractions; documentation of fetal well-being; cervical dilatation and effacement or cervical length as ascertained by transvaginal ultrasonography, unless contraindicated (such as with placenta previa and preterm premature rupture of membranes); fetal presentation and station of the presenting part; status of the membranes; estimated fetal weight; history of allergies; use of any medications; and time, content, and amount of most recent food or fluid ingestion. Along with these assessment data, date and time of the patient's arrival and notification of the primary obstetric care provider should be included in the medical record.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Fetal status assessment should be included in the initial triage assessment before determining the level and immediacy of care required.
- **1 nurse to 2–3 women during nonstress testing.**
- The Maternal Fetal Triage Index (AWHONN, 2015) is a valid and reliable tool for assessing and triaging pregnant women who present to the hospital for maternity care.

Patient Type or Clinical Situation: *High-Risk Antepartum Care*

Background

Hospitalized antepartum patients are presumed to have complications that require inpatient nursing care, or they would be managed in the outpatient setting. They require careful assessment of maternal and fetal status based on their individual condition. Pregnant women may be admitted to the hospital for obstetric or nonobstetric complications. One of the most common complications of pregnancy requiring hospital admission is preterm labor (AAP & ACOG, 2017; Toscano et al., 2021; Waters & Bailit, 2012). Other indications for antepartum hospitalization include hypertension, diabetes mellitus, placental problems, hyperemesis, vaginal bleeding, fetal growth or other fetal abnormalities, "incompetent" cervix, and premature rupture of membranes (Shaddeau & Burd, 2020; Spehar et al., 2018; Toscano et al., 2021; Waters & Bailit, 2012). Nonobstetric complications often requiring hospital admission are urinary infection, substance use, psychologic/mental health conditions, other infection, gynecologic, renal, or physical injuries/trauma; anemia, and cardiac and venous thromboembolic events (Auger et al., 2021; Waters & Bailit, 2012). Many of these patients require frequent and intense monitoring and associated nursing care. This may include hourly vital signs, blood glucose assessment, cardiac monitoring, continuous EFM, twice-daily nonstress testing, and/or multiple IV lines administering blood products or high-alert medications such as insulin or magnesium sulfate. They may have a central line or a PICC line. They may need supplemental oxygen and/or or be experiencing vaginal bleeding, uterine contractions, FHR decelerations or other abnormalities. They may have a contagious disease. Personal protective equipment may be necessary before each patient encounter. Patients who have psychosocial concerns, are grieving, or are non–English-speaking may require extra nursing attention. Approximately one third of women hospitalized during pregnancy for obstetric complications reported clinical levels of depression or anxiety symptoms based on a meta-analysis, twice the prevalence of antenatal depression or anxiety reported among all pregnant women (Toscano et al., 2021). Thus, attention to the mental health of hospitalized antepartum patients is an essential part of their care, as an inpatient and after hospital discharge. Each of these factors individually and collectively contributes to patient acuity and must be considered in the dose of nursing care required for optimal outcomes. Some antepartum patients are quite complex such that a ratio of 1 nurse to 1 woman hospitalized during antepartum or 1 nurse to 2 women is more appropriate than 1 nurse to 3 women.

Some antepartum patients with complications such as preterm labor or preeclampsia receive high-alert medications such as IV magnesium sulfate, which requires more intensive monitoring and care because a medication error or missed assessment could result in an adverse patient outcome (AHRQ, 2017; ISMP, 2018; Simpson & Knox, 2004). Likewise, patients who are being administered cervical ripening agents such as Cervidil (prostaglandin E_2 vaginal insert) or Cytotec (misoprostol) are sometimes cared for on antepartum units and are of higher acuity and require more intensive monitoring than patients not receiving pharmacologic agents for cervical ripening (ACOG, 2009a, reaffirmed 2019; Simpson, 2020a). AWHONN (Simpson, 2020a) recommends a ratio of 1 nurse to no more than 2 women undergoing cervical ripening with pharmacologic agents. Cervical ripening with pharmacologic agents is common because cervical readiness or ripening is recommended for women having labor induction (ACOG, 2009a, reaffirmed 2019; ACOG & SMFM, 2014).

Pregnancy increases risk of falls because of a shift in the center of gravity, loosening of ligaments, increased postural sway, and impeded view from the enlarged abdomen (AWHONN, 2020a; Hrvatin & Rugelj, 2021). Falls are estimated to occur in 25% of pregnant women, with an increased risk for falls in the third trimester. Pregnant women are more likely to sustain injury from falls compared to the general population (Hrvatin & Rugelj, 2021). Hospitalized antepartum patients have additional risks for falls including balance issues, muscle weakness or atrophy, headaches, and visual disturbances upon standing, in part from being in bed (AWHONN, 2020a). Being hospitalized increases risk of falls due to illness, hospital environment, unfamiliar surroundings, medications and treatments, and decreased activity (AHRQ, 2021a). Hospitals must implement programs to reduce the risk of patient harm resulting from falls, including identifying types of patients and clinical situations in which the patient is at risk of falling (TJC, 2015, 2021a, 2021b).

Existing Applicable Professional Standards and Guidelines

- Women who are receiving IV magnesium sulfate who are not in labor (antepartum patients at risk for preterm birth who are no longer contracting to the degree that preterm birth is an imminent concern or antepartum patients at risk for preterm labor receiving IV magnesium sulfate for neuroprotection for the fetus) should have 1 nurse in continuous bedside attendance for the first

Staffing Standards

- **Hospitalized antepartum patients are presumed to have complications and require a ratio of 1 nurse to 3 women if in stable condition.**
- If the hospitalized antepartum patient **needs intense and frequent monitoring and associated nursing care, a**

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hour of administration and 1 nurse to 1–2 women thereafter with at least hourly assessment of maternal–fetal status.

(*Safe Medication Administration: Magnesium Sulfate*; AHRQ, 2017)

- For women receiving IV magnesium sulfate: baseline maternal and fetal assessment and periodic assessment.

  Assessment prior to initiation:

  Vital signs (i.e., temperature, pulse, blood pressure, respiratory rate and pattern); deep tendon reflexes/clonus; breath sounds; level of consciousness; symptoms such as headache, visual disturbances, nausea/vomiting, and epigastric pain; uterine activity; and FHR pattern (antepartum and intrapartum only).

  During loading dose:

  While the loading dose is being administered, the nurse should remain at the bedside to monitor the patient.

  Periodic nursing assessments:

  Every 15 minutes during first hour of infusion, every 30 minutes during second hour, and hourly thereafter. Assessments should include vital signs (i.e., blood pressure, respirations [rate and pattern], pulse, temperature, oxygen saturation level), deep tendon reflexes and presence or absence of clonus, fluid inputs and outputs (if a patient cannot ambulate to the bathroom or use a bedpan, an indwelling urine catheter may be needed), level of consciousness, breath sounds, presence of headaches or visual disturbances (blurred or double vision), presence or absence of epigastric pain, presence of extravasation or infiltration at IV site, signs/symptoms of magnesium toxicity, worsening pre-signs or symptoms of eclampsia, progression of labor, periodic urine assessment for protein (if applicable), vaginal bleeding, uterine activity, and FHR (with antepartum or intrapartum use).

  (*Safe Medication Administration: Magnesium Sulfate*; AHRQ, 2017)

- Hospitals must implement programs to reduce the risk of patient harm resulting from falls, including identifying types of patients and clinical situations in which the patient is at risk of falling.

(*Comprehensive Accreditation Manual for Hospitals*; TJC, 2021a)

1 nurse to 1 woman ratio or **1 nurse to 2 women ratio** is recommended based on acuity.

- If the antepartum patient is **not in stable condition, a minimum ratio of 1 nurse to 1 woman** is recommended.
- **A woman who is receiving IV magnesium sulfate should have 1 nurse in continuous bedside attendance for the first hour of administration. The ratio of 1 nurse to 1 woman receiving magnesium sulfate should continue until the woman is no longer contracting to the degree that preterm birth is an imminent concern.**
- **Women receiving IV magnesium sulfate who are not in labor** (antepartum patients at risk for preterm birth who are no longer contracting to the degree that preterm birth is an imminent concern, antepartum patients at risk for preterm labor receiving IV magnesium sulfate for neuroprotection for the fetus, or antepartum patients requiring seizure prophylaxis) **require a minimum of 1 nurse to 2 women** with at least hourly assessment of maternal–fetal status.
- **Women receiving pharmacologic agents for cervical ripening** such as Cervidil (prostaglandin E_2 vaginal insert) or Cytotec (misoprostol) require continuous electronic fetal monitoring and a **minimum of 1 nurse to 2 women** with assessment of maternal–fetal status at least every 30 minutes.

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(*Preventing Falls and Fall-Related Injuries in Health-Care Facilities*; TJC, 2015)

- Women having cervical ripening with pharmacologic agents should have maternal–fetal assessments every 30 minutes; continuous monitoring of FHR and uterine activity is indicated while Cervidil (prostaglandin E_2 vaginal insert) is in place. Continuous monitoring of FHR and uterine activity is indicated for 4 hours after intravaginal dose and 2 hours after oral dose of Cytotec (misoprostol).

(*Cervical Ripening and Labor Induction and Augmentation* [AWHONN Practice Monograph]; Simpson, 2020a)

- As comparative standards, SOGC recommends verification of a normal FHR tracing using continuous EFM for 30 minutes prior to use of prostaglandin preparations. Following prostaglandin administration, EFM is recommended for 1 to 2 hours to assess fetal well-being. EFM is maintained if an (indeterminate) or abnormal tracing is identified or whenever there are maternal or fetal indications for continuous EFM.

(*Fetal Health Surveillance* [Intrapartum Consensus Guideline]; SOGC et al., 2020)

Patient Type or Clinical Situation: *During Labor*

Background

AWHONN continues to recommend a 1:1 nurse-to-patient ratio for women with medical or obstetric complications, women receiving IV oxytocin for induction or augmentation of labor (Simpson, 2020a), coverage for epidural analgesia/anesthesia (AWHONN, 2020a), and women in the active pushing phase of second-stage labor (AWHONN, 2019b), as per the original nurse staffing standards (AAP & ACOG, 1983–2007) and those updated by AWHONN (2010). Nursing care for coverage of the first 30 minutes after initiating epidural analgesia/anesthesia and for the active pushing phase of the second stage of labor requires continuous bedside attendance by the nurse (AWHONN, 2019b, 2020a). There are many other types of patients and clinical situations that warrant a 1:1 nurse-to–laboring woman ratio (AWHONN, 2010). Intrapartum care requires the same labor intensiveness and expertise as any other intensive care unit, and accordingly, perinatal units should have the same adequately trained nurses, ancillary personnel, and fiscal support (AAP & ACOG, 2017).

The guidelines for identifying and managing labor dystocia to promote vaginal birth are helpful in reconceptualizing when active labor begins for most women (ACOG & SMFM, 2014). These guidelines are meant to provide an evidence-based framework to avoid primary cesarean birth in the context of slow, but within normal limits, labor progress (ACOG & SMFM, 2014) and were not intended to determine the nurse-to-patient ratio based on centimeters of cervical dilation. Patient acuity must be the basis for determining the nursing care needs for each patient in labor. Arbitrary designation of cervical status such as 6 cm for active labor is inappropriate for determining patient care needs related to nurse staffing. Following are detailed descriptions of several such patients and clinical situations that require a 1:1 nurse-to–laboring woman ratio. This is not meant to be a complete list. There may be additional types of patients and clinical situations that require a 1:1 nurse-to-laboring woman ratio. Some types of patients and clinical situations require more than 1 nurse per patient (e.g., critically ill and/or hemodynamically unstable patients).

Patient Type or Clinical Situation: *During Labor of Women Laboring with Minimal to No Pain Relief or Medical Interventions*

Background

Although it is not known how many patients in the United States labor and give birth without pharmacologic pain relief, the most recent data from the *Listening to Mothers* survey (Sakala et al., 2018) suggest that approximately 17% of those who give birth choose this option. Nonpharmacologic approaches to relieve pain during labor when used as part of overall pain relief strategies are significantly valuable for those who labor and give birth (ACOG, 2019a; AWHONN, 2018a; Breman & Neerland, 2020; Chaillet

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Patient Type or Clinical Situation: *During Labor of Women Laboring with Minimal to No Pain Relief or Medical Interventions*

et al., 2014). Patients who labor without pharmacologic pain relief benefit from intensive labor support techniques with continuous bedside presence of the labor nurse (AWHONN, 2018a).

It is not known how many laboring patients in the United States are monitored by intermittent auscultation rather than EFM. The last published data on EFM during labor were based on 2003 certificates of live births, in which it was reported 85.4% of laboring patients used EFM (Martin et al., 2005). The most recent *Listening to Mothers* survey (Sakala et al., 2018) suggests this number is now above 90%.

Patients who choose minimal-intervention labor and birth often also prefer intermittent auscultation for fetal assessment. Intermittent auscultation is a labor-intensive method of assessing fetal status for low-risk women (American College of Nurse-Midwives, 2015; ACOG, 2009b, reaffirmed 2019; AWHONN 2018b). Low risk in this context generally includes patients who have no meconium staining, intrapartum bleeding, or abnormal or undetermined fetal test results before birth or at initial admission, no increased risk of developing fetal acidemia during labor (e.g., congenital anomalies, intrauterine growth restriction), no maternal condition that may affect fetal well-being (e.g., prior cesarean scar, diabetes, hypertensive disease), and no requirement for oxytocin induction or augmentation of labor (AAP & ACOG, 2017). High-risk women in labor should be monitored continuously via EFM (ACOG, 2009b, reaffirmed 2019; AWHONN, 2018b; SOGC et al., 2020). The effect on nurse staffing requirements and availability of a nurse for 1 nurse to 1 woman in labor care must be considered when ordering intermittent auscultation during labor as the primary method of fetal assessment (AAP & ACOG, 2017).

Hydrotherapy in the shower or tub can be part of a labor with minimal intervention, as can be use of a peanut ball or birthing ball (ACOG, 2019a). Use of hydrotherapy can increase risk of patient slips and falls while getting in and out of the shower or tub and/or walking on a wet floor. The peanut ball is generally used for laboring women in bed, while the birthing ball can be used for women laboring out of bed. Women on the birthing ball are at risk of falling. Women using inhaled nitrous oxide with associated dizziness or drowsiness are at increased risk of falling (AWHONN, 2020a). A nurse should stay with the woman until she has demonstrated competence in the use of inhaled nitrous oxide (AWHONN, 2020a). The most frequently reported sentinel event by TJC is falls resulting in patient harm (TJC, 2021b), with inadequate staffing cited as a factor (TJC, 2015).

Hospitals must implement programs to reduce the risk of patient harm resulting from falls, including identifying types of patients and clinical situations in which the patient is at risk of falling (TJC, 2015, 2021a, 2021b). National data on inpatient fall rates on medical–surgical units are 3.39 falls per 1,000 patient days, with 21.24% of these falls resulting in moderate or greater injury (NDQNI, 2021). As comparison data, inpatient fall rates on antepartum and postpartum units are 0.97 per 1,000 patient days, with 0% resulting in moderate injuries, and patient fall rates on LDRP units are 0.48 falls per 1,000 patient days, with 10.42% resulting in moderate or greater injury (NDQNI, 2021). The incidence of women in labor specifically who experience a fall in the inpatient setting is unknown; however, with approximately 3.7 million births each year, based on the NDNQI data for perinatal services per 1,000 patient days, the number of falls during inpatient childbirth activities is significant. Ongoing quality programs to promote the assessment of a woman's readiness to ambulate, use the birthing ball out of bed, and use hydrotherapy in the tub or shower are critical to patient safety and require skilled nursing assessment.

Existing Applicable Professional Standards and Guidelines	Staffing Standards
• AWHONN recommends continuous labor support for women who choose a minimal-intervention labor and birth. Perinatal nurse leaders should plan nurse staffing so that this type of intense nursing care is available as needed. (*Continuous Labor Support for Every Woman* [Position Statement]; AWHONN, 2018a)	• **1 nurse to 1 woman for women choosing to labor with minimal to no pharmacologic pain relief or medical interventions.** (Generally, this recommendation applies beginning when the woman is actively contracting and/or experiencing discomfort. However, some women in this category may require more intensive nursing care earlier in labor, depending on the woman's desires, level of comfort, and overall maternal–fetal status.)
• Intermittent auscultation requires FHR and uterine activity assessment every 15 to 30 minutes for low-risk women during the latent phase of labor from 4 cm to up to 6 cm and during the active phase of the first stage of labor at 6 cm and on. The	• **1 nurse to 1 woman when using intermittent auscultation for fetal assessment during the latent phase of labor starting at 4 cm and continuing through the active phase**

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frequency increases to every 15 minutes during the passive descent phase of second-stage labor and to every 5 to 15 minutes during the active pushing phase of second-stage labor.

(*Continuous Labor Support for Every Woman* [Position statement]; AWHONN, 2018a)
(*Fetal Heart Monitoring* [Position Statement]; AWHONN, 2018b)
(*Fetal Heart Rate Auscultation* [AWHONN Practice Monograph]; Wisner & Holschuh, 2018)

- There is insufficient evidence for recommendations for the frequency of intermittent auscultation during the latent phase of labor up to and including 3 cm; thus, the ordering nurse-midwife or physician has discretion as to how often to assess fetal well-being during this period when using intermittent auscultation. SOGC recommends assessment every hour during latent phase labor while acknowledging the minimal data.

(*Fetal Heart Monitoring* [Position Statement]; AWHONN, 2018b)
(*Fetal Health Surveillance* [Intrapartum Consensus Guideline]; SOGC et al., 2020)

- As comparative references, standards from the Royal College of Obstetricians and Gynaecologists National Institute of Health and Clinical Excellence and SOGC indicate that a ratio of 1 nurse to 1 woman in labor is best practice for all patients. RCOG further states that women who are laboring should have continuous bedside attendance by the nurse. Midwives in the United Kingdom and labor nurses in the United States have very similar roles during labor (Lyndon et al., 2017).

(*Fetal Health Surveillance* [Intrapartum Consensus Guideline]; SOGC et al., 2020)
(*Intrapartum Care for Healthy Women and Babies*; NICE, 2014, updated 2017)
(*Safe Midwifery Staffing for Maternity Settings*; NICE, 2015)

- Labor assessment and documentation for all patients includes documentation of the woman's status, fetal status, and status of labor progress. Specific items regarding maternal status include maternal position changes, maternal vital signs, supplemental oxygen and drug administration, amniotomy or spontaneous rupture of membranes, color of amniotic fluid, use of spontaneous pushing efforts or Valsalva maneuver, and maternal use of nonpharmacologic or pharmacologic analgesic techniques. Specific items regarding fetal status include FHR, variability, accelerations, decelerations, and changes over time. Documentation of labor status includes cervical examination results such as dilatation, effacement, station, and position.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

of the first stage of labor and during the second stage labor until birth.

- **Women using birthing balls (while out of bed) or undergoing hydrotherapy in the shower or tub should not be left unattended**. If no support person or ancillary personnel is available, the nurse should stay with the woman.

- **1 nurse to 1 woman using inhaled nitrous oxide during initiation and assessment of the woman's initial response for at least 30 minutes.**

- **1 nurse to 1 woman during the active pushing phase of the second stage of labor in continuous bedside attendance.**

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- Nursing care for the active pushing phase of the second stage of labor requires continuous bedside attendance by the nurse.

(*Nursing Care and Management of the 2nd Stage of Labor* [Evidence-based clinical practice guideline]; AWHONN, 2019b)

- To identify maternal response to inhaled nitrous oxide, nurse staffing of 1 nurse for each patient should be implemented during the initiation phase or the first 30 minutes of use. Routine assessments of vital signs and maternal condition should be based on maternal risk factors and stage of labor. Inhaled nitrous oxide may affect the woman's ability to safely ambulate independently, so she should be instructed to call for assistance before ambulation.

(*Analgesia and Anesthesia in the Intrapartum Period* [Evidence-Based Clinical Practice Guideline]; AWHONN, 2020a)

- Hospitals must implement programs to reduce the risk of patient harm resulting from falls, including identifying types of patients and clinical situations in which the patient is at risk of falling.

(*Comprehensive Accreditation Manual for Hospitals*; TJC, 2021a)
(*Preventing Falls and Fall-Related Injuries in Health-Care Facilities*; TJC, 2015)

Patient Type or Clinical Situation: *During Labor of Women Receiving Oxytocin*

Background

In 2019 (the most recent year for which detailed natality data are available), rates of induction and augmentation of labor in the United States were 29.35% and 21.72%, respectively, the first time these combined reported rates exceeded 50% (Martin et al., 2021). The 2019 induction rate (29.35%) has more than tripled since 1990, when the rate was 9.5%, and is the highest since these data have been recorded from the U.S. Standard Certificates of Live Birth (Martin et al., 2021). The induction rate increased by 5% from 2017 (25.7%) to 2018 (27.1%) and 8.3% from 2018 (27.1%) to 2019 (29.35%; Martin et al., 2021). Birth certificate data do not include obstetric or medical indication for induction of labor or whether it was elective. The augmentation rate increased slightly from 2017 (21.28%) to 2018 (21.55%) and likewise in 2019 (21.72%).

Most labor nurses would note that these numbers seem low when considering their clinical practice. The disconnect between reported natality data and lived experience is due to the induction rate being calculated based on all those who give birth (Martin et al., 2021). If women who had planned or repeat cesarean births were excluded from the denominator and induction rate was calculated based on all others who could have had labor inductions, then the reported induction rate would be higher. It is likely that data about induction and augmentation are considerably underreported on birth certificates, so the absolute rate of women who receive IV oxytocin during labor in the United States is unknown. However, an increase of 5% from 2017 to 2018 and 8.3% from 2018 to 2019 to now 29.35% represents a *significant and accelerated rise* over previous years where the rate of induction of labor has remained somewhat stable, only slightly increasing each year (e.g., 22.3% in 2005, 23.5% in 2010, and 23.8% in 2015).

High-alert medications are drugs that have a heightened risk of causing significant patient harm when they are used in error (ISMP, 2018). Although errors with high-alert medications may or may not be more common than with other drugs, patient injury and consequences of associated errors may be more devastating (ISMP, 2018). Thus, special considerations and precautions are required before and during administration (ISMP, 2018). ISMP (2020) summarized its analysis of 196 reported errors involving use of IV oxytocin during labor from 1999 to 2019 in the United States and Canada and found the following: approximately 10% involved more than one oxytocin error, 44% were mistakes with using another medication instead of oxytocin due to look-alike

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Patient Type or Clinical Situation: *During Labor of Women Receiving Oxytocin*

product vials and label confusion, 23% occurred during administration, and 13% occurred during prescribing. One quarter (25%) resulted in maternal, fetal, or neonatal harm, including tachysystole that led to an abrupt change in fetal status requiring emergency cesarean birth and/or uterine rupture, and several deaths (ISMP, 2020, 2021; ISMP Canada, 2019). Careful nursing attention is required during oxytocin administration for labor induction and augmentation to avoid uterine tachysystole and subsequent effects on fetal status (ACOG, 2009a, reaffirmed 2019; O'Brien-Abel, 2020; Simpson, 2020a). SOGC et al. (2020) recommend remaining at the bedside when tachysystole is identified and treated until there is resolution and return to normal uterine activity. Oxytocin medication errors during labor represent a substantial source of medical liability (Hanscom et al., 2018). Safe labor induction requires adequate nurse staffing, including 1 nurse for every woman receiving IV oxytocin during labor (AWHONN, 2019a).

Existing Applicable Professional Standards and Guidelines

- AAP and ACOG (2017) designate women in labor receiving oxytocin as high-risk patients.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Labor assessment and documentation for all patients include documentation of the woman's status, fetal status, and status of labor progress. Specific items regarding maternal status include maternal position changes, maternal vital signs, supplemental oxygen and drug administration, amniotomy or spontaneous rupture of membranes, color of amniotic fluid, use of spontaneous pushing efforts or Valsalva maneuver, and maternal use of nonpharmacologic or pharmacologic analgesic techniques. Specific items regarding fetal status include FHR, variability, accelerations, decelerations, and changes over time. Documentation of labor status includes cervical examination results such as dilatation, effacement, station, and position.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Maternal and fetal status should be assessed every 15 minutes for patients receiving oxytocin for labor induction or augmentation as well as every time oxytocin dose is adjusted. This assessment includes determination of baseline rate; variability; presence or absence of accelerations; presence or absence of decelerations; contraction frequency, duration, and intensity; uterine resting tone, and the maternal–fetal response to the medication.

(*Cervical Ripening and Labor Induction and Augmentation* [AWHONN Practice Monograph]; Simpson, 2020a)
(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- If a nurse cannot clinically evaluate the effects of medication at least every 15 minutes, the oxytocin infusion should be discontinued until this level of maternal and fetal care can be provided.

Staffing Standards

- Patient assignment for women receiving **oxytocin for labor induction or augmentation should be 1 nurse to 1 woman** to be able to assess maternal and fetal status every 15 minutes, consistent with safe care.

- If a nurse cannot clinically evaluate the effects of medication at least every 15 minutes, the oxytocin infusion should be discontinued until that level of maternal and fetal care can be provided

- Elective procedures should be deferred until there are adequate nurses to safely meet the needs of the service.

- **1 nurse to 1 woman during the active pushing phase of the second stage of labor in continuous bedside attendance.**

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(*Cervical Ripening and Labor Induction and Augmentation* [AWHONN Practice Monograph]; Simpson, 2020a)
(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Elective procedures should be deferred until there are adequate nurses to safely meet the needs of the service.

(*Cervical Ripening and Labor Induction and Augmentation*, [AWHONN Practice Monograph]; Simpson, 2020a)

- In 2007, ISMP added IV oxytocin to their list of high-alert medications (ISMP, 2018). When using high-alert medications, clinicians and hospitals should follow principles of safe care, including processes to prevent errors and harm, methods to identify error and harm when they occur, and methods to mitigate the harm that may result from the error. Adequate staffing (1 nurse to 1 woman receiving IV oxytocin) meets criteria for principles of safe care when administering IV oxytocin.

(*High-Alert Medications in Acute Care Settings*; ISMP, 2018)

- Nursing care for the active pushing phase of the second stage of labor requires continuous bedside attendance by the nurse.

(*Nursing Care and Management of the 2nd Stage of Labor* [Evidence-Based Clinical Practice Guideline]; AWHONN, 2019b)

- As comparative references, standards from RCOG's National Institute of Health and Clinical Excellence and SOGC indicate that a ratio of 1 nurse to 1 woman in labor is best practice for all patients. RCOG further states that women who are laboring should have continuous bedside attendance by the nurse. Midwives in the United Kingdom and labor nurses in the United States have very similar roles during labor (Lyndon et al., 2017).

(*Fetal Health Surveillance*; [Intrapartum Consensus Guideline] SOGC et al., 2020)
(*Intrapartum Care for Healthy Women and Babies*; NICE, 2014, updated 2017)
(*Safe Midwifery Staffing for Maternity Settings*; NICE, 2015)

Patient Type or Clinical Situation: *During Labor of Women With Regional Analgesia/Anesthesia*

Background

Approximately three quarters (76% in 2019) of women in the United States have regional analgesia/anesthesia during labor (Martin et al., 2021).

Existing Applicable Professional Standards and Guidelines

- Perform a risk assessment to identify women who should have pre-anesthesia consultation, including women at high risk for complications and women with high-risk medical conditions.

Staffing Standards

- **1 nurse to 1 woman in labor during the initiation of regional analgesia/anesthesia for at least 30 minutes in continuous bedside attendance.**

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Provide a ratio of 1 nurse to 1 woman in labor during initiation of regional analgesia/anesthesia and for a minimum of 30 minutes after the procedure is completed. Assess fetal status and maternal baseline blood pressure, pulse, respiratory rate, temperature, oxygen status, and labor progress before the administration of regional analgesia/anesthesia. Obtain an FHR tracing before initiation of regional analgesia/anesthesia. Monitor FHR during catheter placement as indicated and whenever possible. Assess for severe adverse maternal reactions during and immediately after the administration of the test dose of regional analgesia/anesthesia. Assess uterine activity and FHR patterns after the initiation or rebolus of regional analgesia/anesthesia, including patient-controlled epidural analgesia. Recognize potential fetal complications of regional anesthesia, such as FHR tracing characteristics that fall into category II or category III. Initiate intrauterine resuscitative measures if category II or category III FHR characteristics occur. Evaluate maternal pain levels using a facility-approved scoring tool. Assess for urinary retention and bladder distension at a minimum of every 4 hours and assist with bladder emptying as needed. Recognize potential maternal postpartum complications related to analgesia/anesthesia, including urinary retention, pruritus, shivering, and headache.

(*Analgesia and Anesthesia in the Intrapartum Period* [Evidence-Based Clinical Practice Guideline]; AWHONN, 2020a)

- Provide a ratio of 1 nurse to 1 women receiving remifentanil during labor. Maintain continuous electronic FHR monitoring for women using remifentanil in the intrapartum period. Recognize potential maternal postpartum complications related to analgesia/anesthesia, including urinary retention, pruritus, shivering, and headache.

(*Analgesia and Anesthesia in the Intrapartum Period* [Evidence-Based Clinical Practice Guideline]; AWHONN, 2020a)

- Nursing care for the active pushing phase of the second stage of labor requires continuous bedside attendance by the nurse.

(*Nursing Care and Management of the 2nd Stage of Labor* [Evidence-Based Clinical Practice Guideline]; AWHONN, 2019b)

- **1 nurse to 1 woman in labor receiving remifentanil.**
- **1 nurse to 1 woman during the active pushing phase of the second stage of labor in continuous bedside attendance.**

Patient Type or Clinical Situation: *During Labor of Women With Medical or Obstetric Complications*

Background

The percentage of pregnant women with medical or obstetric complications varies with level of perinatal services provided at each hospital (AAP, 2012b, reaffirmed, 2015; ACOG et al., 2019). Some tertiary-care centers report that 30% to 50% of pregnant women have such complications. Interpretations and definitions of "medical or obstetric complications" are not consistent in the literature or clinical practice (Korst et al., 2021). Based on most recent natality data, general estimates of obstetric and medical complications can be gleaned; however, it is important to consider that these data are historically underreported (Martin et al., 2021). In 2019, obstetric complications noted on birth certificates included prepregnancy or gestational diabetes (7.9%), prepregnancy

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Patient Type or Clinical Situation: *During Labor of Women With Medical or Obstetric Complications*

hypertension (2.2%), gestational hypertension (7.8%), eclampsia (0.28%), previous preterm birth (3.6%), and previous cesarean birth (22.5%; Martin et al., 2021). Of those who had a previous cesarean birth, 13.8% had a vaginal birth. The rate of vaginal birth after cesarean in the United States has continued to increase over the past several years (Osterman, 2020). Based on prepregnancy BMI, 27% and 29% of women were overweight (BMI = 25–29.9 kg/m^2) or obese (BMI ≥ 30 kg/m^2), respectively (Martin et al., 2021). Prepregnancy BMI and the rate of pregnancy obesity have been increasing over the last 20 years in the United States (A. K. Driscoll & Gregory, 2020). Approximately 3% of women were treated for infection during pregnancy, with chlamydia being the most common. One quarter of patients received antibiotics during labor; 1.6% were diagnosed with clinical chorioamnionitis (Martin et al., 2021). The preterm birth rate in 2019 was 10.23%, with 2.77% early preterm and 7.46% late preterm (Martin et al., 2021). The mean age of first births for women was 27 years; maternal age has steadily increased since 1985, especially for those in their 40s and age 50 years and older (Martin et al., 2021), which increases the risk of medical and obstetric complications, including death (Fingar et al., 2018; Frederiksen et al., 2018; MacDorman et al., 2021; Oot et al., 2021; SMFM et al., 2021).

According to the CDC (2020c), the most severe complications of pregnancy, generally referred to as severe maternal morbidity (SMM), affect more than 50,000 women in the United States every year. Based on recent trends, this burden has been steadily increasing. From 2006 to 2015, the rate of SMM rose 45% (Fingar et al., 2018). In 2018, the SMM rate was 76.6 per 10,000 hospital births, with notable differences based on race and ethnicity. AHRQ (2021b) reported SMM differences by these groups based on the rate per 10,000 hospital births: Black non-Hispanic, 118.8; other non-Hispanic, 83.6; Hispanic, 78.5; White non-Hispanic, 63.2. Rises in SMM are likely driven by a combination of factors, including increases in maternal age, prepregnancy obesity, preexisting chronic medical conditions, and cesarean birth (CDC, 2020c). The most common SMM indicators are eclampsia, blood transfusions, and adult respiratory distress syndrome (Black et al., 2021). Cesarean birth, multiple gestation, preexisting comorbidities, and obstetric complications continue to be associated with risk of SSM (Black et al., 2021; Oot et al., 2021). Consequences of the increasing SMM prevalence are wide ranging and include higher health service use, higher direct medical costs, extended hospitalization stays, and long-term rehabilitation (CDC, 2020c). Rates of SMM are significantly underestimated (Oot et al., 2021).

Some patients in labor require frequent and intense monitoring in addition to routine evaluation of maternal-fetal status and labor progress. This may include blood glucose assessment, cardiac monitoring, and/or multiple IV lines administering blood products or high-alert medications such as insulin or magnesium sulfate. They may have a central line or a PICC line. They need supplemental oxygen. They may have a contagious disease. Personal protective equipment may be necessary before each patient encounter. Patients who have psychosocial concerns, are grieving, or are non–English-speaking may require extra nursing attention. Each of these factors individually and collectively contributes to patient acuity and must be considered in the dose of nursing care required for optimal outcomes. Identification of specific complications commonly encountered during labor that require a ratio of 1 nurse to 1 laboring patient may be helpful. Medical complications include but are not limited to diabetes, pulmonary or cardiac disease, and morbid obesity; obstetric complications include but are not limited to preeclampsia, hypertensive crisis, multiple gestation, fetal demise, some indeterminate and all abnormal FHR patterns, and a trial of labor attempting a vaginal birth after cesarean birth. This is not meant to be an all-inclusive list. There may be other types of patients and clinical situations that fall into the category of medical or obstetric complications that would require a nurse staffing ratio of 1 nurse to 1 woman in labor. Some types of patients and clinical situations require more than 1 nurse per patient (e.g., a critically ill and/or hemodynamically unstable patient).

Existing Applicable Professional Standards and Guidelines	Staffing Standards
• Women in labor who are receiving magnesium sulfate should have 1 nurse in continuous bedside attendance for the first hour of administration and 1 nurse to 1 woman thereafter. (*Safe Medication Administration: Magnesium Sulfate*; AHRQ, 2017) • As comparative references, standards from RCOG's National Institute of Health and Clinical Excellence and SOGC indicate 1 nurse to 1 woman in labor is best practice.	• **1 nurse to 1 woman with obstetric or medical complications in labor.** • **Women in labor who are receiving magnesium sulfate should have 1 nurse in continuous bedside attendance for the first hour of administration and 1 nurse to 1 woman thereafter.**

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(*Fetal Health Surveillance* [Intrapartum Consensus Guideline]; SOGC et al., 2020)
(*Intrapartum Care for Healthy Women and Babies*; NICE, 2014, updated 2017)
(*Safe Midwifery Staffing for Maternity Settings*; NICE, 2015)

- Hourly assessment during labor is recommended for most medical or obstetric complications of pregnancy.

(*Intrapartum Care for Women With Existing Medical Conditions or Obstetric Complications and Their Babies*; NICE, 2019)
("Labor and Birth," in *AWHONN's Perinatal Nursing*; Simpson & O'Brien-Abel, 2021)

- Nursing care for the active pushing phase of the second stage of labor requires continuous bedside attendance by the nurse.

(*Nursing Care and Management of the 2nd Stage of Labor* [Evidence-Based Clinical Practice Guideline]; AWHONN, 2019b)

- **1 nurse to 1 woman during the active pushing phase of the second stage of labor in continuous bedside attendance.**

Patient Type or Clinical Situation: *During Vaginal Birth*

Background

About two thirds (68.2% in 2020) of births in the United States are vaginal (B. E. Hamilton et al., 2021). During the active pushing phase of the second stage of labor, 1 nurse should be in continuous attendance with the woman preparing to give birth (AWHONN, 2019b). As birth appears imminent, a second nurse should be in attendance to prepare to care for the newborn baby (AAP & AHA, 2021). As soon as possible after the birth, given the newborn is stable and healthy, the baby should be placed on the mother's chest, skin-to-skin (AWHONN, 2021b).

Existing Applicable Professional Standards and Guidelines

- 1 nurse to care for the mother (circulating nurse) and 1 nurse with neonatal resuscitation skills whose sole responsibility is to the newly born baby (baby nurse).

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(Neonatal Resuscitation Program; AAP & AHA, 2021)

- 1 person skilled in the initial steps of newborn care and capable of initiating newborn resuscitation, including positive-pressure ventilation, should attend every birth. When a birth is attended by only 1 qualified person to care for the baby, the likelihood of resuscitation should be low. In the event of unanticipated resuscitation, this team member will initiate resuscitation and call for additional help. When a nurse whose sole responsibility is the newly born baby is attending an uncomplicated birth, the nurse evaluates gestational age, muscle tone, and respirations and provides tactile stimulation. If the newborn does not respond appropriately, the nurse positions and clears the airway, starts positive-pressure ventilation, and initiates an emergency call for immediate assistance.

Staffing Standards

- **2 nurses should attend every vaginal birth, 1 for the mother and 1 for the baby. In the case of multiples, there should be 1 nurse for each baby.** The presence of the second nurse to attend to the baby is essential for safety of the mother and baby. Within 30 seconds after birth, 85% of term newborns will begin breathing, 5% of term newborns receive positive-pressure ventilation, 2% of term newborns will be intubated, and 3 of 1,000 newborns will receive chest compressions or emergency medications (AAP & AHA, 2021); a significant number of those babies are unexpectedly depressed at birth. When there are maternal or newborn complications, the circulating nurse may have to leave the room to secure medications (e.g., in the case of immediate postpartum hemorrhage). There should be another nurse in attendance to assist with care.

- **1 person skilled in the initial steps of newborn care and capable of initiating newborn resuscitation, including positive-pressure ventilation, should attend every birth.**

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(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(Neonatal Resuscitation Program; AAP & AHA, 2021)

- A qualified team with full resuscitation skills, including endotracheal intubation, chest compressions, emergency vascular access, and medication administration, should be identified and immediately available for every resuscitation. The fully qualified resuscitation team should be present at the time of birth if the need for advanced resuscitative measures is anticipated. It is not sufficient to have the team on call at home or in a remote area of the hospital. When resuscitation is needed, it must begin without delay.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(Neonatal Resuscitation Program; AAP & AHA, 2021)

- If risk factors are present as delineated per AAP and AHA (2021), at least 2 qualified people should be present solely to manage the baby. In the case of an anticipated high-risk birth, a team with sufficient personnel to provide positive-pressure ventilation, intubate the trachea, perform chest compressions, obtain emergency vascular access, prepare medications, and document events should be assembled before the birth. Depending on the setting, this will likely require 4 or more qualified providers.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(Neonatal Resuscitation Program; AAP & AHA, 2021)

- An Apgar score should be determined at 1 minute and 5 minutes after birth. If the 5-minute Apgar score is less than 7, additional scores should be assigned every 5 minutes, up to 20 minutes.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Blood loss should be quantified objectively by weighing and measuring rather than visually estimated.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*Quantification of Blood Loss* [Practice Brief]; AWHONN, 2021c)

- Healthy term babies should be placed skin-to-skin with the mother immediately after birth and remain there for at least the first hour of life.

(*Safe Sleep and Skin-to-Skin Care in the Neonatal Period for Healthy Term Newborns* [AAP Clinical Report]; Feldman-Winter et al., 2016)
(*Immediate and Sustained Skin-to-Skin Contact for Healthy Late Preterm and Term Newborns After Birth* [Practice Brief]; AWHONN, 2021b)
(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- **A qualified team with full resuscitation skills, including endotracheal intubation, chest compressions, emergency vascular access, and medication administration, should be identified and immediately available for every resuscitation**. It is not sufficient to have the team on call at home or in a remote area of the hospital. When resuscitation is needed, it must begin without delay.
- **If the birth is anticipated to be high risk, a neonatal resuscitation team should be assembled according to the Neonatal Resuscitation Program (AAP & AHA, 2021) guidelines.**

Patient Type or Clinical Situation: *During the Immediate Postpartum Recovery Period After Vaginal Birth: Mother and Baby*

Background

The recovery process outlined here applies to women both with and without regional analgesia/anesthesia. Immediate recovery care after vaginal birth lasts at least 2 hours. Maternal blood pressure, pulse, and respirations should be assessed and documented every 15 minutes for the first 2 hours after birth (AAP & ACOG, 2017; James & Suplee, 2021). Maternal vital signs should be assessed more frequently and for longer duration if there are complications (AAP & ACOG, 2017; James & Suplee, 2021). Maternal postpartum observation should be designed for timely identification of signs of excessive blood loss, including tachycardia and hypotension (AAP & ACOG, 2017; James & Suplee, 2021). The amount of vaginal bleeding should be evaluated continuously and the uterine fundus identified, massaged, and assessed for size and degree of contraction (AAP & ACOG, 2017; James & Suplee, 2021). These assessments should continue during the full 2-hour recovery period (AAP & ACOG; James & Suplee, 2021) and are critical to identify and respond to changes in the mother's vital signs and clinical condition to minimize risk of postpartum hemorrhage (James & Suplee, 2021). *For the purposes of this document, the 2-hour postpartum recovery period after vaginal birth generally begins with delivery of the placenta; however, this may need to be extended in some cases, such as postpartum hemorrhage or prolonged or complex perineal birth trauma repair.*

Immediately after birth, the baby requires assessment, stabilization, and identification. Because the nurse caring for the woman in the immediate postpartum period should have no other responsibilities, newborn care should be provided by a nurse assigned to the baby (AAP & ACOG, 2017). Temperature, heart rate and respiratory rates, skin color, adequacy of peripheral circulation, type of respiration, level of consciousness, tone, and activity should be monitored and recorded at least once every 30 minutes until the newborn's condition has remained stable for at least 2 hours (AAP & ACOG, 2017). Healthy term babies should be placed skin-to-skin with the mother immediately after birth and remain there for at least the first hour of life (AWHONN, 2021b). If the mother has chosen to breastfeed, the baby should be placed at the breast within an hour of birth (AAP & ACOG, 2017).

The newborn baby should be in continuous observation by the nurse for the full 2-hour recovery period, including during skin-to-skin positioning, breastfeeding, and the mother holding the baby, to promote safety and decrease the risk of sudden unexpected postnatal collapse (SUPC) in part due to unsafe positioning or inattention (AWHONN, 2020c; Feldman-Winter et al., 2016). As per the clinical report from AAP on *Safe Sleep and Skin-to-skin Care in the Neonatal Period for Healthy Term Newborns*, many SUPC events are related to suffocation or entrapment while unobserved (Feldman-Winter et al., 2016). The first 2 hours after birth during newborn transition are a period of increased risk of SUPC (Andres et al., 2011; AWHONN, 2020c; Becher et al., 2012; Dageville et al., 2008; Feldman-Winter et al., 2016; Friedman et al., 2015; Pejovic & Herlenius, 2013). More than one third (36%) of cases of SUPC occur within the first 2 hours after birth (Herlenius & Kuhn, 2013; Monnelly & Becher, 2018).

ASPAN (2010, 2020) developed critical elements of care that are required before the nurse responsible for a patient during the recovery period can accept a second patient. These critical elements were adapted to perinatal care in the first edition of the AWHONN nurse staffing standards (AWHONN, 2010) and continue here.

Existing Applicable Professional Standards and Guidelines	Staffing Standards
• Nurses assigned to the immediate recovery of a woman *should have no other obligations* (1 nurse to 1 mother; this does not include the baby). (*Guidelines for Perinatal Care*; AAP & ACOG, 2017) • Maternal blood pressure, pulse, and respirations should be monitored every 15 minutes for 2 hours and more frequently and for a longer duration of time if there are complications. Maternal postpartum observation should be designed for timely	• **During the immediate postpartum recovery period after vaginal birth, there should be 1 nurse for the mother and 1 nurse for the baby. In the case of multiples, there should be 1 nurse for each baby.** When conditions of mother and baby are determined to be stable and the critical elements are met, **1 nurse can care for both the mother and the baby.** Critical elements for the mother's care after vaginal birth before the mother's nurse accepts the baby as part of the patient care assignment are defined as (a) initial assessment is completed and documented, (b) repair of

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identification of excessive blood loss, including hypotension and tachycardia.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
("Postpartum Care," in *AWHONN's Perinatal Nursing*; James & Suplee, 2021)

- The amount of vaginal bleeding should be evaluated continuously and the uterine fundus identified, massaged, and assessed for size and degree of contraction.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Timely response to changes in maternal vital signs and clinical condition are critical to patient safety.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*Quantification of Blood Loss* [Practice Brief]; AWHONN, 2021c)

- All patients recovering from neuraxial anesthesia should receive appropriate postanesthesia care.

(*Guidelines for Neuraxial Analgesia or Anesthesia in Obstetrics*; ASA, 2018)

- Temperature, heart rate and respiratory rates, skin color, adequacy of peripheral circulation, type of respiration, level of consciousness, tone, and activity should be monitored and recorded at least once every 30 minutes until the newborn's condition has remained stable for at least 2 hours.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Healthy term babies should be placed skin-to-skin with the mother immediately after birth and remain there for at least the first hour of life.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*Immediate and Sustained Skin-to-Skin Contact for Healthy Late Preterm and Term Newborns After Birth* [Practice Brief]; AWHONN, 2021b)
(*Safe Sleep and Skin-to-Skin Care in the Neonatal Period for Healthy Term Newborns* [AAP Clinical Report]; Feldman-Winter et al., 2016)

- If the mother has chosen to breastfeed, the baby should be placed at the breast within an hour of birth.

episiotomy or perineal laceration(s) is completed, and (c) the woman is hemodynamically stable. Critical elements for the baby's care before the mother's nurse accepts the baby as part of the patient care assignment are defined as follows: (a) report has been received from the baby nurse, questions have been answered, and the transfer of care has taken place; (b) initial assessment and care are completed and documented; (c) identification bracelets have been applied; and (d) baby's condition is stable.

- **The ratio of 1 nurse to 1 woman recovering from vaginal birth (and her baby after the critical elements are met) should continue for at least 2 hours, or longer if complications are encountered. The nurse should be in continuous attendance during the 2-hour recovery period. The nurse should not be given another patient assignment until the recovery process is completed.**

- Healthy term babies should be placed skin-to-skin with the mother immediately after birth and remain there for at least the first hour of life.

- If the mother has chosen to breastfeed, the baby should be placed at the breast within an hour of birth.

- Based on mother's and baby's condition, they should remain together during this time when possible.

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(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Healthy newborn babies should remain with their mothers.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

Patient Type or Clinical Situation: ***During Cesarean Birth***

Background

About one third of U.S. births (31.8% in 2020) are via cesarean; the rate has generally been steady over the last decade (B. E. Hamilton et al., 2021). The cesarean birth rate rose slightly to 31.8% in 2020 from 31.7% in 2019; the low-risk cesarean birth rate increased to 25.9% from 25.6% in 2019 (B. E. Hamilton et al., 2021). The most common indications for cesarean birth in order of frequency are labor dystocia, indeterminate or abnormal FHR tracing, fetal malpresentation, multiple gestation, and suspected fetal macrosomia (AAP & ACOG, 2017). Safe perioperative care includes verification of informed consent and use of a time-out process prior to administration of anesthesia and prior to the surgery (AWHONN, 2019c; TJC, 2021c). Prior to scheduled cesarean birth, FHR should be assessed (AAP & ACOG, 2017). For unscheduled cesarean birth, fetal surveillance should continue until abdominal sterile preparation has begun (AAP & ACOG, 2017). If internal FHR monitoring is in use, it should be continued until the abdominal sterile preparation is complete or longer if indicated (AAP & ACOG, 2017). Intraoperative maternal hypothermia may be prevented by the use of various warming methods such as IV fluid warming, upper body forced-air warming, ambient operating room temperature, and warming mattresses (AWHONN, 2019c; Dendis & Hooven, 2020). Intraoperative mother and baby skin-to-skin care during cesarean birth can be accomplished safely based on condition of the mother and baby and desires of the mother (Feldman-Winter et al., 2016; Frederick et al., 2020).

Existing Applicable Professional Standards and Guidelines

- 1 nurse to care for the mother (circulating nurse) and 1 with neonatal resuscitation skills whose sole responsibility is to the newly born baby (baby nurse)

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(Neonatal Resuscitation Program; AAP & AHA, 2021)
(*Perioperative Registered Nurse Circulator Dedicated to Every Patient Undergoing a Surgical or Other Invasive Procedure*; AORN, 2019)

- 1 person skilled in the initial steps of newborn care and capable of initiating newborn resuscitation, including positive-pressure ventilation, should attend every birth. When a birth is attended by only one qualified person to care for the baby, the likelihood of resuscitation should be low. In the event of unanticipated resuscitation, this team member will initiate resuscitation and call for additional help. When a nurse whose sole responsibility is the newly born baby is attending an uncomplicated birth, the nurse evaluates gestational age, muscle tone, and respirations and provides tactile stimulation. If the newborn does not respond appropriately, the nurse positions and clears the airway, starts positive-pressure ventilation, and initiates an emergency call for immediate assistance.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*Neonatal Resuscitation Program*; AAP & AHA, 2021)

Staffing Standards

- **2 nurses should attend every cesarean birth, 1 for the mother and 1 for the baby. In the case of multiples, there should be 1 nurse for each baby**. The presence of the second nurse to attend to the baby is essential for safety of the mother and baby. Within 30 seconds after birth, 85% of term newborns will begin breathing, 5% of term newborns will receive positive-pressure ventilation, 2% of term newborns will be intubated, and 3 of 1,000 newborns will receive chest compressions or emergency medications (AAP & AHA, 2021); a significant number of those babies are unexpectedly depressed at birth. When there are maternal or newborn complications, the circulating nurse may have to leave the room to secure medications (e.g., in the case of immediate postpartum hemorrhage). There should be another nurse in attendance to assist with care.

- **1 person skilled in the initial steps of newborn care and capable of initiating newborn resuscitation, including positive-pressure ventilation, should attend every birth.**

- **A qualified team with full resuscitation skills, including endotracheal intubation, chest compressions, emergency vascular access, and medication administration, should be identified and immediately available for every resuscitation**. It is not sufficient to have the team on call at

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- A qualified team with full resuscitation skills, including endotracheal intubation, chest compressions, emergency vascular access, and medication administration should be identified and immediately available for every resuscitation. The fully qualified resuscitation team should be present at the time of birth if the need for advanced resuscitative measures is anticipated. It is not sufficient to have the team on call at home or in a remote area of the hospital. When resuscitation is needed, it must begin without delay.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*Neonatal Resuscitation Program*; AAP & AHA, 2021)

- If risk factors are present as delineated per the AAP and AHA (2021), at least 2 qualified people should be present solely to manage the baby. In the case of an anticipated high-risk birth, a team with sufficient personnel to provide positive-pressure ventilation, intubate the trachea, perform chest compressions, obtain emergency vascular access, prepare medications, and document events should be assembled before the birth. Depending on the setting, this will likely require 4 or more qualified providers.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*Neonatal Resuscitation Program*; AAP & AHA, 2021)

- An Apgar score should be determined at 1 minute and 5 minutes after birth. If the 5-minute Apgar score is less than 7, additional scores should be assigned every 5 minutes, up to 20 minutes.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Healthy term babies should be placed skin-to-skin with the mother immediately after birth and remain there for at least the first hour of life. This can be accomplished safely during most cesarean births when the mother is awake, alert, and in stable condition and desires skin-to-skin positioning and the nurse assigned to the baby remains in continuous presence with the mother and baby.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*Immediate and Sustained Skin-to-Skin Contact for Healthy Late Preterm and Term Newborns After Birth* [Practice Brief]; AWHONN, 2021b)
(*Safe Sleep and Skin-to-Skin Care in the Neonatal Period for Healthy Term Newborns* [AAP Clinical Report]; Feldman-Winter et al., 2016)

- Healthy newborn babies should remain with their mothers.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

home or in a remote area of the hospital. When resuscitation is needed, it must begin without delay.

- **If the birth is anticipated to be high-risk, a neonatal resuscitation team should be assembled according to the Neonatal Resuscitation Program (AAP & AHA, 2021) guidelines.**

- During cesarean birth, the baby should remain in the surgical suite with the mother as the baby's condition allows. The nurse assigned to the baby should remain with the baby.

- Skin-to-skin positioning of mother and baby can be accomplished safely after cesarean birth based on the condition of the mother and baby and the wishes of the mother.

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- Blood loss should be quantified objectively by weighing and measuring rather than visually estimated.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*Quantification of Blood Loss* [Practice Brief]; AWHONN, 2021c)

Patient Type or Clinical Situation: *Postanesthesia Care After Cesarean Birth: Mother and Baby*

Background

The recovery process outlined here applies to women with both regional analgesia/anesthesia and general anesthesia. Immediate recovery care after cesarean birth lasts at least 2 hours. Maternal blood pressure, pulse, and respirations should be assessed and documented every 15 minutes for the first 2 hours after birth (AAP & ACOG, 2017; James & Suplee, 2021). Maternal vital signs should be assessed more frequently and for longer duration if there are complications (AAP & ACOG, 2017; James & Suplee, 2021). Maternal postpartum observation should be designed for timely identification of signs of excessive blood loss, including tachycardia and hypotension (AAP & ACOG, 2017). The amount of vaginal bleeding should be evaluated continuously and the uterine fundus identified, massaged, and assessed for size and degree of contraction (AAP & ACOG, 2017). These assessments should continue for at least the full 2-hour recovery period (AAP & ACOG, 2017) and are critical to identify and respond to changes in the mother's vital signs and clinical condition to minimize risk of postpartum hemorrhage (James & Suplee, 2021). Maternal hypothermia risk is increased during the cesarean birth perioperative period (AWHONN, 2019c). Beneficial preventive measures include IV fluid warming, upper body forced-air warming, ambient operating room temperature, and warming mattresses (AWHONN, 2019c; Dendis & Hooven, 2020). *For the purposes of this document, the 2-hour postanesthesia recovery period after cesarean birth begins with admission to the OB postanesthesia care unit (PACU) or surgical PACU or transfer to the LDR/LDRP (if postanesthesia care is provided in the LDR/LDRP room); however, the recovery period may need to be extended in some cases, such as in the event of postpartum hemorrhage or other maternal complications. Postanesthesia discharge criteria must be met.*

Immediately after birth, the baby requires assessment and stabilization. Because the nurse caring for the woman in the immediate postanesthesia period should have no other responsibilities, newborn care should be provided by a nurse assigned to the baby. Temperature, heart rate and respiratory rates, skin color, adequacy of peripheral circulation, type of respiration, level of consciousness, tone, and activity should be monitored and recorded at least once every 30 minutes until the newborn's condition has remained stable for 2 hours (AAP & ACOG, 2017). Healthy term babies should be placed skin-to-skin with the mother immediately after birth and remain there for at least the first hour of life (AWHONN, 2021b). If the mother has chosen to breastfeed, the baby should be placed at the mother's breast within an hour of birth (AAP & ACOG, 2017).

The newborn baby should be continuously observed by the nurse for the full 2-hour recovery period, during skin-to-skin positioning, breastfeeding, and the mother holding baby, to promote safety and decrease risk of SUPC in part due to unsafe positioning (AWHONN, 2019c, 2020c; Feldman-Winter et al., 2016). As per the clinical report from AAP on *Safe Sleep and Skin-to-skin Care in the Neonatal Period for Healthy Term Newborns*, many SUPC events are related to suffocation or entrapment while unobserved (Feldman-Winter et al., 2016). The first 2 hours after birth during newborn transition are a period of increased risk of SUPC (Andres et al., 2011; AWHONN, 2020c; Becher et al., 2012; Dageville et al., 2008; Feldman-Winter et al., 2016; Friedman et al., 2015; Pejovic & Herlenius, 2013). More than one third (36%) of SUPC cases occur within the first 2 hours after birth (Herlenius & Kuhn, 2013; Monnelly & Becher, 2018).

Existing Applicable Professional Standards and Guidelines

- Patients with the same health status and condition should receive a comparable level of quality care regardless of where that care is provided within the hospital. This standard ensures that obstetric patients receiving general and regional anesthesia and having surgery are provided consistent perioperative care. Therefore, perinatal units should maintain care standards comparable to the main hospital surgical suites and PACU. Availability of equipment,

Staffing Standards

- **During initial admission to the OB PACU, 2 nurses should be in attendance, 1 for the mother and 1 for the baby. After the critical elements have been met and mother and baby are stable, 1 nurse can care for the mother and baby, with a second nurse available to assist as necessary. In the case of multiples, there should be 1 nurse for each baby.** Critical elements for the mother's

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facilities, and support personnel should be comparable to that provided in the surgical suite. This should include the availability of a properly equipped and staffed recovery room capable of receiving and caring for all patients recovering from neuraxial or general anesthesia. Assessment based on the patient's condition should be conducted as per postanesthesia standards. Following cesarean birth and/or extensive neuraxial blockade, the standards for postanesthesia care should be applied. Birthing facilities, when used for labor anesthesia services or surgical anesthesia, must be appropriately equipped to provide safe anesthetic care during labor and birth and postanesthesia recovery care.

(*2021–2022 Perianesthesia Nursing Standards, Practice Recommendations and Interpretive Statements*; ASPAN, 2020)
(*Comprehensive Accreditation Manual for Hospitals*; TJC, 2021a)
(*Guidelines for Neuraxial Analgesia or Anesthesia in Obstetrics*; ASA, 2018)
(*Optimal Goals for Anesthesia Care in Obstetrics*; ASA, 2016a)
(*Practice Guidelines for Obstetric Anesthesia: An Updated Report by the American Society of Anesthesiologists Task Force on Obstetric Anesthesia and the Society for Obstetric Anesthesia and Perinatology*; ASA, 2016b)
(*Practice Guidelines for Postanesthetic Care: An Updated Report by the American Society of Anesthesiologists Task Force on Postanesthetic Care*; ASA, 2013)

- Nurses assigned to the immediate recovery of a woman *should have no other obligations* (1 nurse to 1 mother; this does not include the baby).

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- 1 nurse to 1 patient at time of admission to the PACU until the critical elements are met. Critical elements for postanesthesia care are defined as follows: (a) report has been received from the anesthesia provider, questions have been answered, and the transfer of care has taken place; (b) woman is conscious, with adequate respiratory status; (c) initial assessment is completed and documented; and (d) woman is hemodynamically stable. Phase of recovery and patient condition determines the level of care and required nurse-to-patient ratio.

(*2021–2022 Perianesthesia Nursing Standards, Practice Recommendations and Interpretive Statements*; ASPAN, 2020)

- Maternal blood pressure, pulse, and respirations should be monitored every 15 minutes for 2 hours, and more frequently and for more time if complications are encountered. Maternal postpartum observation should be designed for timely identification of excessive blood loss, including hypotension and tachycardia.

postanesthesia care after cesarean birth before the mother's nurse accepts the baby as part of the patient care assignment are defined as follows: (a) report has been received from the anesthesia provider, questions have been answered, and the transfer of care has taken place; (b) woman is conscious, with adequate respiratory status; (c) initial assessment is completed and documented; and (d) woman is hemodynamically stable. Critical elements for the baby's care before the mother's nurse accepts the baby as part of the patient care assignment are defined as follows: (a) report has been received from the baby nurse, questions have been answered, and the transfer of care has taken place; (b) initial assessment and care are completed and documented; (c) identification bracelets have been applied; and (d) baby's condition is stable.

- **If there are 2 stable mothers and 2 stable babies in the OB PACU, there should be a minimum of 2 nurses.** The baby is an appropriate second patient to be cared for with the mother in the OB PACU after the critical elements are met and when mother and baby are stable.

- **If the woman is recovered in an LDR/LDRP room, 2 nurses should be in attendance until the critical elements for both patients are met (1 nurse for the mother and 1 nurse for the baby).** After the critical elements are met and when the conditions of mother and baby are determined to be stable, 1 nurse can care for both the mother and the baby.

- **1 nurse to 1 woman recovering from cesarean birth (and her baby after the critical elements are met) should continue for at least 2 hours, or longer if complications are encountered. The nurse should be in continuous attendance during the 2-hour recovery period. The nurse should not be given another patient assignment until the recovery process is completed.**

- Healthy term babies should be placed skin-to-skin with the mother immediately after birth and remain there for at least the first hour of life.

- If the mother has chosen to breastfeed, the baby should be placed at the breast within an hour of birth.

- **2 nurses should be in attendance to care for the mother if she is critically ill or unstable.**

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(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
("Postpartum Care," in *AWHONN's Perinatal Nursing*; James & Suplee, 2021)

- The amount of vaginal bleeding should be evaluated continuously and the uterine fundus identified, massaged, and assessed for size and degree of contraction.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Timely response to changes in maternal vital signs and clinical condition are critical to patient safety.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*Quantification of Blood Loss* [Practice Brief]; AWHONN, 2021c)

- Temperature, heart rate and respiratory rates, skin color, adequacy of peripheral circulation, type of respiration, level of consciousness, tone, and activity should be monitored and recorded at least once every 30 minutes until the newborn's condition has remained stable for 2 hours.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Healthy term babies should be placed skin-to-skin with the mother immediately after birth and remain there for at least the first hour of life.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*Immediate and Sustained Skin-to-Skin Contact for Healthy Preterm and Term Newborns After Birth* [Practice Brief]; AWHONN, 2021b)
(*Safe Sleep and Skin-to-Skin Care in the Neonatal Period for Healthy Term Newborns* [AAP Clinical Report]; Feldman-Winter et al., 2016)

- If the mother has chosen to breastfeed, the baby should be placed at the breast within an hour of birth.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Healthy newborn babies should remain with their mothers.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

Patient Type or Clinical Situation: ***Mother–Baby Care***

Background

About one third of U.S. births (31.8% in 2020) are via cesarean (B. E. Hamilton et al., 2021), making the care of postoperative patients a routine part of daily nursing responsibilities for nurses on postpartum and mother–baby units. These responsibilities may include care of patients with patient-controlled analgesia (PCA) pumps and medication administered via epidural catheters postoperatively (ACOG, 2019b). Based on prepregnancy BMI, 27% and 29% of those who gave birth in 2019 were overweight (BMI = 25–29.9 kg/m^2) or

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obese (BMI $\geq$ 30 kg/m^2), respectively (Martin et al., 2021). Prepregnancy BMI and the rate of pregnancy obesity have been increasing during the last 20 years in the United States (A. K. Driscoll & Gregory, 2020). Patients with obesity are at risk for respiratory depression when using these techniques during the postoperative period and need closer monitoring (ASA, 2016c). Risk status and dose of medication are factors in determining frequency of monitoring respiratory and sedation status of patients receiving intrathecal or epidural morphine for postoperative analgesia as part of multimodal analgesic treatment after cesarean birth (Bauchat et al., 2019). Application of the enhanced recovery after cesarean guidelines can promote optimal outcomes after planned and unplanned cesarean birth (Caughey et al., 2018; Macones et al., 2019; Wilson et al., 2018). Postoperative care to promote enhanced recovery after cesarean includes gum chewing, nausea and vomiting prevention, postoperative analgesia, nutritional care including regular diet 2 hours after surgery, glucose control, thromboembolism prophylaxis with pneumatic compression stockings, early mobilization, removal of indwelling urinary catheter after surgery, and discharge counseling (Macones et al., 2019).

The late-preterm (34 to 36 6/7 weeks of gestation) birth rate in 2019 was 7.46% (Martin et al., 2021). The percentage of infants born early term (37 to 38 6/7 weeks) rose by 3% in 2019, from 26.53% in 2018 to 27.31%, and the full-term (39 to 40 6/7 weeks) birth rate declined, from 57.24% in 2018 to 57.02% in 2019. From 2007 to 2014, in contrast, the early-term birth rate had generally been on the decline, and the full-term rate had been on the rise (Martin et al., 2021). There is a cumulative body of evidence that late-preterm babies, compared with term babies, have higher incidence of prematurity-related medical and surgical conditions, such as respiratory distress, temperature instability, hypoglycemia, jaundice and hyperbilirubinemia, inadequate feeding, infection, neonatal mortality, and short-term and long-term neurodevelopmental delay (AWHONN, 2017). Early-term infants are at increased risk for respiratory distress syndrome, transient tachypnea of the newborn, ventilator use, pneumonia, respiratory failure, hypoglycemia, NICU admission, 5-minute Apgar scores of less than 7, and neonatal mortality (ACOG, 2019c). Therefore, late-preterm and early-term babies require closer monitoring than term babies. When a late-preterm baby is stable enough to remain at the mother's bedside, frequent nursing assessment is recommended.

Healthy mothers and babies should remain together (AAP & ACOG, 2017). The mother and newborn should be admitted to the room together to enable maternal–newborn attachment, on-demand feeding, and newborn care education. Preferably, each postpartum room is occupied by a single family and equipped for care of the mother and the baby (AAP & ACOG, 2017). Mother–baby couplet care in which the same nurse cares for both the healthy mother and the healthy baby is the model used in most perinatal services. The expected nurse-to-patient ratio is 1 nurse to no more than 3 healthy mother–baby couplets. However, in some perinatal services, postpartum women are cared for by nurses other than those caring for the healthy newborn. As the cesarean birth rate has increased, more postpartum women are recovering from major surgery, and a ratio of 1 nurse to no more than 5 postpartum women is consistent for safe care of this population. Nurse-to-patient ratios for medical–surgical patients is typically 1 nurse to no more than 5 patients. In California, the mandated nurse-to-patient ratio for medical–surgical patients is 1 nurse to no more than 5 patients (California Department of Public Health, 2007).

Patient assignment should consider acuity and type of birth. Nurses caring for women receiving IV magnesium sulfate during the postpartum period should not have more than 1 other mother–baby couplet or 1 woman as part of the patient care assignment. Nurses should not have more than 2 women on the immediate postoperative day who are recovering from cesarean birth as part of the nurse-to-patient ratio of 1 nurse to 3 mother–baby couplets. Nurses should not have more than 5 postpartum women without complications, with no more than 2 to 3 women on the immediate postoperative day who are recovering from cesarean birth as part of the nurse-to-patient ratio of 1 nurse to 5 postpartum women without complications. Nurses should not have more than 3 postpartum patients with complications who are stable. Healthy newborns need complete care, cannot communicate, may have swallowing and feeding deficits or temperature instability, and may need to be fed every 2 to 3 hours; 1 nurse to no more than 5 healthy term newborns is recommended if using a care model in which there are separate nurses for mothers and for babies.

Mother–baby nursing care responsibilities include comprehensive assessments, interventions, support, and education for each patient. Maternal nursing care includes hourly rounding, vital signs, and physical assessment such as examination of the breasts, uterine fundus, bladder, perineum, lochia, and incision as well as pain management, immunizations, assistance with ambulation, breastfeeding, and psychosocial support. Patients with postpartum hemorrhage, diabetes, hypertension, preeclampsia, and other common maternal conditions need additional nursing care specific to their needs and more frequent monitoring. Newborn care includes hourly rounding; full physical assessment; daily weights; feeding; urine and stool output evaluation; jaundice monitoring; blood glucose monitoring; immunizations; vitamin K administration; thermoregulation; multiple screenings for hearing, critical congenital heart defects, and newborn inherited

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conditions; parent teaching about infant security and safe sleep in the hospital and at home; help with breastfeeding or formula feeding; and support.

Some women during postpartum require frequent and intense assessment and monitoring in addition to routine evaluation of maternal status after giving birth. This may include blood glucose assessment, cardiac monitoring, and/or multiple IV lines administering blood products or high-alert medications such as insulin or magnesium sulfate. They may have a central line or a PICC line. They may need supplemental oxygen. Some patients who have had a cesarean birth may develop post-surgical complications such as hemorrhage, surgical site infection, sepsis, venous thromboembolism, or other maternal morbidities (Burke & Allen, 2020). They may have a contagious disease. Personal protective equipment may be necessary before each patient encounter. Patients who have psychosocial concerns, are grieving, or are non–English-speaking may require extra nursing attention. Some babies may require frequent and intense assessment and monitoring while being cared for at the mother's bedside. Each of these factors individually and collectively contributes to patient acuity and must be considered in the dose of nursing care required for optimal outcomes. Some patients during postpartum may require a ratio of 1 nurse to 1 mother–baby couplet or 1 nurse to 2 mother–baby couplets (e.g., a mother receiving IV magnesium sulfate needing hourly assessments).

Newborns with neonatal abstinence syndrome or neonatal opioid withdrawal syndrome require frequent assessments and nursing care specific to their needs (AWHONN, 2017; Patrick et al., 2020). In 2016, the last year for which these data are available, 91,800 inpatient childbirth stays had a substance use disorder diagnosis, representing 24.3 per 1,000 births (Soni et al., 2019). Cannabis, opioids, and cocaine are the most common types of substance use diagnosed at birth (Soni et al., 2019). Opioid use disorder rates at birth more than quadrupled from 1999 to 2014 in the United States from 1.5 per 1,000 birth hospitalizations to 6.5 per 1,000 birth hospitalizations (Haight et al., 2018). When comparing rates in 2010 with rates in 2017, maternal opioid-related diagnoses increased approximately 130%, from 3.5 to 8.2 per 1,000 birth hospitalizations (Hirai et al., 2021). Maternal opioid use increases risk of neonatal opioid withdrawal syndrome. In 2009, the rate of neonatal abstinence syndrome was 2.9 per 1,000 newborn hospitalizations. In 2018, the last year for which these data are available, the rate was 6.8 per 1,000 newborn hospitalizations, a significant increase from 2009 (AHRQ, 2021e).

Newborns in the hospital setting are at risk for adverse events including falls, drops, and SUPC, many of which are preventable (AWHONN, 2020b, 2020c; Bittle et al., 2019; C. A. H. Driscoll et al., 2019; Feldman-Winter et al., 2016; TJC, 2019; Kukielka & Wallace, 2019; Loyal et al., 2018; Wallace, 2014). Hourly rounding and close monitoring of the newborn rooming in with the mother is recommended to prevent infant falls, drops, and SUPC (Feldman-Winter et al., 2016; TJC, 2018). High-risk mothers may require rounding every 30 minutes during nighttime and early morning hours (Feldman-Winter et al., 2016). Many SUPC events are related to suffocation or entrapment while unobserved (Feldman-Winter et al., 2016). The mother is often fatigued after the events of labor, birth, and immediate postpartum and therefore may inadvertently fall asleep while holding the newborn (Duthie, 2020). There is heightened risk of SUPC in the early newborn period (Anderson et al., 2021; Andres et al., 2011; AWHONN, 2020c; Bass et al., 2018; Becher et al., 2012; Feldman-Winter et al., 2016; Herlenius & Kuhn, 2013; Lutz et al., 2016; Miyazawa et al., 2020; Pejovic & Herlenius, 2013; Poets et al., 2011). Most cases of SUPC occur within the first 24 hours of life: 36% in the first 2 hours after birth, 29% between 2 and 24 hours after birth, 24% between 24 and 72 hours after birth, and 9% between days 4 and 7 (Herlenius & Kuhn, 2013; Monnelly & Becher, 2018).

There is significant evidence of the benefits of breastfeeding for mothers and babies. Human milk provides developmental, nutritional, and immunologic benefits to the baby that cannot be duplicated by formula. Breastfeeding is an important strategy to promote public health (CDC, 2020a). Breastfeeding is associated with a decreased risk of breast cancer, ovarian cancer, diabetes, and hypertensive heart disease (ACOG, 2021). Exclusive breast milk feeding is recommended for all mothers and babies as appropriate to their clinical condition. Exclusive breastfeeding for the first 6 months of life has long been recommended by AAP (2012a), ACOG (2021), AWHONN (2021a), and the World Health Organization (2021). Exclusive breast milk feeding is a Joint Commission Perinatal Care Measure (TJC, 2021d) and is routinely reported by the CDC (2020a). Some patients who are breast- or chestfeeding may require expert assistance as inpatients and after hospital discharge. In each birthing facility, all mother–baby couplets should have access to an International Board Certified Lactation Consultant (IBCLC) upon request or as a referral for more complex feeding, anatomy, or neurologic impairment that affects nutritive intake at the breast/chest (Lober et al., 2021). The United States Lactation Consultant Association (Lober et al., 2021) recommends 1.3 IBCLC FTEs per 1,000 well babies and 4.3 IBCLC FTEs per 1,000 babies admitted to the NICU. Acuity, level of maternal and neonatal care, and average daily census can be used to estimate an appropriate IBCLC staffing ratio for each birthing facility (Lober et al., 2021). For example, in a perinatal service with approximately 80% well babies and 20% babies admitted to the NICU, the combined ratios of 1.3 FTEs per 1,000 mother–well-baby couplets and 4.3 FTEs per 1,000 mother–NICU-baby couplets suggest a need for 1.9 IBCLC FTEs

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per 1,000 dyads for inpatient care. Suggested ratios for outpatient care are available per the United States Lactation Consultant Association position statement *Professional Lactation Support Staffing in the Hospital Setting* (Lober et al., 2021).

Discharge teaching must include maternal and newborn early warning signs so that there is clear guidance on when to call the primary care provider for the mother or baby (AAP & ACOG, 2017). This involves significant nursing time to make sure parents understand the information and know when to act. AWHONN's postbirth warning signs patient teaching handouts include categories of events based on who to call. Chest pain, obstructed breathing or shortness of breath, or seizures warrant a call to emergency services via 911, while excessive vaginal bleeding, an incision that is not healing, red or swollen leg that is painful or warm to the touch, temperature of 100.4 °F or higher, headache that does not get better with medications, or headache with vision changes should prompt a call to the primary care provider (AWHONN, 2018c). During the childbirth hospitalization, women should be taught about postpartum depression symptoms and who to call if they should experience these symptoms after discharge (CDC, 2020b). The prevalence of postpartum depression symptoms in the United States in 2018 was 13.2%, ranging from 9.7% in Illinois to 23.5% in Mississippi. Prevalence exceeded 20% among women who were ages 19 years or younger, were American Indian/Alaska Native, smoked during or after pregnancy, experienced intimate partner violence before or during pregnancy, or self-reported depression before or during pregnancy, or whose infant had died since birth (Bauman et al., 2020). The newborn having difficulty breathing or turning blue should warrant a call to emergency services via 911, while newborn warning signs that should prompt a call to the primary care provider include temperature below 97 °F (36.1 °C) or above 100.4 °F (38 °C), jaundice, difficulty feeding or not waking for feedings, vomiting, no voids for 12 hours, lethargy, irritability, or changes in typical behaviors (AWHONN, 2017). An important part of discharge education is encouraging (and ideally scheduling) the postpartum and newborn follow-up outpatient visits.

Hospitals must implement programs to reduce the risk of patient harm resulting from falls, including identifying types of patients and clinical situations in which the patient is at risk of falling (TJC, 2015, 2018, 2021a, 2021b). Newborn drops and falls rates are estimated to be approximately 4.5 per 10,000 live births (Kukielka & Wallace, 2019; Loyal et al., 2018). Fall rates on antepartum and postpartum units are 0.97 per 1,000 patient days, with 0% resulting in moderate injuries, and patient fall rates on LDRP units are 0.48 falls per 1,000 patient days, with 10.42% resulting in moderate or greater injury (NDQNI, 2021). Patient education about the possibility and prevention of falls in the hospital and home setting is an important part of patient education.

Existing Applicable Professional Standards and Guidelines

- All those who have given birth and their newborn babies require comprehensive nursing care including initial and ongoing assessments; pain relief measures as needed; postoperative care; hourly rounding; early initiation and ongoing support for breastfeeding; parent education and support; infant feeding instructions and encouragement; support for the attachment process; and discharge teaching that covers follow-up of the woman and her newborn infant based on her and her family's needs, maternal and newborn warning signs, and when to call the primary care provider or emergency services. Contact information for her postpartum care team, including community-based lactation support and written instructions on timing of follow-up postpartum care, should be give to every new parent.

(*Assessment and Care of the Late Preterm Infant* [Evidence-Based Clinical Practice Guideline]; AWHONN, 2017)
(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
("Postpartum Care," in *AWHONN's Perinatal Nursing*; James & Suplee, 2021)

Staffing Standards

- **The nurse-to-patient ratio for normal healthy mother–baby couplets should be no more than 1:3.** This means direct patient care assignments and responsible nurses, not averaged based on a charge nurse (or lactation consultant, clinical educator, clinical nurse specialist, manager) without a patient assignment.
- **The nurse's assignment of patients should consider acuity and type of birth.**
- **A woman who is receiving IV magnesium sulfate during postpartum should have 1 nurse in continuous bedside attendance for the first hour of administration.**
- **Nurses caring for women receiving magnesium sulfate during the postpartum period should not have more than 1 other mother–baby couplet or 1 other patient** (if not providing couplet care) as part of their patient care assignment because assessment of maternal status for women receiving magnesium sulfate is required at least hourly.

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- Late-preterm newborns and newborns with neonatal abstinence syndrome or neonatal opioid withdrawal syndrome require more frequent assessments and care than healthy term newborns. The nurse should have education and experience in the recognition of normal and abnormal physical and emotional signs or symptoms exhibited by the patient or newborn baby.

(*Assessment and Care of the Late Preterm Infant* [Evidence-Based Clinical Practice Guideline]; AWHONN, 2017)
(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
("Postpartum Care," in *AWHONN's Perinatal Nursing*; James & Suplee, 2021)

- Patients having a cesarean birth should be provided the same level of care as other patients having major abdominal surgery. Perinatal units should have policies on monitoring patients with PCA medication pumps or opiates via epidural catheter. These policies should include specific protocols for increased monitoring or patients at high risk for respiratory depression (e.g., unstable medical condition, obesity, obstructive sleep apnea, concomitant administration of opioid analgesics or hypnotics by other routes). Patients with sleep apnea may need to be placed in a monitored bed (e.g., specific vital signs monitored at a central station with 24/7 surveillance) rather than relying on in-room alarms to alert caregivers of abnormal changes in respiratory status.

(*High Alert Medication Feature: Reducing Patient Harm From Opiates*; ISMP, 2007)
(*Practice Guidelines for the Prevention, Detection, and Management of Respiratory Depression Associated with Neuraxial Opioid Administration: An Updated Report by the American Society of Anesthesiologists Task Force on Neuraxial Opioids and the American Society of Regional Anesthesia and Pain Medicine*; ASA, 2016c)

- Patients receiving intrathecal or epidural morphine for postoperative analgesia as part of multimodal analgesic treatment after cesarean birth require assessment of respiratory and sedation status based on preoperative (cardiopulmonary or neurologic comorbidity, class III obesity [BMI $\geq$ 40 kg/m^2], known or suspected obstructed sleep apnea, chronic opioid use, receiving magnesium sulfate, or hypertension) and perioperative (general anesthesia, supplemental IV opioid, concomitant sedating medications, magnesium sulfate administration, desaturation, or event in the PACU) risk factors and dose of medication (ultra-low-dose intrathecal morphine [$\leq$0.05 mg] or epidural morphine [$\leq$1 mg], low-dose intrathecal morphine [>0.05 to $\leq$0.15 mg] or epidural morphine [>1 mg to $\leq$3 mg], or high-dose intrathecal morphine [> 0.15 mg] or epidural morphine [> 3 mg]) being infused. Low-risk healthy women receiving ultra-low-dose intrathecal or epidural morphine for postoperative analgesia require routine monitoring. For other patients receiving higher-

- **For couplet care assignments, nurses should not have more than 2 women recovering from cesarean birth on the immediate postoperative day as part of the nurse-to-patient ratio of 1 nurse to 3 mother–baby couplets.**

- **For assignments that include only new mothers, nurses should not have more than 5 postpartum women without complications, with no more than 2 to 3 women on the immediate postoperative day who are recovering from cesarean birth, as part of the nurse-to-patient ratio of 1 nurse to 5 postpartum women without complications (when the babies are cared for by other nurses).**

- For assignments that include only new mothers, **nurses should not have more than 3 postpartum patients with complications who are stable** (when the babies are cared for by other nurses).

- **For assignments that include only babies, the ratio should not exceed 1 nurse physically present in the nursery to 5 newborns requiring routine care** (when the mothers are cared for by other nurses).

- At least 1 nurse should be physically present at all times in each occupied basic care nursery when babies are physically present in the nursery.

- After cesarean birth, patients need assistance with newborn care, especially in the immediate recovery period. They should not be required to keep their babies in their rooms if they do not feel up to it and/or a support person is not available to stay with them. Until the new mother recovering from cesarean birth is no longer receiving pain relief via PCA pumps or epidural catheters, babies should not be left alone in mothers' arms without nursing personnel or support people in attendance to reduce risk of a baby falling from the mother's arms and to reduce risk of a mother falling asleep with the baby in the bed. This recommendation also applies to mothers who have been given medication for sleep.

- Availability of lactation consultants 7 days a week is recommended to assist with complex breastfeeding issues. For inpatient care, **1.3 full-time equivalent lactation consultants are recommended per 1,000 well-baby births, and 4.3 full-time equivalent lactation consultants are recommended per 1,000 babies admitted to the NICU.**

- **1 nurse to 1 baby undergoing circumcision or other surgical procedures during the immediate preoperative, intraoperative, and immediate postoperative periods.**

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dose (low-dose or high-dose) neuraxial opioids or those with risk factors, the recommended monitoring for adequacy of ventilation (e.g., respiratory rate, depth of respiration [assessed without disturbing a sleeping patient]), oxygenation (e.g., pulse oximetry when appropriate), and level of consciousness is every 1 to 2 hours for the first 12 to 24 hours and then every 4 hours thereafter while receiving the medication. Until the new mother recovering from cesarean birth is no longer receiving pain relief via PCA pumps or epidural catheters, babies should not be left alone in mothers' arms without nursing personnel or support people in attendance to reduce risk of babies falling from the mother's arms and to reduce risk of a mother falling asleep with the baby in the bed. This recommendation also applies to mothers who have been given medication for sleep.

(*High Alert* Medication Feature: Reducing Patient Harm From Opiates; ISMP, 2007)
(*Practice Guidelines for the Prevention, Detection, and Management of Respiratory Depression Associated with Neuraxial Opioid Administration: An Updated Report by the American Society of Anesthesiologists Task Force on Neuraxial Opioids and the American Society of Regional Anesthesia and Pain Medicine*; ASA, 2016c)
(*Society for Obstetric Anesthesia and Perinatology Consensus Statement: Monitoring Recommendations for Prevention and Detection of Respiratory Depression Associated with Administration of Neuraxial Morphine for Cesarean Delivery Analgesia*; Bauchat et al., 2019)

- Hospitals must implement programs to reduce the risk of patient harm resulting from falls, including identifying types of patients and clinical situations in which the patient is at risk of falling.

(*Comprehensive Accreditation Manual for Hospitals*; TJC, 2021a)
(*Preventing Falls and Fall-Related Injuries in Health-Care Facilities*; TJC, 2015)

- Hourly rounding and close monitoring of the newborn rooming in with the mother is recommended to prevent infant falls, drops, and SUPC. High-risk mothers may require rounding every 30 minutes during nighttime and early morning hours.

(*Preventing Newborn Falls and Drops*; TJC, 2018)
(*Safe Sleep and Skin-to-Skin Care in the Neonatal Period for Healthy Term Newborns* [AAP Clinical Report]; Feldman-Winter et al., 2016)

- Exclusive breast milk feeding is recommended for all mothers and babies as appropriate to their clinical condition. Exclusive breastfeeding for the first 6 months of neonatal life has long been recommended by AAP, ACOG, AWHONN, and the World

The steps involved in the process of a surgical procedure require the presence of a nurse.

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Health Organization. Exclusive breast milk feeding is a Joint Commission Perinatal Core Measure (TJC, 2021d) and is routinely reported by the CDC.

(*Breastfeeding*; World Health Organization, 2021)
(*Breastfeeding and the Use of Human Milk* [Position Statement]; AWHONN, 2021a)
(*Breastfeeding and the Use of Human Milk* [Policy Statement]; AAP, 2012a)
(*Breastfeeding Challenges* [Committee Opinion No. 820]; ACOG, 2021)
(*Breastfeeding Report Card, United States, 2020*; CDC, 2020a)
(*Perinatal Care Measures*; TJC, 2021d)

- Availability of lactation consultants 7 days a week is recommended to assist with complex breastfeeding issues. For inpatient care, 1.3 full-time equivalent lactation consultants are recommended per 1,000 well-baby births, and 4.3 full-time equivalent lactation consultants are recommended per 1,000 babies admitted to the NICU.

(*Professional Lactation Support Staffing in the Hospital Setting* [United States Lactation Consultant Association Position Statement]; Lober et al., 2021)

- Lactation consultants are important members of the perinatal team. They provide encouragement and support for those who choose to breastfeed and provide human milk to their newborns. Each family should have a telephone number and other resources to contact for lactation assistance after hospital discharge.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- Circumcision for newborns is a surgical procedure and requires preoperative assessment, proper patient identification, a time-out procedure, appropriate analgesia, comfort measures, and postoperative assessment and care. Swaddling, sucrose by mouth, and acetaminophen may reduce the stress response but are not sufficient for the operative pain and cannot be recommended as the sole method of analgesia. Although local anesthesia and combination preparations of lidocaine and prilocaine provide some anesthesia benefit, ring blocks or dorsal penile blocks have been proven to be more effective.

(*Comprehensive Accreditation Manual for Hospitals*; TJC, 2021a)
(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*National Patient Safety Goals Effective January 2021 for the Hospital Program*; TJC, 2021c)

- At a minimum, 1 nurse circulator should be dedicated to each patient undergoing a surgical or other invasive procedure and present during the patient's intraoperative experience.

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(*Perioperative Registered Nurse Circulator Dedicated to Every Patient Undergoing a Surgical or Other Invasive Procedure*; AORN, 2019)

Patient Type or Clinical Situation: *Babies Requiring a Higher Level of Care*

Background

The preterm birth rate in the United States rose to 10.23% in 2019, up from 10.02% in 2018, the fifth straight year of increases in this rate (from 9.57% in 2014). Recent natality data highlight trends in preterm births (Martin et al., 2021). The preterm birth rate had declined steadily from 2007 (10.44%) to 2014. Most of the increase in the total preterm birth rate for 2018 to 2019 was among infants born late preterm (34 to 36 6/7 weeks of gestation), up from 7.28% to 7.46%. The early-preterm birth rate (less than 34 weeks) increased from 2.75% in 2018 to 2.77% in 2019. The early-preterm rate was essentially unchanged from 2014 to 2018 but was down from 2.93% in 2007. Changes in the distribution of births at term and later (37 or more weeks gestation) were also observed from 2018 to 2019. The percentage of infants born early term (37 to 38 6/7 weeks) rose by 3% in 2019, from 26.53% to 27.31%, and the full-term (39 to 40 6/7 weeks) birth rate declined, from 57.24% to 57.02%. From 2007 to 2014, in contrast, the early-term birth rate had generally been on the decline and the full-term rate on the rise. Preterm birth rates rose by 2% among non-Hispanic White mothers (from 9.09% to 9.26%), non-Hispanic Black mothers (from 14.13% to 14.39%), and Hispanic mothers (from 9.73% to 9.97%) between 2018 and 2019. In 2019, the preterm birth rate for non-Hispanic Asian mothers was 8.72%. In 2019, 9.3% of babies born in the United States were admitted to a NICU (Martin et al., 2021).

Preterm birth is a common reason for admission to the special care nursery or NICU. Advances in neonatal care have contributed to the ability of babies on the edge of viability to survive after months of intensive inpatient care. These fragile preterm babies are cared for by nurses with expertise in neonatal intensive care. Other common reasons babies are admitted to a special care nursery or NICU include difficult transition to extrauterine life, temperature instability, hypoglycemia, respiratory problems, transient tachypnea of the newborn, unstable vital signs, suspected sepsis, isolation, feeding difficulties, hyperbilirubinemia, anemia, small for gestational age, oxygen therapy, continuous positive airway pressure, mechanical ventilation, cardiac problems, meconium aspiration, birth trauma, and congenital anomalies. These neonatal complications require specialized nursing knowledge and skill.

AWHONN continues to recommend the nurse-to-patient ratios for babies as per the original nurse staffing standards (AAP & ACOG, 1983–2007) and those updated by AWHONN (2010). There has been a significant amount of evidence published during the past 20 years to support adequate nurse staffing in subspecialty NICUs (Levels II, III, and IV) to meet the complex care requirements of critically ill and convalescent infants (NANN, 2021). Neonatal morbidity and mortality are negatively affected when there are not enough nurses to care for babies based on their acuity (Beltempo et al., 2018; Callaghan et al., 2003; K. E. Hamilton et al., 2007; Kaempf et al., 2019; Küng et al., 2019; Lee et al., 2020; Leistner et al., 2013; NANN, 2021; Rogowski et al., 2013; Sink et al., 2011; Tawfik et al., 2020; Watson et al., 2016). *There has been no evidence to suggest these original minimum nurse-to-baby ratios should be increased to include more babies per nurse.* As per NANN (2021), a key difference in the [newborn and] NICU population when compared to most other inpatient populations is that "100% of the [newborn and] NICU population is 100% dependent upon their caregivers for all care and activities of daily life" (p. 3). Babies cared for in subspecialty NICUs range in conditions from the most immature, small, and/or medically complex patients to infants who are growing and convalescing (NANN, 2021).

Classification of care for babies is delineated as follows: *Newborn nursery care* is provided for healthy newborns, generally in their mothers' rooms as appropriate based on individual clinical conditions of mother and baby. Late-preterm babies may be cared for in the newborn nursery or in their mother's room if they are physiologically stable. Late-preterm babies are usually not ill but may require more frequent feeding and more hours of nursing care than term babies. *Continuing care* is provided to convalescing babies who have returned to specialty facilities from an outside intensive care unit or remain in the same facility or nursery but have progressed such that they no longer need intermediate care. *Intermediate care* is provided to sick babies who do not need intensive care but require 6 to 12 hours of nursing care per day. *Intensive care* is provided to severely ill babies who require constant nursing care and continuous cardiopulmonary and other support. The number of nurses required in the NICU is greater than that required in less-acute care nurseries. The nurse-to-baby ratio should be 1 to 1 or 1 to 2 for babies requiring intensive care, based on acuity.

Safe and effective neonatal nursing care requires a sufficient number of qualified nurses to attend to the complex care needs of critically ill and convalescent babies in subspecialty NICUs (Levels II, III, and IV; NANN, 2021). Babies in subspecialty NICUs are especially vulnerable to events requiring emergency measures, such as metabolic disturbances, respiratory emergencies, and cardiovascular events (NANN, 2021). They may require resuscitation at any time during hospitalization; thus, adequate and

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Patient Type or Clinical Situation: *Babies Requiring a Higher Level of Care*

appropriate nurse staffing is essential for the necessary care to be provided in a timely manner (NANN, 2021). Current nursing workloads in these critical care units are unprecedented as patient acuity, technology, and the scope of nursing practice increases. Some clinical situations are resource intensive, including infants who receive continuous positive airway pressure requiring meticulous monitoring of their physiologic status to minimize risk of adverse outcomes such as pneumothorax or nasal trauma and late-preterm infants who may require considerable attention related to enteral feeding (NANN, 2021). Supporting breastfeeding for infants requiring a higher level of care is nursing time intensive and essential to breastfeeding success (AWHONN, 2017; NANN, 2021). Professional nursing resources must be sufficient to provide appropriate care based on the physiologic stability of individual babies to ensure a safe, high-quality standard of nursing care, including parent education, bereavement care, and emergency response (AAP & ACOG, 2017; AWHONN, 2017; NANN, 2021).

Existing Applicable Professional Standards and Guidelines

AWHONN continues to recommend the nurse-to-patient ratios for babies as per the original nurse staffing standards (AAP & ACOG, 1983–2007) and those updated by AWHONN (2010).

- 1 nurse to 3–4 newborns requiring continuing care.
- 1 nurse to 2–3 newborns requiring intermediate care.
- 1 nurse to 1–2 newborns requiring intensive care.
- 1 nurse to 1 newborn requiring multisystem support.
- 1 or more nurses to 1 unstable newborn requiring complex critical care.

NANN recommends minimum nurse staffing for neonatal specialty units (NANN, 2021).

- Situations involving neonatal specialty care for fewer than 6 intermediate care babies or 4 or fewer intensive care babies require a minimum of 2 registered nurses with neonatal expertise and training.

(*RN Staffing in the NICU*, [Position Statement], NANN, 2021)

- Certified lactation consultants should be available to assist mothers of NICU infants with establishing and maintaining lactation.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)
(*Professional Lactation Support Staffing in the Hospital Setting* [United States Lactation Consultant Association Position Statement]; Lober et al., 2021)

Staffing Standards

- **1 nurse to 3–4 newborns requiring continuing care.**
- **1 nurse to 2–3 newborns requiring intermediate care.**
- **1 nurse to 1–2 newborns requiring intensive care.**
- **1 nurse to 1 newborn requiring multisystem support.**
- **1 or more nurses to 1 unstable newborn requiring complex critical care.**
- **Situations involving neonatal specialty care for fewer than 6 intermediate care babies or 4 or fewer intensive care babies require a minimum of 2 registered nurses with neonatal expertise and training.**

Patient Type or Clinical Situation: *Minimum Staffing*

Background

For the purposes of this document, *core staffing* refers to the number of nurses scheduled and actually present on each unit for each shift based on predetermined numbers related to the unit's history of average daily census and acuity. *Minimum staffing* refers to the minimum number of nurses required to be on the unit (or in the hospital with a patient assignment that can be quickly handed off to another nurse so the perinatal nurse can return to the unit immediately) to be ready to care for women who may present for care when there are

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no perinatal patients. Safe nurse-to-patient staffing must consider requisite numbers of registered nurses for minimum unit staffing when there are temporarily no patients.

A pregnant woman who presents for care should be evaluated in a timely fashion (AAP & ACOG, 2017). All hospitals offering labor and birth services should be equipped to perform emergency cesarean births (AAP & ACOG, 2017). The required personnel, including nurses, anesthesia personnel, neonatal resuscitation team members, and obstetric attendants, should be in the hospital or readily available. Any hospital providing an obstetric service should have the capability of responding to an obstetric emergency. The decision-to-incision interval for emergency cesarean birth should be based on the timing that best incorporates maternal and fetal risks and benefits. There are clinical situations such as morbid obesity, eclampsia, cardiopulmonary compromise, or hemorrhage that may require maternal stabilization or additional surgical preparation before an emergency cesarean birth. However, some clinical conditions may require more expeditious birth such as hemorrhage from placenta previa, abruptio placentae, umbilical cord prolapse, and uterine rupture. Therefore, timing is based on maternal and fetal status, local circumstances, and logistics (AAP & ACOG, 2017). For perinatal care, it is recommended that there be two registered nurses continuously available to care for a woman who presents with an obstetric emergency (AAP & ACOG, 2017).

Approximately 7 million women of childbearing age live in counties in the United States with limited to no access to maternity care, yet they give birth to approximately 500,000 babies per year (March of Dimes, 2020). Less than 50% of women in the rural United States have access to perinatal services within a 30-mile drive from their home, and more than 10% of women in rural areas drive 100 miles or more for these services (CMS, 2019). In 2020, 47% of rural hospitals had fewer than 25 staffed beds (American Hospital Association, 2021b). As of January 2022, there were 1,356 critical access hospitals (CAHs) in 45 states in the United States under the Medicare Rural Hospital Flexibility Grant Program (Flex Monitoring Team, 2022). Critical access hospitals must be in rural areas and meet the following criteria: have 25 beds or fewer, be more than 35 miles from another hospital or 15 miles from another hospital in mountainous terrain or areas with only secondary roads, provide 24-hour emergency services 7 days a week, and maintain a 96-hour or less length of stay for acute care patients (CMS, 2021a). According to recent data including CAHs with 10 or more births per year, 38.1% of CAHs offered obstetric services in 2017 and 34.5% in 2018 (American Hospital Association, 2019; Kozhimannil et al., 2020). This number is declining because of multiple factors, including higher rates of uninsured patients, higher amounts of uncompensated care, financial distress, hospital size, and community poverty rates (CMS, 2019). The American Hospital Association (2021b) reported 59% of hospitals that closed in the United States from 2015 to 2019 were rural hospitals. Specialty services are resource intensive. Safe care for mothers and babies requires allocation of sufficient personnel who have experience in caring for the childbearing population. Access to safe perinatal care is imperative for all those who give birth (March of Dimes, 2020). In the context of a small-volume perinatal service, supporting minimum staffing can be operationally and financially challenging (CMS, 2019). However, the availability of the appropriate personnel to provide adequate and timely care and assist in the management of a variety of obstetric problems is a necessary feature of good obstetric care.

At least 2 nurses should be in the hospital and available to care for pregnant women who present for care, even at times when there are no perinatal patients. Two nurses are needed to be able to safely care for a woman who presents with an obstetric emergency that may require cesarean birth (1 nurse circulator and 1 baby nurse, one or both of whom should have obstetric triage, labor, and fetal assessment skills; the baby nurse must be skilled in neonatal resuscitation as per the AAP and AHA [2021] neonatal resuscitation program). A scrub nurse or obstetric/surgical technician should be available in the hospital or on call so that an emergency birth can be accomplished in a timely manner consistent with the patient's clinical situation (AAP & ACOG, 2017). Another labor nurse should be called in to be available to care for any other pregnant woman who may present for care while the first 2 nurses are caring for the woman undergoing cesarean birth and during the postanesthesia recovery period. In small-volume obstetric services, perinatal nurses may be cross-trained to a variety of other specialty areas to maximize in-hospital availability when needed to care for perinatal patients and allow for productive time spent on other activities when there are no perinatal patients. Nurses in small-volume perinatal services may have a "mixed" patient assignment (e.g., 1 low-risk woman in early labor [not receiving IV oxytocin] or 1 woman being seen as an OB triage patient to rule out labor, in addition to 1 low-risk mother–baby couplet). An on-call system or contingency plan is a key factor in allowing flexibility to support adequate nurse staffing on small-volume perinatal units.

Existing Applicable Professional Standards and Guidelines	Staffing Standards
• A pregnant woman who presents for care should be evaluated in a *timely* fashion. They should be cared for according to triage acuity rather than time of arrival. Minimally, the evaluation by an obstetric nurse or health care provider during the first encounter should include assessment of maternal vital signs, FHR, uterine contractions, reason for presentation, status of labor (e.g., presence of contractions, vaginal bleeding, membrane status), woman's perception of fetal movement, and any high-risk medical or obstetric condition as identified by a review of history or the woman's report. Further evaluation includes assessment for and to rule out vaginal bleeding, acute abdominal pain, temperature of 100.4 °F or higher, abnormal maternal heart rate or respiratory rate, preterm labor, preterm premature rupture of membranes, hypertension, indeterminate or abnormal FHR pattern, signs of imminent birth, and inability to detect FHR. If these findings are present or suspected, the responsible obstetric care provider should be promptly informed. (*Guidelines for Perinatal Care*, AAP & ACOG, 2017) • Any patient suspected to be in labor or who has ruptured membranes or vaginal bleeding should be evaluated *promptly* in an obstetric service area. Minimally, the following should be assessed: estimated due date; maternal vital signs; frequency and duration of uterine contractions; documentation of fetal well-being; cervical dilatation and effacement or cervical length as ascertained by transvaginal ultrasonography, unless contraindicated (such as with placenta previa and preterm premature rupture of membranes); fetal presentation and station of the presenting part; status of the membranes; estimated fetal weight; history of allergies; use of any medications; and time, content, and amount of most recent food or fluid ingestion. Along with these assessment data, date and time of the patient's arrival and notification of the primary obstetric care provider should be included in the medical record. (*Guidelines for Perinatal Care*, AAP & ACOG, 2017) • All hospitals offering labor and delivery services should be equipped to perform emergency cesarean births. The required personnel, including nurses, anesthesia personnel, neonatal resuscitation team members, and obstetric attendants, should be in the hospital or readily available. Any hospital providing an obstetric service should have the capability of responding to an obstetric emergency. (*Guidelines for Perinatal Care*, AAP & ACOG, 2017)	• **2 nurses are required in the hospital as minimum staffing, even when there are no perinatal patients;** 2 nurses are needed to be able to safely care for a woman who presents with an obstetric emergency that may require cesarean birth (1 nurse circulator and 1 baby nurse, one or both of whom should have obstetric triage, labor, and fetal assessment skills; the baby nurse must be skilled in neonatal resuscitation as per the AAP and AHA [2021] Neonatal Resuscitation Program). A scrub nurse or obstetric/surgical technician should be available in the hospital or on call such that an emergency birth can be accomplished in a timely manner consistent with the patient's clinical situation. Another labor nurse should be called in to be available to care for any other patient who may present while the first 2 nurses are caring for the woman undergoing cesarean birth and during postanesthesia recovery period.

Patient Type or Clinical Situation: *Contingency Planning*

Background

Staffing requirements based on patient census and acuity are dynamic and may change dramatically at times. There may be some situations in which there are not enough nurses to safely meet the needs of the service based on patient census and acuity, even with the most careful planning and robust prediction methods. A contingency plan on all shifts that may include an on-call or standby system should be in place to cover situations when existing staffing becomes inadequate (TJC, 2021a). Women who present for care with emergency clinical conditions or in spontaneous labor should be cared for as best as possible in such situations until more

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Patient Type or Clinical Situation: *Contingency Planning*

nurses can be called in and arrive to provide assistance and assume patient care. Elective procedures such as repeat cesarean birth for women not in active labor, elective labor inductions, postpartum tubal ligations, and circumcisions should be deferred until there is an adequate number of nurses to safely meet the needs of the service. This may also include discontinuing oxytocin infusion for women having elective labor induction. Some, but not all, perinatal services have an on-call or standby system that can be activated; however, on-call nurses may not arrive for 30 to 60 minutes. A checklist or protocol may be useful in this context because several actions must be done as soon as possible to promote safe care including securing additional resources and reducing care demands. Details of essential steps to be taken in various situations, contact information of team leaders, and a link to the contact information for other members of the perinatal team should be included. See Appendix D for a temporary nurse staffing contingency plan due to unexpected increases in census and acuity. This type of framework can be used by leaders in individual perinatal services and may include communication strategies, calling for help, patient care reassignments, prioritizing patient care based on immediate needs (ideally through a multidisciplinary team process), developing immediate and intermediate solutions, and debriefing once the crisis has resolved. Available beds and space can limit care capacity. See Appendix E for an OB overcapacity trigger grid that can be used to assess capacity and make decisions when surges in patient census occur.

Some Level II, Level III, and Level IV neonatal services and maternity services routinely accept transfers from other facilities when the condition of the mother, fetus, or baby requires a higher level of care than can be provided at the site of patient presentation (AAP, 2012b, reaffirmed 2015; ACOG et al., 2019). There may be situations in which the number of nurses, midwives, physicians, and/or available beds preclude acceptance of such patients, and the potential receiving unit must divert patients temporarily to other high-risk perinatal centers. Some neonatal and maternity services transfer mothers and babies to a higher level of care as needed (AAP, 2012b, reaffirmed 2015; ACOG et al., 2019). Nurse staffing of neonatal and maternal transport teams is essential in planning and budgeting staffing in perinatal services that perform these types of transfers.

Unanticipated increases in patient census and acuity can occur for a variety of reasons (e.g., conditions in many perinatal services during the COVID-19 pandemic). There are events that affect the entire hospital. Plans for emergency staffing are needed for patient surges and shortages of health care personnel, including nurses, that may result from disaster events. Disasters that can have a negative effect on adequate nurse staffing can be *weather-related*, such as hurricanes, floods, and tornados; *environmental,* such as fires, chemical spills or exposure, gas release, loss of electrical power, or earthquakes; *infectious (biohazardous)*, such as the COVID-19 pandemic, anthrax, and the Ebola epidemic; or *social/human made*, such as riots, protests, strikes, bombings, shootings, and terrorist attacks. Any one of these situations can quickly change the nurse-to-patient ratios required for safe care (e.g., one-to-one care at the bedside of a laboring woman or baby in the NICU in the case of a power outage), negatively affect the ability of nurses to report to the hospital (e.g., a hurricane, flood, or tornado), or require evacuation (e.g., fire, flooding, or lack of electrical power). The disaster-related implications for nurse staffing can be time-limited or ongoing for many weeks or months. In these types of crisis situations, nurses are tasked with doing the best they can while focusing on the immediate needs of the patient. Elective procedures should be deferred and EMR documentation should be as time allows. Patients can be discharged early, and virtual care via telehealth visits and telephone calls can be implemented (ACOG, 2017). Nurses are key leaders and play a central role in contingency planning, organizing the response, deploying resources, and rearranging unit operations during disaster events (ANA, 2021; NASEM, 2021).

Hospital leaders are responsible for making sure there is adequate nurse staffing, maintaining a safe working environment, providing enough personal protective equipment, and offering physical and mental health support services for disaster events that are sustained (NASEM, 2021). Hospital disaster plans need to accommodate changes in clinical duties and nurse staffing to meet demand and identify alternative nurse staffing resources to aid the health, safety, and security needs of their employees, affiliated practitioners, and patient population during an emergency or disaster situation, including emerging infectious disease outbreaks (CMS, 2021d). Emergency management plans for disasters are required by TJC (2021a), including details for staffing. An overall disaster preparedness plan is essential for all areas of the hospital and all personnel including perinatal services (AAP & ACOG, 2017). Disasters disproportionally affect vulnerable, technology-dependent patients, including preterm and critically ill newborns in the NICU (AAP & AAP, 2017). See Appendix F for a sample OB disaster plan and Appendix G for a sample neonatal disaster plan.

Existing Applicable Professional Standards and Guidelines	Staffing Standards
• A contingency plan for all shifts that may include an on-call or standby system should be in place to cover situations when existing staffing is inadequate.	• **A contingency plan for all shifts that may include an on-call system should be in place to cover situations when existing staffing is inadequate.**

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(*Comprehensive Accreditation Manual for Hospitals*; TJC, 2021a)

- An overall disaster preparedness plan is essential for all areas of the hospital and all personnel including perinatal services.

(*Guidelines for Perinatal Care*; AAP & ACOG, 2017)

- A Medicare-participating hospital that has specialized capabilities or facilities (such as burn units, shock–trauma units, NICUs, or [with respect to rural areas] regional referral centers as identified by the Secretary in regulation) shall not refuse to accept an appropriate transfer of an individual who requires such specialized capabilities or facilities if the hospital has the capacity to treat the individual.

(*Medicare Program; Emergency Medical Treatment and Labor Act (EMTALA): Applicability to Hospital Inpatients and Hospitals With Specialized Capabilities*; CMS, 2012)

- Hospitals must have an emergency preparedness program that describes a facility's comprehensive approach to meeting the health, safety, and security needs of their staff and patient population during an emergency or disaster situation, including emerging infectious disease outbreaks.

(*Updated Guidance for Emergency Preparedness—Appendix Z of the State Operations Manual*; CMS, 2021d)

- Hospital leaders are responsible for making sure there is adequate nurse staffing, maintaining a safe working environment, providing enough personal protective equipment, and offering physical and mental health support services for disaster events that are sustained.

(*The Future of Nursing 2020–2030: Charting a Path to Achieve Health Equity*; NASEM, 2021)

- Obstetricians and other obstetric care providers should consider the option of altering obstetric services to function with less resource use (e.g., early hospital discharge after birth and enhanced use of virtual care such as telephone and telemedicine triage, with attention to documentation requirements).

(*Hospital Disaster Preparedness for Obstetricians and Facilities Providing Maternity Care* [Committee Opinion]; ACOG, 2017)

- Hospitals providing Level II, Level III, and Level IV neonatal services and maternity services should determine **criteria for temporary diversion** of patients when there is not capacity to accept and treat further patients.

- **Elective procedures** such as repeat cesarean birth for women not in active labor, elective labor inductions, postpartum tubal ligations, circumcisions, etc. **should be deferred until there are adequate nurses to safely meet the needs of the service**. This may also include discontinuing the oxytocin infusion for women having elective labor induction.

Note. AAP = American Academy of Pediatrics; ACOG = American College of Obstetricians and Gynecologists; AHA = American Heart Association; AHRQ = Agency for Healthcare Research and Quality; ASA = American Society of Anesthesiologists; ASPAN = American Society of PeriAnesthesia Nurses; AWHONN = Association of Women's Health, Obstetric and Neonatal Nurses; BMI = body mass index; CAH = critical access hospital; CDC = Centers for Disease Control and Prevention; CMS = Centers for Medicare and Medicaid Services; ED = emergency department; EFM = electronic fetal monitoring; FHR = fetal heart rate; FTE = full-time equivalent; IBCLC = International Board Certified Lactation Consultant; ISMP = Institute for Safe Medication Practices; IV = intravenous; LDR = labor–delivery–recovery; LDRP = labor–delivery–recovery–postpartum; NANN = National Association of Neonatal Nurses; NASEM = National Academies of Sciences, Engineering, and Medicine; NDQNI = National Database of Quality Nursing Indicators; OB = obstetric; PACU = postanesthesia care unit; PCA = patient-controlled analgesia; PICC = peripherally inserted central catheter; RCOG = Royal College of Obstetricians and Gynaecologists; SMFM = Society for Maternal–Fetal Medicine; SMM = severe maternal morbidity; SOGC = Society of Obstetricians and Gynaecologists of Canada; SUPC = sudden unexpected postnatal collapse; TJC = The Joint Commission.

SUMMARY

Standards for Professional Registered Nurse Staffing for Perinatal Units

Standards for registered nurse-to-patient ratios for contemporary perinatal practice are listed in Tables 1 and 2. Detailed discussions of supportive evidence and rationales have been provided for each of the standard acuity-based nurse-to-patient ratios for the types of patients and clinical situations commonly encountered in the perinatal setting. See Appendix H for examples of nurse staffing assignment grids based on the hospital level of maternal and neonatal care. Current conditions and multiple continuing changes in perinatal care and their associated influence on nurse staffing are the framework for these standards. The goal is to promote a safe care environment and allow perinatal nurses to spend adequate time at the bedside caring for all those who give birth and their babies. Safe, high-quality perinatal nursing care includes carefully listening to patients, responding to their concerns, and providing respectful maternity care for everyone who gives birth. There are ample data that nurse staffing affects patient outcomes. All those who give birth and their babies deserve and expect safe, high-quality nursing care associated with the nurse staffing standards outlined here. The expectation is that perinatal nurse leaders, supported by hospital administrators, will budget for, plan, and operationalize these nurse staffing standards for nurse-to-patient ratios on a routine basis.

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APPENDICES

When AWHONN members were surveyed about their recommendations for updating the AWHONN nurse staffing standards, many specifically asked for implementation tools (Simpson et al., 2021). The AWHONN nurse staffing task force assembled appendices for that purpose. They include acuity grids, staffing assessment tools, contingency plans, disaster plans, and examples of staffing assignments based on hospital level of neonatal or maternal care. Acuity grids can be used to classify types of patients and clinical situations linked to safe nurse-to-patient ratios (Appendix A). Ideally, a color-coded acuity system of patients and their nursing care needs can be embedded into the electronic health record and patient census list so charge nurses and other nurse leaders can easily visualize care needs and make nurse-patient assignments accordingly (Simpson, 2013). The EMR can be used to integrate nurse staffing data with historical patient data to make staffing decisions in real-time and project nurse staffing needs that are consistent with the AWHONN nurse staffing standards (L. W. Jones & Hall, 2022). Nurse staffing needs change dynamically as patient census and acuity changes. Nurse staffing assessment tools can be used on a real-time basis or periodically (e.g., every 4 hours) to ensure that there are adequate numbers of nurses to meet patient care requirements (Appendix B). Predicting nurse staffing needs based on historical patient characteristics and unit operations can be helpful in promoting safe staffing (Simpson, 2015). A tool and worksheets have been included as a framework for planning and budgeting for nurse staffing consistent with the AWHONN nurse staffing standards (Appendix C). A checklist and outline for contingency planning in response to unexpected increases in census and acuity has been added (Appendix D). At times, patient census and acuity beyond available nurses, space and beds limit the ability to provide safe care. Appendix E is an example of an obstetric (OB) service overcapacity trigger tool that can help to guide decision-making. Appendices E and F are examples of disaster plans for OB and neonatal services.

Multiple examples of nurse staffing assignment grids based on the American College of Obstetricians and Gynecologists and the Society for Maternal-Fetal Medicine (ACOG, SMFM et al., 20219) hospital level of maternal care and the American Academy of Pediatrics (AAP, 2012b; reaffirmed 2015) levels of neonatal care are included in Appendix H. These examples include descriptions of units, their productivity, nurses and other personnel and their skills, and patients, including characteristics that may affect decisions about staffing assignments. Descriptions are included in recognition of the complexity of the obstetrical unit. Level of Maternal Care Definitions by ACOG and SMFM are used to identify a specific unit's capabilities. Not all states have adopted these definitions; however, they provide common terminology. Maternity and neonatal units are complex and vary significantly based on their patient population and level of care provided. They may include an emergency department, an OB triage unit, an inpatient unit serving age groups from birth to ages 50-plus, patients with numerous co-morbidities, a perioperative service with surgical suites and a postanesthesia care unit (PACU), and/or an intensive care unit. Complexity of maternity and neonatal units is a factor in planning for safe nurse staffing. Per the American Nurses Association (ANA, 2020), nurse characteristics used in determining nurse staffing are as follows: licensure, experience with the population being served, level of overall nursing experience (e.g., continuum from novice to expert), competence with technologies and clinical interventions, professional certification(s), educational preparation, language capabilities, and organizational experience. Required skill sets vary based on unit needs. See AWHONN's *Basic, High-Risk, and Critical Care Intrapartum Nursing: Clinical Competencies and Education Guide* (2019) for minimum standards.

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APPENDIX CONTENTS

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APPENDIX A: PERINATAL ACUITY GRIDS

Perinatal Acuity: Antepartum and Postpartum				
Level	**Nurse-to-Patient Ratio**	**Type of Patient / Clinical Situation**	**Gaps**	**Nurses Needed**
A	2 to 1	Critically ill, hemodynamically unstable		
B	2 to 2	Birth (cesarean or vaginal) and immediate recovery period 30 to 60 min until the critical elements are met for both mother and baby, then 1 nurse to 1 mother-baby couplet (2 patients) in continuous bedside attendance for the remainder of the 2-hour recovery process		
C	1 to 1	Initial OB triage assessment, unstable antepartum patients, epidural initiation (first 30 min), oxytocin administration for labor induction or augmentation, magnesium sulfate administration ([first hour at the bedside] during labor and immediately postpartum), second-stage labor pushing, some indeterminate FHR patterns; all abnormal FHR patterns, labor in the shower or tub (if supportperson is unavailable to stay with patient), trial of labor for VBAC, intermittent auscultation during labor, morbid obesity such that continuous EFM is challenging and requires repeated bedside monitoring adjustments; women in labor with multiples, preeclampsia, or diabetes (requiring blood glucose assessment); women who require frequent and intense assessment, monitoring, and care		
D	1 to 2	Cervical ripening with pharmacologic agents/spontaneous labor with adequate pain control		
E	1 to 3	Ongoing obstetrical triage, rule out labor, nonstress test, antepartum patients in stable condition		

Perinatal Acuity: Mother-Baby Couplets				
Level	**Nurse-to-Patient Ratio**	**Type of Patient/Clinical Situation**	**Gaps**	**Nurses Needed**
A	2 to 1	Critically ill, hemodynamically unstable		
B	2 to 2	Birth (cesarean or vaginal) and immediate recovery period 30 to 60 min until the critical elements are met for both mother and baby, then 1 nurse to 1 mother-baby couplet (2 patients) for the remainder of the 2-hour recovery process		
F	1 to 2 mother-baby couplets (4 patients)	Mother-baby couplets including 1 mother-baby couplet where the mother is receiving IV magnesium sulfate; mothers and/or babies who need frequent and intensive assessment and monitoring		
G	1 to 3 mother-baby couplets (6 patients) 1 to 5 mothers or 1 to 5 babies	Healthy mother-baby couplets (should not include more than 2 mother-baby couplets on day of cesarean birth) In hospitals where mothers and babies are assigned to separate nurses		

Perinatal Acuity: Special Care Nursery/Neonatal Intensive Care Unit				
Level	**Nurse-to-Patient**	**Type of Patient / Clinical Situation**	**Gaps**	**Nurses Needed**
	Ratio			
A	2 to 1	Critically ill, hemodynamically unstable newborn requiring complex care		
C	1 to 1	Newborn requiring multisystem support; newborn undergoing circumcision or other surgical procedures during the immediate preoperative, intraoperative, and immediate postoperative periods		
D	1 to 1–2	Newborn requiring intensive care		
E	1 to 2–3	Newborns requiring intermediate care		
F	1 to 3–4	Newborns requiring continuing care		
G	1 to 5 babies	Healthy newborns in the nursery requiring only routine care whose mothers cannot or do not desire to keep their baby in the postpartum room; there should be at least 1 nurse physically present at all times in each occupied basic care nursery when babies are physically present in the nursery		

Appendix A is adapted from Simpson, K. R. (2013). Perinatal acuity tool. MCN, *The American Journal of Maternal Child Nursing*, 38(3), 191. https://doi.org/10.1097/NMC.0b013e318285a008. Used with permission.

APPENDIX B: NURSE STAFFING GAP ANALYSIS TOOL

Date/Time	Summary of Current Staffing and Gaps	Yes/No	Gap: # of Nurses Needed
Nurse-to-Woman Ratio Nurse-to-Baby Ratio	**Patient Type/Clinical Situation**		
Antepartum			
1 to 2–3	women during nonstress testing		
1 to 1	woman presenting for initial obstetric triage		
1 to 2–3	women in obstetric triage after initial assessment and in stable condition		
1 to 3	women with antepartum complications in stable condition		
1 to 1	woman with antepartum complications who is unstable		
1 to 1	continuous bedside attendance for woman receiving IV magnesium sulfate for the first hour of administration for preterm labor prophylaxis and no more than 1 additional couplet or woman for a nurse caring for a woman receiving IV magnesium sulfate in a maintenance dose		
1 to 2	women receiving pharmacologic agents for cervical ripening		
Intrapartum			
1 to 1	woman with medical (such as diabetes, pulmonary or cardiac disease, or morbid obesity) or obstetric (such as preeclampsia, hypertensive crisis, multiple gestation, fetal demise, some indeterminate and all abnormal FHR patterns, having a trial of labor attempting vaginal birth after cesarean birth) complications during labor		
1 to 1	woman receiving oxytocin during labor		
1 to 1	woman laboring with minimal to no pain relief or medical interventions		
1 to 1	woman whose fetus is being monitored via intermittent ausculation		
1 to 1	continuous bedside nursing attendance to woman receiving IV magnesium sulfate for the first hour of administration; 1 nurse to 1 woman ratio during labor and until at least 2 hours postpartum and no more than 1 additional couplet or woman in the patient assignment for a nurse caring for a woman receiving IV magnesium sulfate during postpartum		
1 to 1	continuous bedside nursing attendance during initiation of regional anesthesia until condition is stable (at least for the first 30 minutes after initial dose)		
1 to 1	continuous bedside nursing attendance to woman during the active pushing phase of second-stage labor		
1 to 2	women in labor without complications		
2 to 1	birth; 1 nurse responsible for the mother and 1 nurse whose sole responsibility is the baby		
Postpartum and Newborn Care			
1 to 1	continuous bedside nursing attendance to woman in the immediate postoperative recovery period (for at least 2 hours)		
1 to 3	mother-baby couplets after the 2-hour recovery period (with consideration for assignments with mixed acuity rather than all recent post-cesarean cases)		

1 to 2	women on the immediate postoperative day who are recovering from cesarean birth as part of the nurse to patient ratio of 1 nurse to 3 mother-baby couplets		
1 to 5	women postpartum without complications (no more than 2–3 women on the immediate postoperative day who are recovering from cesarean birth as part of the nurse-to-patient ratio of 1 nurse to 5 women without complications); their newborns are cared for by another nurse		
1 to 3	women postpartum with complications who are stable		
1 to 5	healthy newborns in the nursery requiring only routine care whose mothers cannot or do not desire to keep their baby in the postpartum room; their mothers are cared for by another nurse		
1	at least 1 nurse physically present at all times in each occupied basic care nursery when babies are physically present in the nursery		
1 to 1	newborns undergoing circumcision or other surgical procedures during the immediate preoperative, intraoperative, and immediate postoperative periods		
1 to 3–4	newborns requiring continuing care		
1 to 2–3	newborns requiring intermediate care		
1 to 1–2	newborns requiring intensive care		
1 to 1	newborn requiring multisystem support		
1 or more to 1	unstable newborn requiring complex critical care		
1	at least 1 nurse available at all times with skills to care for newborns who may develop complications and/or need resuscitation		
2	situations involving neonatal specialty care for fewer than 6 intermediate-care babies or 4 or fewer intensive care babies require a minimum of 2 registered nurses with neonatal expertise and training		

APPENDIX C: PREDICTIVE LABOR-BIRTH-RECOVERY UNIT STAFFING MODEL TOOL AND WORKSHEETS

For detailed instructions on how to gather and analyze these data to predict nursing hours needed for staffing in L&D, see: Simpson, K. R. (2015). Predicting nurse staffing needs for a labor and birth unit in a large volume perinatal service. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 44*(2), 329–338.

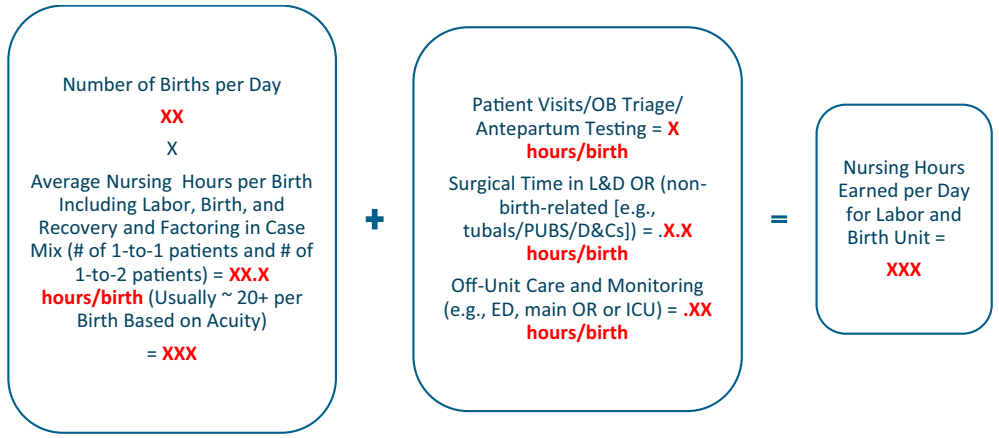
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Data Point	Results
Ratio of patient visits to births	
Average number of triage visits per birth (excluding presentation for birth)	
Average length of stay (LOS) for obstetric (OB) triage patients	
Average number of nursing OB triage hours per birth (excluding presentation for birth)	
Percent of total patients with LOS > 36 hours on labor unit (high-risk antepartum patients)	
Average LOS for high-risk antepartum patients on labor unit	
Average number of births on weekdays	
Average number of births on weekends	
Percentage of total patients with spontaneous labor	
Average intrapartum LOS for women having spontaneous labor	
Percentage of total patients who have cervical ripening with pharmacologic agents and labor induction with oxytocin	
Average intrapartum LOS for women having cervical ripening with pharmacologic agents and labor induction with oxytocin	
Percentage of total patients with induced labor	
Average intrapartum LOS for women having induction with oxytocin without cervical ripening	
Percentage of vaginal births (excluding extended-stay high-risk antepartum patients)	
Average LOS for women who labor and give birth vaginally (excluding extended-stay high-risk antepartum patients)	
Percentage of cesarean births (excluding extended-stay high-risk antepartum patients)	
Average LOS for women who labor and give birth via cesarean (excluding extended-stay high-risk antepartum patients)	
Average LOS for women giving birth via scheduled cesarean (non-labor)	
Average nursing hours per day for non-birth-related surgical time (e.g., percutaneous umbilical blood sampling [PUBS] or dilation and curettage [D&Cs]; could also include tubal ligations)	

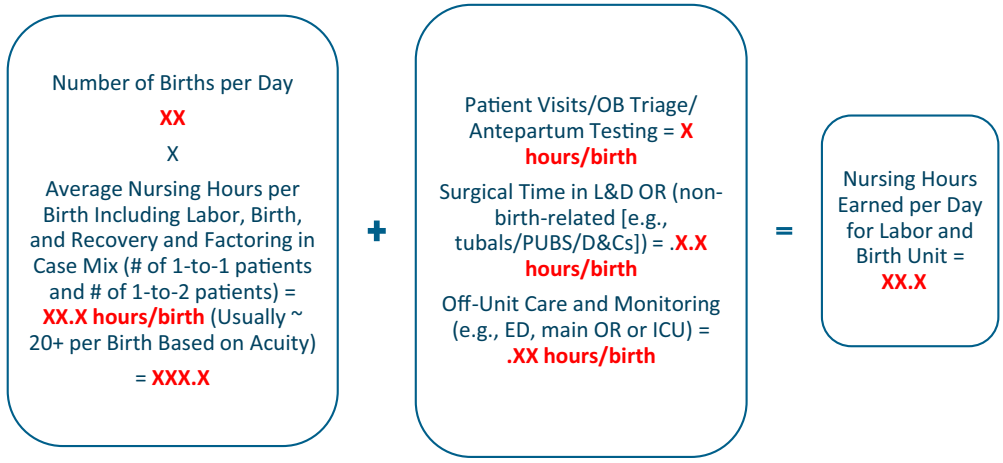
Average nursing hours per birth for non-birth surgical time	
Average nursing hours per day for off-unit care and monitoring (e.g., ED, main surgery department or ICU)	
Average nursing hours per birth for off-unit care and monitoring	
Case mix: percentage of patients who require 1 nurse to 1 woman care	
Case mix: patients who require 2 nurses to 1 woman care (birth)	

Data to Calculate Standard Nursing Hours per Birth: Example for Labor, Birth, Recovery Unit

	Number of Patients	**X**	**Length of Stay (LOS) on Labor Unit**	=	**Nursing Hours**
Patients with intrapartum LOS > 36 hours	n = X women	X	X hours	=	X hours
Vaginal birth excluding extended LOS group	n = X women	X	X hours	=	X hours
Cesarean birth excluding extended LOS group	n = X women	X	X hours	=	X hours
Totals (should equal total number of births)	N =			=	Total nursing hours
Divide total nursing hours by total number of births				=	nursing hours per birth



Weekdays



Weekends

FIGURE 1 Calculation of Total Patient Care Hours to Determine Nurse Staffing Budgetary Requirements for Labor, Birth, Recovery (LDR) Unit on Weekdays and on Weekends: Numbers in red indicate data based on calculations from example LDR Unit.

Data Components of Predictive Staffing Model: Example for Labor, Birth, Recovery Unit Sample Completed Worksheets (High Volume Labor, Birth, Recovery Unit)

Data Point	Results
Ratio of patient visits to births	3 to 1
Average number of triage visits per birth (excluding presentation for birth)	2 to 1
Average length of stay (LOS) for obstetric (OB) triage patients	2.5 hours
Average number of nursing OB triage hours per birth (excluding presentation for birth) 2 visits X 2.5 hours LOS	5 hours
Percentage of total patients with LOS > 36 hours on labor unit (high-risk antepartum patients)	15%
Average LOS for high-risk antepartum patients on labor unit	98 hours
Average number of births on weekdays	25
Average number of births on weekends	14
Percentage of total patients with spontaneous labor	50%
Average intrapartum LOS for women having spontaneous labor	8 hours
Percentage of total patients who have cervical ripening with pharmacologic agents and labor induction with oxytocin	6%
Average intrapartum LOS for women having cervical ripening with pharmacologic agents and labor induction with oxytocin	22 hours
Percentage of total patients with induced labor	30%
Average intrapartum LOS for women having induction with oxytocin without cervical ripening	18 hours
Percentage of vaginal births (excluding extended-stay high-risk antepartum patients)	65%
Average LOS for women who labor and give birth vaginally (excluding extended-stay high-risk antepartum patients)	11.1 hours
Percentage of cesarean births (excluding extended-stay high-risk antepartum patients)	35%
Average LOS for women who labor and give birth via cesarean (excluding extended-stay high-risk antepartum patients)	15.4 hours
Average LOS for women giving birth via scheduled cesarean (non-labor)	5 hours
Average nursing hours per day for non-birth-related surgical time (e.g., percutaneous umbilical blood sampling [PUBS] or dilation and curettage [D&Cs]; could also include tubal ligations)	0.5 hours
Average nursing hours per birth for non-birth surgical time (0.5 hours per day/182.5 hours per year/0.02 hours per birth)	0.02 hours
Average nursing hours per day for off-unit care and monitoring (e.g., ED, main surgery department or ICU)	1 hours
Average nursing hours per birth for off-unit care and monitoring (1 hour per day/365 hours per year/0.04 hours per birth)	0.04 hours
Case mix: percentage of patients who require 1 nurse to 1 woman care	50% to 65% at any one time
Case mix: patients who require 2 nurses to 1 woman care (birth)	~ 1 patient per hour

Data to Calculate Standard Nursing Hours per Birth: Example for Labor, Birth, Recovery Unit

	Number of Patients	Length of Stay (LOS) on Labor Unit	Nursing Hours
Patients with intrapartum LOS > 36 hours (range: 37 hours to 5 weeks, 6 days)	n = 1,200 women	98.0 hours	117,600
Vaginal birth excluding extended LOS group	n = 4,420 women	11.1 hours	49,062
Cesarean birth excluding extended LOS group	n = 2,380 women	15.4 hours	36,652
Totals	N = 8,000		203,314
Total nursing hours divided by total women giving birth			25.4 nursing hours per birth

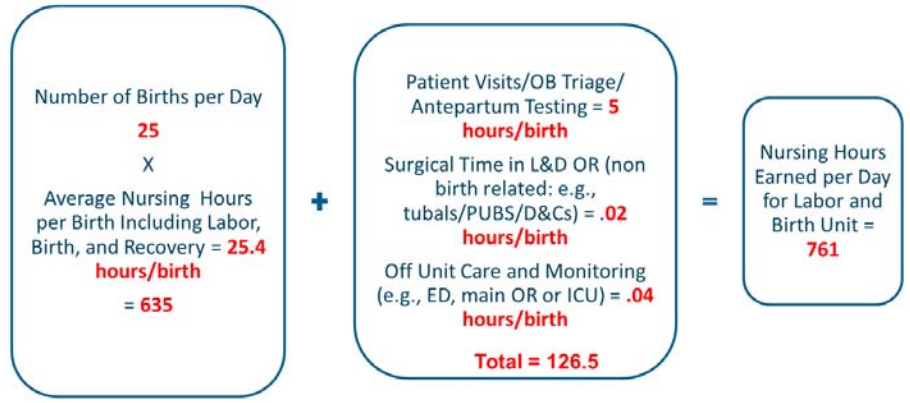


FIGURE 2 Calculation of Total Patient Care Hours to Determine Nurse Staffing Budgetary Requirements for Labor, Birth, Recovery (LDR) Unit on Weekdays and on Weekends: Numbers in red indicate data based on calculations from example LDR Unit.

Appendix C has tables and figures modified from:

Simpson, K. R. (2015). Predicting nurse staffing needs for labor and birth unit in a large-volume perinatal service. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 44(2), 329–338. https://doi.org/10.1111/1552-6909.12549. Used with permission.

APPENDIX D: TEMPORARY NURSE STAFFING CONTINGENCY PLAN DUE TO UNEXPECTED INCREASES IN CENSUS AND ACUITY

At times, despite the best predictions and contingency planning, the needs of the perinatal service temporarily exceed the nurse staffing resources available. Nurse staffing needs can change abruptly in the context of patient surges, emergencies, or disaster events. Some, but not all, perinatal services have an on-call system that can be activated; however, on-call nurses may not arrive for 30 to 60 minutes. A checklist or protocol may be useful in this context because several actions are needed as soon as possible to promote safe care including obtaining additional resources and reducing care demands. In these types of crisis situations, nurses are tasked with doing the best they can while focusing on the immediate needs of the patient. A checklist or protocol may include essential steps to be taken in various situations, contact information of team leaders, and a link to the contact information for other members of the perinatal team. This is a flexible framework that can be used and applied to individual perinatal services.

Communication

Once the charge nurse is made aware of or identifies the situation, communication with the nurse manager or manager on call is essential. Maintain communication between the staff nurses, charge nurses, nurse manager, nurse director, nurse-midwives, and physicians during the process. Maintain and update a list of contact information for the leadership team.

Ask for Help/Reassign Nurses

Although many hospitals do not have nurses on other units who are skilled in nursing care during labor and birth or for mother-baby couplets, in some units this may be an option. Some perinatal services have nurses who are cross-trained to all areas of the perinatal service and who can be reassigned or asked to fill in to cover patient care needs until the situation is resolved. Members of the nursing leadership team can be reassigned to patient care until the situation is resolved. If nurses have been floated to other units, they can be called back to the unit. Ancillary care givers such as nurses' aides, unit secretaries, OB techs, and other types of unlicensed assistive personnel can be extremely helpful. If the conditions causing the mismatch between patient care needs and available nurse staffing continue, provide food and drink to nurses unable to take a break to support nurses in a practical way.

Prioritize Care Based on Needs/Temporarily Defer Elective Procedures

Elective induction of labor, scheduled cesarean birth, scheduled external version, postpartum tubal ligations, and circumcisions may need to be deferred until there are enough nurses. The responsible nurse-midwife or physicians should be notified. Patients can be called before they come to the hospital. Depending on the severity of the situation, it may be necessary to temporarily discontinue IV oxytocin for an already-underway elective induction of labor. Unit policies for induction and augmentation of labor with oxytocin should include a statement about discontinuing the oxytocin infusion when there are not enough nurses to assess maternal-fetal status every 15 minutes. Early discharge of healthy mothers and babies may be an option with follow-up virtual care via telehealth visits and telephone calls.

Prioritizing care is ideally accomplished through an interdisciplinary team process. Board rounds or huddles with the charge nurse and other members of the care team including, but not limited to, staff nurses, nurse-midwives, resident physicians in training, anesthesia providers, OB hospitalists, and neonatal providers are approaches to share information and make plans to cover patient needs.

Potential Solutions

On-call activation if applicable
Deferring or delaying elective procedures

Temporarily stopping IV infusion for elective induction of labor
Reassigning nurses
Obtaining ancillary personnel
Group communication technology strategies such as calls or texts outlining the situation and asking for help
Diversion temporarily to other hospitals' perinatal services
Early discharge of healthy mothers and babies with follow-up virtual care via telehealth visits and telephone calls

Debrief

What could be done to avoid this situation in the future?
Was it predictable?
What could have been done better?
What should be planned when/if this happens again in the future?

APPENDIX E: EXAMPLE OF AN OB OVERCAPACITY TRIGGER GRID

Green	Yellow	Orange	Pink	Lavender
Beds Available -normal operation -business as usual -no patient holds	**Bed Availability Near Census** -L&D or MB bed availability is less than current patient census -Awaiting births and discharges -No holds	**Bed Availability < Census** -MB couplets holding in L&D for MB bed < 2 hours -medically indicated labor inductions holding in Triage < 2 hours -non-urgent (MFTI Priority 4), scheduled (MFTI Priority 5) waiting in lobby < 2 hours	**SURGE Capacity** -Active labor/epidural patients in triage and/or delivered holding in L&D > 2 hours-MFTI Priority 4 and 5 lobby wait time > 2 hours -MB at capacity -L&D 1–2 beds	**Disaster Capacity** -No L&D beds for emergency birth -No Triage beds -MFTI 1, 2, 3 priority waiting in lobby -All MB beds at capacity, including overflow and discharges
NOTIFICATIONS	**NOTIFICATIONS** -Providers notified to expedite discharges (OBs and PEDs)	**NOTIFICATIONS** -Providers notified to expedite discharges (OBs and PEDs) -OB directors -Administration representative	**NOTIFICATIONS** -CNO/CMO notified -Providers notified to expedite discharges (OBs and PEDs) -Coordinate with sister hospital about potential scheduled patient transfers	**NOTIFICATIONS** -CNO/CMO notified -Providers notified to expedite discharges (OBs and PEDs) -Coordinate with sister hospital for patient transfers/emergency privileges
ACTIONS OB Triage transfer to L&D: -L&D charge nurse evaluates and distributes admitted patients to L&D and Antepartum -Use L&D beds for inductions L&D transfer to MB: -Charge nurses (L&D, MB, and NICU) attend bed huddles -Census evaluated for possible discharge -Schedule evaluated daily for compliance or fallouts -Census (level of care) and staffing continuously evaluated (WHPUOS, low workload, extra shift, etc.) -Staffing look ahead/ planning daily for high schedule or low-count days	**ACTIONS** OB Triage transfer to L&D: -Expedite births/discharges -Move outpatients to antepartum beds -L&D charge nurse evaluates bed capacity for elective inductions L&D transfer to MB: -Plan to open overflow unit -Increase staffing -Nonclinical staff assume clinical role	**ACTIONS** OB Triage transfer to L&D: -Mobilize labor patients out of triage -L&D charge nurse evaluates rescheduling scheduled outpatients -Hold elective labor inductions -Increase staffing L&D transfer to MB: -Reduce recovery times -Open overflow if at capacity pending discharges -Notification of providers (OBs and PEDs) for ASAP discharges -Increase staffing -Transfer babies needing bili treatment to pediatric unit	**ACTIONS** OB Triage transfer to L&D: -Hold elective inductions -Evaluate medically indicated labor inductions for hold -Discuss with physician director L&D transfer to MB: -Open all overflow areas -Increase staffing	**ACTIONS** OB Triage transfer to L&D: -Hold all Inductions -Hold all elective surgery -Discuss with CNO options for alternative units L&D transfer to MB: -Discuss with CNO options for alternative units -Increase staffing

OB = Obstetric; L&D = Labor-Delivery-Recovery Unit; MB = Mother-Baby Unit; PEDs = Pediatricians; OBs = Obstetricians; MFTI = Maternal Fetal Triage Index; Bili = Bilirubin; CNO = Chief Nursing Officer; CMO = Chief Medical Officer; WHPUS = Worked Hours Per Unit Of Service

APPENDIX F: EXAMPLE OF AN OB DISASTER PLAN

Acuity Level	Patient Description	Action/Description
Green/Low Acuity: Green patients moved first	-Triage patients who are MFTI Level 5 or awaiting testing -Antepartum patients who are stable -Laboring patients prior to active labor without an epidural (ambulatory) -Delivered patients > 2 hours who are ambulatory with stable VS -Healthy newborns > 2 hours old who are stable with parent	**Horizontal:** Patient moved ambulatory to designated area with supplies as appropriate; infants moved in crib with feeding supplies to designated area **Vertical:** Patient moved ambulatory to designated area with supplies as appropriate; infants carried with feeding supplies and transported to designated area.
Yellow/Medium Acuity: Yellow patients moved second	-Triage patients who are MFTI level 3–4 -Antepartum patients requiring intermittent monitoring, stable VS -Laboring patients in active labor without epidural, may have IV infusing; oxytocin discontinued -Delivered patients 30 min to 2 hours post birth, stable VS -Healthy newborns 30 min to 2 hours old, stable VS	**Horizontal:** Current respiratory support connected to portable oxygen tank for transport; IV pumps transported with patient via pole; transported ambulatory or in wheelchair to designated area; may need auscultation or fetal monitoring if electrical availability **Vertical:** Necessary IV pumps removed from pole for transport; those unable to manage stairs moved horizontally and then vertically as transport help is available
Red/High Acuity: Red patients moved last Nurse manager/charge nurse complete last sweep of unit to confirm all patients, visitors, staff are out of unit	-Triage patients MFTI level 1–2 -Antepartum patients on continuous monitoring or unstable VS -Laboring patients in second stage or with epidural, unable to ambulate -Patients currently in OB OR -Patients/newborns within 30 minutes of birth or with unstable VS	**Horizontal:** IV pumps transported with patient via pole; epidural pumps transported with patient via pole; patients in OB OR may need to remain until procedure is complete and patient is stable enough to transport; transported in bed/stretcher currently occupying to designated area; placed in area as private as possible, continue to monitor for labor progress and possible delivery **Vertical:** IV pumps/epidural pumps removed from pole for transport; those unable to manage stairs will be moved horizontally and then vertically as transport help is available

MFTI = Maternal Fetal Triage Index; VS = Vital Signs; OB = Obstetric; OR = Operating Room; IV = Intravenous; Horizontal = movement of patients across the same floor to a different area; Vertical = movement of patients to a different floor higher or lower than the original floor.

APPENDIX G: EXAMPLE OF A NEONATAL DISASTER PLAN

Acuity Level	Patient Description	Action/Description
Green/Low Acuity: Green patients moved first	Feeder/grower: -Open crib -Room air -May have NG tube	**Horizontal:** Infant moved in crib with feeding supplies to designated area **Vertical:** Infant placed in bassinet with feeding supplies and transported via patient transport sled to designated area
Yellow/Medium Acuity: Yellow patients moved second	Respiratory support: -Nasal cannula, high-flow nasal cannula, bubble CPAP/vent CPAP IV status: -Running PIV or PICC Thermoregulation: -Requiring support to maintain normothermia	**Horizontal:** Current respiratory support to be connected to portable oxygen tank for transport; if on vent CPAP, will be switched to equivalent bubble CPAP; IV pumps transported with infant via pole; transported in isolette currently occupying to designated area; may need to be placed on transport warmer mattress for thermoregulation; extra transport warmer mattress to be taken as well **Vertical:** Respiratory support as described above; necessary IV pumps removed from pole and placed in patient transport sled basket; unable to transport in isolette: infant placed on activated transport warmer mattress, wrapped in warm hospital blankets, hat applied, and placed in patient transport sled basket for transport to designated area
Red/High Acuity: Red patients moved last Nurse manager/charge nurse complete last sweep of unit to confirm all patients, visitors, staff are out of unit	Respiratory support: -Intubated; high ventilatory requirement IV status: -Running umbilical venous/arterial lines Thermoregulation: -Requiring support to maintain normothermia	**Horizontal:** Infant transported on portable monitor; respiratory support: RT connect bag/mask with manometer to portable oxygen tank to provide PPV during transport with RN assist; IV pumps transported with infant via pole; infant transported in isolette currently occupying to designated area; placed on transport warmer mattress for thermoregulation; extra transport warmer mattress to be taken as well **Vertical:** Infant transported on portable monitor; respiratory support: RT connect bag/mask with manometer to portable oxygen tank to provide PPV during transport with RN assist; IV pumps removed from pole and placed in patient transport sled basket; if unable to transport in isolette: infant placed on activated transport warmer mattress, wrapped in warm hospital blankets, hat applied, and placed in bassinet for transport via patient transport sled basket. All infants transported via patient transport sled basket placed in patient transport sled basket/rack system at designated area for reuse of patient transport sled basket

IV = Intravenous; RT = Respiratory Therapist; RN = Registered Nurse; CPAP = Continuous Positive Airway Pressure; PIV = Peripheral IV; PICC = Peripherally Inserted Central Catheter; Horizontal = movement of patients across the same floor to a different area; Vertical = movement of patients to a different floor higher or lower than the original floor.

APPENDIX H: SAMPLE NURSE STAFFING ASSIGNMENT GRIDS BY HOSPITAL LEVEL OF MATERNAL AND NEONATAL CARE

Maternal Care Level I (Labor-Birth-Recovery-Postpartum)

Charge RN	RN 1	RN 2	Manager	Other
14 years of experience Assists with antepartum patients (usually 3-6 NSTs) per day shift Assists with birth/neonatal resuscitations as needed Orientations, competence validation, and skills Responsible for nurse assignments and overseeing patient care Collects data and helps with statistical reporting Performs chart audits and assists with quality improvement initiatives	25 years of experience 1. Assigned labor induction at 36 and 0/7 weeks gestation with oxytocin for gestational diabetes, multiparous 4 cm (scheduled for 10:00 am) 2. Assists with 1 NST and completes some follow-up lactation phone calls (before 10 am) 3. Assists with follow-up weight check for an infant of a breastfeeding mother (before 10 am) Lactation certified and able to help with breastfeeding as needed	2 years of experience 1. Assigned 2 MB couplets (1 couplet, vaginal birth, PPD1, term baby; 1 couplet, vaginal birth, PPD2, term baby, discharge scheduled for this evening) 2. Helps other nurses with NSTs and newborn weight and bilirubin checks scheduled for the day 3. Will be baby nurse at the birth of the patient who is being induced if available	15 years of experience Manager responsibilities 50-75% of the time, fluctuates based on patient census Fills in for patient care and being baby nurse at birth as needed. Most responsibilities include administrative work such as staffing schedules, payroll, time-cards, policy development, recruitment, hiring, performance improvement, and daily unit operations	OB manager or House Supervisor for the facility will come to the department and cover mother-baby couplets during any births while the 2 OB RNs are attending the birth

RN = Registered Nurse; NST = Nonstress Test; PPD = Postpartum Day; MB = Mother-Baby

Context:

This example is from a 25-bed critical access hospital in a rural community with a service area that includes a population of approximately 25,000. The OB department has five acute care LDRP beds and one triage bed. The medical-surgical unit and intensive care unit have a combined 20 acute care beds. The facility uses an electronic health record. There are 200 births per year and more than 1,000 outpatients annually for antenatal testing. The family clinic has 9 OB providers (1 obstetrician, 6 family medicine physicians, and 2 certified nurse midwives [CNMs]). All patients who need non-stress tests (NSTs), newborn post-discharge weight, and bilirubin checks (1-2 days after discharge) are sent to the OB department. The newborn nursery is designated as a Level I well-baby nursery. Babies requiring intravenous (IV) therapy, oxygen therapy with nasal noninvasive ventilation cannula, oxygen hood, or nasal cannula are kept at this facility. Phototherapy is done in the newborn nursery. Women presenting in labor less than 36 weeks gestation are transferred if stable. If not stable, they give birth at this facility, and the neonatal transfer team is called for the baby. Births of twins at term gestation occur several times per year. Labors of women who desire a trial of labor after cesarean birth are not performed at this facility. Cesarean births are performed by 1 obstetrician or 1 general surgeon. Two of the family medicine physicians are currently training to perform cesarean births.

Labor inductions and scheduled cesareans are planned during weekdays due to decreased number of staff available to assist on the weekends (i.e., no OB charge nurse or OB nurse manager). Only medically necessary labor inductions are performed on the weekends. The unit is staffed with approximately 12 full-time equivalent (FTE) nurses (some of the nurses are cross-trained to be house supervisors or to the medical-surgical unit) and float to other departments based on census. The staffing goal is a minimum of 2 labor and birth skilled nurses in house 24 hours per day. When 2 labor and birth skilled nurses are not available for staffing, there is a mother-baby skilled nurse who is cross-trained to the medical-surgical team to assist with caring for mother-baby couplets and a labor and birth-trained nurse on backup OB call. This helps with staffing if a second labor patient comes in or multiple triage patients present to the unit. If there are no patients in the department, a minimum of one labor- and birth-trained nurse is staffed in house 24/7 with all house supervisors certified in neonatal resuscitation as per the American Academy of Pediatrics and the American Heart Association neonatal resuscitation program (NRP) to be able to assist with neonatal resuscitation. Paramedics and emergency department providers are also NRP certified to assist if needed for resuscitation. Anesthesia services are available 24/7 via an on-call service. All cesarean births occur in main hospital perioperative unit; there is no surgical suite in the OB department. The surgery team includes 2 nurses and 1 surgical tech from the main perioperative unit staff, the surgeon, and an assisting surgeon. There is an Advanced Practice RN or physician provider and a nursery-skilled nurse certified in NRP to resuscitate the infant and be responsible for the baby through the recovery process. The OB nurse goes to the surgical suite with the patient and monitors her until the surgical team is ready, and then the nurse goes back to the OB department until the patient comes back to the unit from the PACU. OB nurses without labor experience usually take at least one year or more to get oriented and able to be independently assigned to labor patients due to the limited volume of labor patients and births they are exposed to during orientation. To help increase exposure to labor patients during orientation, this facility has an arrangement with a larger facility with more than 2,000 births annually. Orientees work 6 weeks at the larger facility and care for laboring patients.

Maternal Care Level II (Labor-Birth-Recovery-Postpartum)

Charge RN	RN 1	RN 2	RN 3	RN 4
7 years of experience Responsible for making the assignments for all of maternal-child services (labor/delivery, postpartum, NICU, and pediatrics). Responsible for outpatients, goes to births as an extra nurse, other patients if necessary.	6 months of experience 1. Scheduled cesarean birth at term, circulating nurse and recovery nurse	4 years of experience 1. 39 weeks gestation labor induction requiring cervical ripening 2. Observation patient, preterm labor at 33 weeks gestation	2 years of experience 1. 39 weeks gestation labor induction, requiring cervical ripening, elective 2. Observation patient, at 35 weeks gestation, 24-hour urine	20 years of experience 1. 37 weeks gestation in labor with preeclampsia receiving IV magnesium sulfate
RN 5	**RN 6**	**RN 7**	**RN 8**	**RN 9**
3 years of experience 1. 39 2/7 weeks gestation, active spontaneous labor	3 years of experience 1. MB couplet PPD2, vaginal birth, term baby 2. MB couplet PPD2, vaginal birth, term baby, discharge scheduled for this afternoon 3. MB couplet PPD1, vaginal birth, term baby	15 years of experience 1. MB couplet PPD1, cesarean birth, term baby 2. MB couplet, day of birth, vaginal birth, term baby	5 years of experience 1. MB couplet PPD1, cesarean birth, term baby 2. MB couplet PPD1, vaginal birth, 37 weeks gestation baby	11 years of experience 1. Mother PPD of birth, vaginal birth, term baby in NICU 2. MB couplet, PPD2, cesarean birth, term baby 3. Mother PPD of birth, vaginal birth, 36 weeks gestation, baby in NICU

Other: Patient Care Tech, 16 years of experience, assists with patients' activities of daily living, room cleanup, vital signs, etc. **Unit Secretary**, 21 years of experience, makes charts, answers phone, monitors units locked doors.

RN = Registered Nurse; NST = Nonstress Test; PPD = Postpartum Day; MB = Mother-Baby

Context:

This example is from a Level II community hospital with approximately 1,350 births per year. The unit has 13 LDRPs and 5 smaller rooms used for postpartum overflow and discharged parents of babies in the neonatal intensive care unit (NICU) who are now guests. There are 4 outpatient rooms and two surgical suites on the same floor. This is a Level II 4-bed open-bay concept NICU located on the same floor. All OB RNs are skilled in labor, birth, and mother-baby care, as scrub nurses to assist during cesarean births and circulate during cesareans. NICU RNs are skilled to do mother-baby couplet care. A NICU RN attends all births as the baby nurse. All pediatric RNs are skilled to help in the NICU and in mother-baby couplet care. Nurses are scheduled 12-hour shifts 7:00 am–7:00 pm or 7:00 pm–7:00 am. Call shifts are taken based on staffing needs and typically one to two 4-hour call shifts are taken by each nurse every month. Each shift has one charge nurse who is responsible for making the assignments for all of maternal-child services (labor/delivery, postpartum, NICU, and pediatrics). The charge nurse is responsible for outpatients, goes to births as an extra nurse, and will take mother-baby couplets or labor patients if necessary. There are 2.5 FTEs in lactation consultant support working 7 days a week. The lactation nurses also function as discharge planners seeing patients on the unit and outpatients in a hospital-based lactation clinic. This unit has a 24.2% cesarean birth rate (12% primary; 12.2% repeat) and a 19.3% NTSV (nulliparous, term, singleton, vertex) cesarean rate. There are 7 obstetricians and 4 midwives who are part of two different affiliated clinics and attend births. In total, maternal-child services includes 64.5 RN FTEs with 41.8 dedicated to OB, 2.5 to lactation services, 12.8 to NICU, and 7.4 to pediatrics. All RNs work 1.0, 0.9, or 0.6 FTEs and are full-time, part-time, or weekends only. Maternal-child services has 1 director and 1 manager overseeing daily operations. There is an OB OR coordinator who works weekdays and is responsible for all OB OR orientation and education.

Maternal Level III (Labor-Birth-Recovery Unit, same hospital as Mother-Baby Unit below)

Charge RN	RN 1	RN 2	RN 3	RN 4
20 years of experience; >15 years as charge nurse, supervisor for 8 years Runs L&D unit, assigning nurses as needed, attends deliveries as third RN as needed.	25 years of experience 1. Antepartum patient at 27 weeks gestation with COVID to be discharged today, NST prior to discharge 2. Antepartum patient at 33 weeks gestation with preeclampsia 3. Antepartum patient at 28 weeks gestation with vaginal bleeding	1 year of experience 1. Labor patient at 36 weeks gestation with preeclampsia having induction with oxytocin, receiving IV magnesium sulfate, loading dose completed	37 years of NICU experience 1. CS baby nurse at 0930, 1130, and 1330 cases, available for birth attendance as baby nurse before and after OR cases as able	42 years of experience 1. Labor patient having induction at 36 2/7 weeks gestation with monoamniotic/ diamniotic twins
RN 5	**RN 6**	**RN 7**	**RN 8**	**RN 9**
23 years of experience 1. Labor patient having elective induction with oxytocin at 39 weeks gestation, current fetal heart rate tracing Category II	26 years of experience 1. Multiparous patient at 38 weeks gestation at 6 cm laboring without an epidural	25 years of experience 1. Admission, preparation, circulating for 39 weeks gestation 0930 RCS 2. Admission, preparation, circulating for 39 weeks gestation 1330 primary CS for breech presentation	38 years of experience 1. Primiparous patient at 41 weeks gestation for misoprostol cervical ripening, no other risk factors 2. Two scheduled NST's in am	4 years of experience 1. Multiparous patient at 40 weeks gestation at 6 cm with labor epidural
RN 10	**RN 11**	**Other:**		
35 years of experience (Scheduled 1100-1800) 1. Admission, preparation, circulating for 36 weeks gestation 1130 RCS, patient has hypertension, will be receiving IV magnesium sulfate	35 years of experience (Scheduled 1100-1930) 1. Assigned to OB triage, will take first admit, help with afternoon NST's as available	**2 OB Techs,** assist RNs as needed, set up rooms, answer phones **2 OR Techs** **1 IBCLC RN for lactation consults**		

RN = Registered Nurse; NST = Nonstress Test; CS = Cesarean Section; RCS = Repeat CS

Maternal Level III (Mother Baby Unit, same hospital as Labor-Birth-Recovery Unit above)

Charge RN	RN 1	RN 2	RN 3	RN 4
23 years of experience, Supervisor 5 years Runs MB unit, assigning nurses as needed, assists as second RN as needed. May take up to two patients as needed.	12 years of experience 1. MB couplet, PPD1, cesarean birth, term baby 2. MB couplet, PPD2, term baby, discharge scheduled for today 3. MB couplet, PPD1, vaginal birth, term baby	43 years of experience 1. MB couplet, PPD1, vaginal birth, late preterm baby 2. MB couplet, PPD1, cesarean birth, term baby 3. MB couplet, PPD2, term baby, discharge today, baby under phototherapy	8 months of experience 1. MB couplet, PPD1, cesarean birth, term baby 2. MB couplet, PPD 1, vaginal birth, term baby 3. 0930 CS mother and baby post-recovery	1 year of experience 1. MB couplet, PPD3, cesarean birth, term baby, discharge scheduled for today 2. MB couplet, PPD of birth, vaginal birth, term baby, desires early discharge 3. MB couplet, PPD1, vaginal birth, term baby
RN 5	**RN 6**	**Nursery RN**	**Other:**	
3 years of experience, precepting RN student 1. MB couplet, PPD1, vaginal birth, term baby 2. MB couplet, PPD2, cesarean birth, term baby 3. MB couplet, PPD1, vaginal birth, term baby	15 years of experience, mandatory extra shift scheduled 1. MB couplet, PPD1, vaginal birth, term baby 2. MB couplet, PPD2, vaginal birth, term baby, discharge scheduled for today 3. MB couplet, PPD of birth, vaginal birth, late preterm baby	10 years of experience, scheduled 0530-1300 1. Assist with physician rounds, circumcision, follow-up phone calls	**Supply Tech:** Manages charts, assists with tech duties (not vital signs)	**Note:** 1130 and 1330 scheduled repeat cesareans not yet assigned.

RN = Registered Nurse; PPD = Postpartum Day; MB = Mother-Baby

Context:

These two examples are from the same hospital, a Level III community hospital with approximately 2,400 births per year. There are 37 LDRP rooms and a Level III 22-bed NICU in a building separate from the main hospital and accessible by tunnel. The maternity unit has 5 OB triage rooms, 2 surgical suites, and a 2-bed PACU. The adult intensive care unit, laboratory, and pharmacy departments are in the main hospital. Most nurses are skilled in caring for patients during labor and birth and for mother-baby couplets. Twenty years ago in this unit, the expectation was that nurses orient to mother-baby care, and at the one-year mark, they must orient to L&D. Nurses with more than 20 years of experience are more likely to be competent in either L&D or MB because they were grandfathered at that time. One nurse from the NICU is responsible to attend all births and has a 0.5 FTE commitment to the LDRP unit. Nurses work 8- and 12-hour shifts. Each shift has 2 charge nurses for the L&D patients and MB patients who are co-charge nurses and make the assignments for the entire unit. The MB charge nurse will assume 1-2 couplets, and the L&D charge nurse assists with triage and is the 3rd nurse in a birth (the primary nurse and the neonatal nurse being the first and second). There is a nursery nurse from 0530-1300 to cover well-baby nursery responsibilities and an IBCLC who is committed to the unit and to outpatient calls. Each shift has a certified surgical tech and an ACLS-certified nurse whose responsibilities are the PACU and to assist the anesthesia provider during cesarean births. Only cesarean births and postpartum tubal ligations are done in the OR. This unit has a 32% cesarean rate with productivity rate of 97.2 % and 102.2% for the last 2 years. FTEs (includes RNs, a certified surgical tech, an ancillary tech, secretarial support including birth certificates, and payroll = 94.46; 54 full time RNs [minimum 32 hours per week] and 53 part time RNs, on-call and weekend option; the management team is one nurse manager and 4 nurse supervisors). The manager's time is 100% managerial responsibilities, and the supervisors spend 60% of their scheduled time on the unit, functioning as charge nurse or staff nurse.

Maternal Care Level IV (Labor-Birth-Recovery Unit, same hospital as Mother-Baby Unit below)

Charge Nurse	RN Scrub	RN Triage	RN Resource	RN 1
38 years of experience In charge of L&D, antepartum unit, triage, and OR's, able to scrub, serves as resource nurse	5 years of experience Works in triage, able to scrub	8 years of experience Works in triage, able to scrub, resource nurse	6 years of experience Works in triage, able to scrub, resource nurse	5 years of experience 1. Primiparous patient at 40 weeks gestation, 5 cm, membranes ruptured, GBS positive
RN 2	**RN 3**	**RN 4**	**RN 5**	**RN 6**
4 years of experience 1. Induction of labor at 39 weeks gestation, gestational hypertension, scheduled at 0800	6 years of experience 1. Spontaneous labor patient at 38 weeks gestation, minimal intervention planned, 4-5 cms	2 years of experience 1. Spontaneous labor at 40 weeks gestation, complete and pushing	5 years of experience 1. Admission, preparation, circulating and recovery of scheduled 0930 RCS, 39 weeks gestation	12 years of experience 1. Induction of labor, with oxytocin at 39 weeks gestation, gestational diabetes, scheduled at 0800
RN 7	**RN 8**	**RN 9**	**RN 10**	**RN 11**
11 years of experience 1. Spontaneous labor patient, preterm labor at 35 weeks gestation, 6 cm	5 years of experience 1. Cervical ripening/ oxytocin induction at 30 weeks gestation, IV magnesium sulfate for severe preeclampsia, 2-3 cms	3 years of experience 1. Spontaneous rupture of membranes at 37 weeks gestation, maternal repaired Tetralogy of Fallot, awaiting plan of care	3 years of experience 1. Induction of labor with misoprostol, fetal demise at 26 weeks, 2-3 cm	4 years of experience 1. Finishing recovery of mother and baby following vaginal birth
RN 12	**RN 13 & 14**	**RN 15**	**RN 16**	**RN 17**
4th week of orientation, with RN 4	On call	6 years of experience *Antepartum, all patients are presently stable* 1. Preterm labor at 28 weeks gestation 2. Preterm labor at 31 weeks gestation 3. Type I diabetes at 18 weeks gestation	6 years of experience *Antepartum, all patients are presently stable* 1. Cholecystitis at 34 weeks gestation 2. Mono/Mono twins at 30 weeks gestation 3. Preterm labor at 32 weeks gestation	6 years of experience *Antepartum, all patients are presently stable* 1. Rule out abruption at 34 weeks gestation 2. Pre-op for fetal surgery at 22 weeks gestation 3. Preterm labor at 29 weeks gestation

Other: Patient Care Assistants: 2; **Scrub Tech**: 1, **Unit Secretary**, 1

RN = Registered Nurse; NST = Nonstress Test; CS = Cesarean Section; RS = Repeat CS; Mono/Mono = Monoamniotic, monochorionic

Maternal Care Level IV (Mother Baby Unit, same hospital as Labor-Birth-Recovery Unit above)

Charge RN	RN Resource	RN 1	RN 2	RN 3
5 years of experience In charge of Mother-Baby Unit, serves as resource nurse	3 years of experience 1st MB couplet admission	1 year of experience 1. MB couplet, PPD 2, cesarean birth, term baby 2. MB couplet, PPD 1, vaginal birth, term baby 3. MB couplet, PPD2, vaginal birth, term baby, scheduled for discharge today	4 years of experience 1. MB couplet, PPD1, vaginal birth, term baby 2. MB couplet, PPD 1, cesarean birth, term baby 3. MB couplet, PPD2, vaginal birth, term baby	2 years of experience 1. MB couplet, PPD1, cesarean birth, term baby 2. MB couplet, PPD2, vaginal birth with postpartum hemorrhage, term baby 3. Mother, PPD1, cesarean birth, baby in NICU
RN 4	**RN 5**	**RN 6**	**RN 7**	**RN 8**
12 years of experience 1. Mother, PPD of delivery, vaginal birth, preterm baby in NICU 2. MB couplet, PPD2, vaginal birth, term baby 3. MB couplet, PPD3, vaginal birth, postpartum fever, term baby, scheduled for discharge today	8 years of experience 1. MB couplet, PPD2, vaginal birth, term baby discharged scheduled today 2. MB couplet, PPD1, vaginal birth, term baby 3. MB couplet, PPD of delivery, cesarean birth, term baby	3 years of experience 1. MB couplet, PPD2, vaginal birth, term baby, discharge planned for today 2. MB couplet, PPD1, vaginal birth, late preterm birth 3. Next MB couplet vaginal birth admission	10 years of experience 1. MB couplet, PPD1, vaginal birth, term baby 2. Mother, PPD2, cesarean birth, baby in NICU 3. MB couplet, PPD2, vaginal birth, discharge scheduled for today	7 years of experience 1. Mother, PPD of birth, just started on magnesium sulfate, baby in NICU

Other: **Patient Care Assistant**, 1; **Unit Secretary**, 1

RN = Registered Nurse; PPD = Postpartum Day; MB = Mother-Baby

Context:

These examples are from a Level IV academic medical center with approximately 3,000 births/year. There are three areas: L&D (9 LDRs, 3 ORs, 9 triage beds; 3 rooms can be used as PACU), antepartum (12 rooms that can function as L&D overflow), and mother-baby (24 rooms). When there is overflow on the mother-baby unit, there are 4 rooms available on med-surg that can be used for a satellite mother-baby unit. That unit is staffed by MB staff nurses. L&D charge nurse covers L&D, including ORs and Triage, and Antepartum and does not take an assignment. The labor charge nurse is responsible for patient bed assignment and accepting transfers from referring hospitals. The charge nurse is responsible for making break assignments, coordinating surgery times for scheduled and unscheduled cases, completing safety rounds, and making assignments for the next shift. This is a Level IV NICU with 5 zones located on the same floor as L&D. To improve staff satisfaction and because of the increased areas of competence required by MB nurses to cover L&D, the MB and L&D units are split. All nurses can float to MB, but there is a small group of nurses who are MB only. In L&D labor inductions are limited to 2 in the morning and 2 in the evening. Nurses new to OB orient first to mother-baby, then antepartum, then L&D. Nurses who desire to do so can also develop knowledge and skills for triage, scrub, resource, and charge nurse roles after being on the unit more than5 years. Shifts are 12 hours. Nurses can sign up to take on-call shifts. Charge, scrub, triage, and resource nurses are assigned each shift by the scheduling committee. Patient care staffing is assigned by the charge nurse from the prior shift. There are about 200 RNs employed on this unit, most working 36 hours per week. Each shift has 2 charge nurses, 1 for MB and the other for L&D. On L&D there is a scrub nurse and a scrub tech assigned to the OR. The nurse who is trained to scrub for cesarean births will be a resource nurse for the primary nurse if the scrub tech is scrubbing the case. If there is a need to run two cases, the scrub tech will scrub in one and the scrub nurse will scrub on the other case. It is recommended that only two ORs be in use at one time. There is a resource nurse assigned each shift. This nurse has many roles and must attend a resource class twice a year. The resource nurse serves as break nurse, assisting in triage, attending deliveries, admitting new patients, serving as a resource in the OR, and in times of short staffing and high patient admissions they will receive a patient assignment. Triage nurses must have a minimum of 5 years of experience and attend a triage training class where they are taught phone triage and are MFTI trained.

On the mother-baby unit there is a charge nurse and 2 resource nurses assigned for each shift. The charge nurse is responsible for multidisciplinary meeting with the pediatric team, lactation consultants, OB attending physicians, resident physicians in training, and resource nurses. The charge nurse does not take a patient assignment but makes patient room assignments and coordinates discharge for MB couplets. For every 12 babies, there is one resource nurse whose responsibilities include assisting the primary nurse with discharge teaching, metabolic screening, and circumcisions and assisting in the OR and PACU for skin-to-skin mother-baby bonding. MB nurses will assume care for 2-3 couplets.

Neonatal Intensive Care Unit, Level III (sample staffing for 10 NICU patients)

Charge RN	RN 1	RN 2	RN 3	RN 4
20 years of experience, Supervisor 5 years Runs unit, assists with patient care as needed	17 years of experience 1. Born at 35 5/7 weeks, 3 days old on room air 2. Born at 26 0/7 weeks, 2-month-old on ventilator	10 years of experience 1. Born at 28 2/7 weeks, 3 weeks old on bilevel positive airway pressure (BIPAP) 2. First admit	5 years of experience 1. Born at 38 0/7 weeks, 5 days old on ventilator 2. Born at 28 3/7 weeks, 3 weeks old on BIPAP	APRN, 12 years of experience 1. Born at 36 0/7 weeks, 4 days old, on room air and oral feeds 2. Born at 37 4/7 weeks, 6 days old with umbilical lines and tube feeds
RN 5	**RN 6**	**RN 7**	**Other:**	
3 months of experience 1. Born at 32 6/7 weeks, 6 weeks old, feeder grower 2. Born at 30 6/7 weeks, 8 weeks old, discharge today 3. Born at 37 4/7 weeks, 6 days old, feeder grower	15 years of experience Birth Attendant/ Transport Nurse	Developmental Care Specialist	**Patient Care Techs:** 2	

RN = Registered Nurse

Context:

This example is from a Level 3 Neonatal Center with approximately 250 admissions per year. The unit has 22 private rooms located on the second floor of the Women's and Children's Building and can overflow to the Pediatric unit. This building is separate from the main hospital and accessible by tunnel. The Birth Care Center is located on the first floor and has approximately 2,400 births per year. Skill mix of the NICU is made up of new team members on orientation through tenured nurses with 40 years of experience. Each shift maintains a minimum of 3 RNs who have the capability of managing a newborn at birth and/or caring for an intensive patient. This NICU cares for extremely premature babies as low as 22 weeks gestation. Patients who need surgical intervention; have cardiac abnormalities, some chromosome abnormalities, severe retinopathy of prematurity that requires treatment; and/or are on respiratory support and need extracorporeal membrane oxygenation (ECMO) are transferred to a higher level of care. The transport team averages 110 transports per year including pediatric and NICU patients brought in from regional or Level II neonatal centers or transfers to a higher level of care. Each shift has a charge nurse and birth attendant/pediatric-neonatal transport team assigned 1-2 nurses are on call each shift. The birth attendant/pediatric-neonatal transport team member or designee attends each birth and oversees the newborn. All RNs are cross trained between NICU and Pediatrics. The NICU budgeted census is 13.8 with 10.4 actual YTD census. Current YTD productivity is 95.4%. Total FTE is 39.2, which includes approximately 50 RNs, 10 patient care techs (PCTs), 1 manager, 1 supervisor, and 3 developmental care specialists. RN team members are a mix of full time and part time and work 12-hour shifts. The PCTs work a combination of 8-and12-hour shifts.



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