Research Issues in the Assessment of Birth Settings: A Workshop

Presented by:
Debra Bingham, DrPH, RN
Vice President of Research, Education, and Publications
Association of Women’s Health Obstetric and Neonatal Nurses (AWHONN)

• Standard bearer for more than 350,000 women’s health, obstetric and neonatal nurses in the United States

• Advocate for key health care and nursing professional issues

• Pioneer in developing and disseminating evidence-based nursing practice resources

• International nursing leader
Presentation Objectives:

- Describe the importance of measuring and tracking perinatal RN staffing
- Describe what is known about the current trends in perinatal RN staffing
- Discuss the need for more perinatal nurse staffing research
Goal: Ensure that all women and newborns have equal access to evidence-based, high quality nursing care.
Birth Volume in US Hospitals
All US Hospitals with an Obstetric Service (N = 3,265) in 2008

- 58% reported <1,000 births
- 21% reported 1000-1,999 births
- 11% reported 2,000 to 2,999 births
- 5% reported 3,000-3,999 births
- 5% reported 4,000 or more births

Note: 47.4% of births occur at 500 hospitals where at least 2,475 infants are born each year

Simpson, KR (2011) JOGNN

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Hospital-Based Perinatal Units

- Emergency Triage & Evaluation
- Intensive Care and Psychiatric Care
- Operating Room Post Anesthesia Unit
- Medical and Surgical Patients

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Guidelines for Professional Registered Nurse Staffing for Perinatal Units
Worse Outcomes

1998-1999 compared to 2008-2009

• 75% increase in severe maternal morbidity
• 184% increase in the number of women receiving a blood transfusion during a hospital birth admission

(Callaghan et al., 2012)

Increases in postpartum hemorrhage are associated with the overuse of labor inductions
Electronic Health Records

Non-Pregnant Patient

- Adult Primary Care Chart
  - Sub-Specialist Care, Non-Perinatal In-Patient, e.g., cardiovascular
  - Emergency Care Out-Patient Procedures
  - In-Patient Care

Pregnant Patient

- Woman's Pre- and Post-Pregnancy Primary Care
  - Prenatal Testing Woman
  - Prenatal Testing Fetus
  - Pregnant Women Prenatal Care Chart
    - OB Triage Fetal Assessments
      - Woman Presenting to Triage
      - Woman in Labor
        - Fetal Assessments during Labor
          - Woman Immediately Post Delivery (2 hrs)
            - Newborn Assessments Immediately Post Delivery
              - Newborn
                - NICU
                - Pediatric Outpatient
              - Woman

Over more than a decade of studies…

Link RN Staffing and RN Competency to Outcomes
Patient Outcomes Shown to be Related to RN Staffing

- Urinary tract infections
- Length of stay
- Upper gastrointestinal bleeding
- Shock or Cardiac arrest
- Pneumonia
- Failure to rescue

( Needleman, et al., NEJM 2002)
HRSA Funded

- Hospital-acquired pneumonia
- Unplanned extubation
- Respiratory failure
- Cardiac arrest in ICUs
- **Failure to rescue after a post-surgical complication**

(Kane, et al., Medical Care 2007)
AHRQ Funded Meta-Analysis
Neonatal ICU Care

- Increasing the ratio of nurses with neonatal qualifications was associated with a decrease in risk-adjusted mortality of 48%.

- Survival for very low birth weight or preterm infants was related to proportion of nurses with neonatal qualifications per shift (Hamilton et al., 2007).

- Fewer patients per nurse may be associated with improved achievement of $O_2$ sat goals and may be an important modifiable factor influencing oxygen-related outcomes in premature newborns (Sink et al., 2011).
Critical Transitions - Handoffs

Higher than typical rates of patient admissions, discharges, and transfers during a shift were associated with increased mortality – an indication of the important time and attention needed by RNs to ensure effective coordination of care for patients at critical transition periods. (Needleman et al., NEJM 2011)

Need to study the most effective methods of transitioning care from home and birthing centers to hospitals
Continuous Labor Support

Cochrane Review (22 trials involving 15,288 women)

• Women allocated to continuous support were more likely to have
  – a spontaneous vaginal birth
  – less likely to have intrapartum analgesia
  – Labors were shorter
  – Women were less likely to have
    • a caesarean
    • instrumental vaginal birth
    • regional analgesia
    • a baby with a low five-minute Apgar score

(Hodnett, et al. 2012)
Continuous Labor Support

Cochrane Review (22 trials involving 15,288 women)

• “There was no apparent impact on other intrapartum interventions, maternal or neonatal complications, or breastfeeding.”

• “Subgroup analyses suggested that continuous support was most effective when the provider was neither part of the hospital staff nor the woman's social network, and in settings in which epidural analgesia was not routinely available.”

(Hodnett, et al. 2012)
Measuring Nursing Care Quality

• The number of nursing hours per patient day has been shown to be a significant (P<0.001) predictor of whether patients received nursing care interventions that are known to improve outcomes.

  (Kalish, 2011)

• AWHONN is studying the effect of nurse staffing on process and patient outcomes and has specified 9 draft Nursing Care Quality Measures
Nurse Staffing and Patient Outcomes

• These studies suggest that nursing care can affect outcomes
  – Giving birth is an intensely dynamic, physical, and emotional work
  – Women in labor need support and frequent monitoring of both the woman and her fetus
  – Nurses need to be prepared to respond rapidly to emergencies to avoid failure to rescue
  – Cesareans are major surgery
  – Oxytocin and Magnesium Sulfate are high alert medications
Early Warning Signs and Team Mobilization

Confidential Enquiry into Maternal and Child-Health (CEMACH) findings led to the introduction of the Modified Early Obstetric Warning System (MEOWS). United Kingdom: 2003-2005

(Singh et al., 2012)
AWHONN Staffing Organizing Frameworks

Calculating Staffing Costs

- Patient Factors
- Nurse Factors
- System Factors

\[ \text{FTEs Needed} = \text{Patient Factors} + \text{Nurse Factors} + \text{System Factors} \]

Assessing Staffing Cost Effectiveness and Efficiency

- Patient Outcomes
- Actual Nurse Staffing
- System Issues & Events

\[ \text{Nurse Staffing EE} = \text{Patient Outcomes} + \text{Actual Nurse Staffing} + \text{System Issues & Events} \]

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Maternity Nurses are Essential Frontline Clinicians

- All hospitals have nurses, in-hospital 24/7

- Obstetricians and midwives usually are not in hospitals 24/7

- Nurses run the hospital units
  - perform on-going surveillance
  - mobilize the inter-disciplinary team response
Birthing Centers

• Birthing centers have various types of staffing models
  – RNs
  – LPNs
  – Nurses Aides

• AWHONN’s RN staffing guidelines are based on the type of care a woman needs not the location where the care is performed
Home Births

• Women having a home birth usually do not have an RN take care of them during pregnancy, during birth, or postpartum

It is unknown whether women giving birth in non-hospital birth settings by non-RNs are missing important nursing interventions

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Community-Based Models of Care

- Since the 1980’s – Nurse Family Partnership Programs - have been shown to “improve the maternal life course”
  - Improve choices in health and education, e.g., decreases in perinatal cigarette smoking, fewer hypertensive disorders of pregnancy
  - Improved spacing of children
Data Collaborative Findings
2011-2012 Perinatal Registered Nurse Staffing

Hospital-Based Perinatal Staffing Patterns
Data Collaborative Sample

• Number of hospitals participating:
  – 2011 & 2012 (179 hospitals)

• 2011 and 2012 Combined:
  – 412,747 births (annual birth volumes for 2010 or 2011)
  – Average annual birth volume:
    1900 (median); 2305 (mean)
  – 22,913 nurses (headcount number)
  – 50 Magnet Hospitals (39%)

• Not generalizable data
• Hospital leaders pay to participate
• Largest perinatal staffing database

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US Hospitals by Delivery Category

Note: 47.4% of births occur at 500 hospitals where at least 2,475 infants were born

Is Your Hospital Meeting the AWHONN Guideline for Intrapartum RN Staffing?

AWHONN Staffing Guideline Category

- Comp: 60% Yes, 32% No, 18% Not Applicable, 0% No Response
- Oxytocin: 61% Yes, 39% No, 0% Not Applicable, 0% No Response
- No Pain Protocol: 48% Yes, 41% No, 11% Not Applicable, 0% No Response
- MgSO4: 74% Yes, 26% No, 0% Not Applicable, 0% No Response
- Reg Analg: 90% Yes, 10% No, 0% Not Applicable, 0% No Response
- 2nd Stage Labor: 96% Yes, 4% No, 0% Not Applicable, 0% No Response
- No Comp Labor: 70% Yes, 30% No, 0% Not Applicable, 0% No Response
- Vag Birth: 79% Yes, 21% No, 0% Not Applicable, 0% No Response
- C/S Birth: 48% Yes, 52% No, 0% Not Applicable, 0% No Response
Orientation Hours by Nursing Experience

Average: 388
Median: 320
Antepartum, Intrapartum, Postpartum, and Well Baby Direct Care RNs per 1000 births

Staff RNs plus charge nurse per 1000 Births

Average: 29.79
Median: 27.72
% of Total FTEs
with a BSN or Higher

Average: 52.0%
Median: 55.4%
Recommendations

Apply the four recommendations contained in the IOM report entitled:

*The Future of Nursing: Leading Change, Advancing Health*
IOM Key Point #1: *Nurses should practice to the full extent of their education and training*

- Maximize the impact of perinatal nurses by allowing them to practice to the full extent of their education and training

- Ensure that there is the correct match between how nurses are educated and oriented to their roles and the tasks these nurses are expected to perform
IOM Key Point #2: Nurses should achieve higher levels of education and training through an improved education system that promotes seamless academic progression

- Ensure that nurses have a BSN and adequate orientation
- Promote enhanced dissemination and implementation efforts to ensure that women’s health and newborn nursing care in the United States is consistent with the latest research (regardless of the birth setting)
IOM Key Point #3: Nurses should be full partners, with physicians and other health professionals, in redesigning health care in the United States

- Ensure equal representation of nurses on committees and work groups
- Have nurses in leadership roles on committees and work groups
IOM Key Point #4: Effective workforce planning and policy making require better data collection and an improved information infrastructure

- Perform research on the effect of RN staffing levels and RN competence on maternal and newborn outcomes, such as:
  - Failure to rescue – severe maternal morbidity
  - Labor support
  - Breastfeeding support
  - Transitions of care and transports
  - Out patient and community care

- Promote the development and utilization of perinatal nursing care quality measures
Summary of Key Points

• Importance of measuring and tracking perinatal RN staffing patterns
  – Over a decade worth of research has shown that competent, educated nurses improve patient outcomes.
  – Current data show that perinatal outcomes are worsening
  – Current data show that there is wide variation in orientation hours, number of nurses per 1,000 births

• Need for more perinatal nurse staffing research for all types of birth settings.
  – Most of the research into staffing patterns have been done in non-perinatal settings
  – Need research into how perinatal nurse staffing affects quality, safety, and costs
  – Need validated quality measurements of perinatal nursing care
Thank you!

Debra Bingham, DrPH, RN
Vice President of Research, Education, & Publications

dbingham@awhonn.org
www.awhonn.org