Technology’s Role in Support of Optimal Perinatal Staffing

Cathy Ivory, PhD, RNC-OB
April, 2013

Objectives

• Discuss challenges related to implementation of AWHONN staffing guidelines
• List opportunities to use technology in support of safe perinatal staffing
• Discuss strategies for more efficient perinatal record auditing and benchmarking

AWHONN 2008 Patient Safety Advisory
Panel notes:

• RN staffing and high-alert medications
• Perinatal Guidelines (AAP & ACOG, 2007)
  – contradictory information on frequency of assessments
  – recommendations not universally interpreted in the same manner in all facilities.
• Recommends AWHONN address staffing
Development of the AWHONN Staffing Guidelines

• AWHONN Board of Directors in 2009 creates a task force to consider staffing issues and make recommendations

• Dec 2009 Staffing Task Force begins work: legal, research, clinical, management expertise represented

Task Force Process

• Identify and review relevant existing standards and guidelines affecting perinatal nurse staffing
• Relate each guideline to an existing standard from a relevant professional organization
• Survey AWHONN membership
• Present to AWHONN BOD for review

Task Force Process

• Identify changes in perinatal care since 1983
• Review and summarize research about staffing and outcomes relevant to perinatal care
• Include principle-based context for staffing guidelines
Trends

- Rates of cesarean births in U.S. have increased from 21.2% in 1998 to 31.8%
- U.S. rates of severe obstetric complications increased from 1998–1999 to 2004–2005
- Increases mostly associated with the increasing rate of cesarean delivery.

Kuklina et al., 2009


More labors are induced

Perinatal Units

- Triage
- Intensive Care
- Med/Surg Unit
- OR/Recovery
Implementation timelines

- Based on hospital-specific factors
  - Patient characteristics
  - Organizational priorities
  - Perinatal unit priorities and needs
  - Regional nurse staffing factors

- AWHONN does not recommend a specific timeline for implementing the staffing guidelines

AWHONN Research Study

- AWHONN is forming a science team that will design a national study on staffing trends and patterns in the United States

- The research study will take longer to complete and will be different than the detailed data AWHONN includes in the data collaborative report
Specific Challenges

- **Triage**
  - 1:1 staffing for initial 15-20 minutes
  - 1:3, depends on acuity
- **Oxytocin**
  - 1:1 staffing related to increased acuity
  - Previous staffing for labor was 1:2
- **Mother-Baby**
  - 1:3 couplets
  - Previously 1:4 couplets

AWHONN Staffing Theoretical Frameworks

Calculating Staffing Costs

Patient Factors + Nursing Work Force Factors + System Factors = FTEs Needed

Assessing Staffing Cost Effectiveness and Efficiency

Patient Outcomes + Actual Nurse Staffing + System Issues & Events = Nurse Staffing EE

Calculating Staffing Costs

Patient Factors + Nursing Work Force Factors + System Factors = FTEs Needed

- **Patient Factors:**
  - Volume/Census
  - Acuity, e.g., Frequency of Assessments, diabetes, cardiovascular disease, chorioamnionitis
  - Mode of Birth (surgical or vaginal)
  - Number of Procedures, e.g., blood transfusions
  - Infant status, e.g., infant death
  - High Education Needs, e.g., high-risk infant, low literacy, language barriers
• Nursing Work Force Factors:
  – Competency
  – Experience of nurse
  – Education of nurse
  – Member of a professional organization
  – Certification
  – Attitude
  – Ancillary staff support, e.g., clerical and clinical
  – “Non-productive” time, e.g., for drills, continuing education, orientation, sick leave, vacation
  – Flexibility of the staffing system

• System Factors:
  – Team competency
  – Safety Culture, nursing support, physician responsiveness
  – Leadership support for nurse manager
  – Effective organizational systems, support, communications, and follow-through
  – Strong Nurse Manager
  – Availability of supplies
  – Charting systems & charting time
  – Electronic access to records
  – Non-nursing support, e.g., IV team, transport team, chaplains, social workers, lab, pharmacy
  – Events, e.g., QI initiatives, new electronic charting system
  – Data collection support and QI initiatives

• Worked HHPD
• Nurse Retention
• Nurse never events, nurse sensitive measures of quality
• Measures for improving efficiency, e.g., reduce time nurse spends on non-nurse functions
• Outputs from “non-productive” competency capacity building
• Prioritizing Care
• Algorithm for staffing office/night supervisor of when to cancel or add more staff
• Reduce overtime and agency nurse staffing
Assessing Staffing Cost Effectiveness and Efficiency

• Discharge Time
• Length of Stay
• Measure ancillary support team efficiency and work flow
• Safety culture

Triage volume

• Pregnant women presenting for 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 (does not include antenatal testing or admission for scheduled procedures)

Calculating triage staffing costs

• What factors should be considered when calculating the cost of RN staffing for OB triage?
**Patient Factors:**
- Patient volume
  - % admitted, % discharged
  - Patterns of census fluctuation (weekdays, weekends)
- Classification/acuity
- Average length of stay per classification
- High needs patients: literacy, language barriers
- Procedures: antenatal testing, versions, scheduled IOLs or C/S who first present to triage

**Nurse Work Force Factors:**
- Competence, experience & education of the nurse in triage
- Dedicated triage staff
- Charge nurse involvement in triage
- Use of standing orders in triage
- Ancillary staff support, e.g., clerical and clinical

**System Factors:**
- Location of triage: separate unit or LDR
- Provider availability for triage, competing demands and responsiveness
- Access to prenatal record
- Interface with other departments: radiology, transport team, chaplains, social workers, lab, pharmacy
Patient Outcomes:
- Time to: initial RN triage, provider assessment, disposition meets goals
- Are mean LOSs for patient conditions appropriate?
- Triage census assessed at regular intervals during 24 hours
- Appropriate follow-up s/p triage visit: lab results, with provider
- Quality and Safety
  - Misuse, Overuse of triage unit for prenatal care
- Patient satisfaction scores
- Lawsuits
- Adverse events, failure to rescue

Assessing Staffing Cost Effectiveness and Efficiency

Actual Nurse Staffing:
- Acuity assessed correctly?
- Patients seen in expected timeframe by RNs based on their condition?
- Is time spent on triage nursing care versus non-nursing care appropriate for your setting?
- Does (can) use of standing orders decrease LOS?
- Is staffing appropriate for expected census fluctuations?

System Issues
- Is time to assessment by provider appropriate?
- Are prenatal records usually available?
- Are patients seen in other depts efficiently?
- Is model of triage (triage unit vs LDR) efficient?
OB Nurses Say…

• “In the current OB triage setting there are usually three types of patients, those who are early labor or laboring, those who require more education and time due to inadequate education in the physician's office or no prenatal care, and those who are complicated by a chronic condition or obstetric complication. We have not allowed for the changes in EMTALA and the impact on evaluation of these patients in what really has become OB ER.”
• AWHONN member survey, June 2010

AWHONN Staffing Guidelines for oxytocin administration

• Women receiving oxytocin for labor induction or augmentation should receive 1:1 nursing care in order for maternal and fetal status to be assessed every 15 minutes
• If effects of oxytocin administration cannot be assessed at least every 15 minutes, the infusion should be stopped until that level of care can be provided

AWHONN Staffing Guidelines for oxytocin administration

• Elective procedures should be deferred until there are adequate nurses to safely meet the needs of patients and service
Rationale for Guidelines

• Data suggest about 23% of labor is induced (NCVHS, 2009). The number may be under-reported
• More than 50% of women may receive oxytocin during labor
• Designated high-alert drug

Risks of oxytocin

• Uterine tachysystole
• Increased risk of fetal compromise
• No standard response to standard dose
  – Difficult to determine optimal dose

What needs to be assessed every 15 minutes?

• Fetal Status
  – Fetal heart rate and variability
  – Presence or absence of accelerations
  – Presence or absence of decelerations
  – Evaluation of deceleration type
  – Evolution of pattern over time
What needs to be assessed every 15 minutes?

- Maternal status:
  - Contractions
    - Frequency
    - Duration
  - **Strength**
    - Presence of tachysystole
    - Vital signs
    - Coping, comfort measures
    - Educational needs
    - Other clinical conditions

What can be missed without active assessment?

- Progressive decreases in FHR baseline and/or FHR variability
- Increasing uterine resting tone
- Subtle changes in maternal coping
- The ability to relate the overall clinical picture to a provider

Calculating staffing costs for women receiving oxytocin

- What factors should be considered when calculating the cost of RN staffing for women receiving oxytocin?
• Patient Factors:
  – Patient volume
    • % receiving oxytocin
  – % labor inductions
    • % elective
    • % medically indicated
  – Average length of time in labor
  – Average Bishop score for women admitted for induction of labor

---

**The Bishop Score**

<table>
<thead>
<tr>
<th>Factor Score</th>
<th>Dilation(cm)</th>
<th>Effacement(%)</th>
<th>Station</th>
<th>Consistency</th>
<th>Position of cervix</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Closed</td>
<td>0 – 30</td>
<td>-3</td>
<td>Firm</td>
<td>Posterior</td>
</tr>
<tr>
<td>1</td>
<td>1 – 2</td>
<td>40 – 50</td>
<td>-2</td>
<td>Medium</td>
<td>Mid position</td>
</tr>
<tr>
<td>2</td>
<td>3 – 4</td>
<td>60 – 70</td>
<td>-1, 0</td>
<td>Soft</td>
<td>Anterior</td>
</tr>
<tr>
<td>3</td>
<td>5 – 6</td>
<td>≥ 80</td>
<td>+1, +2</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Station reflects a -3 to +3
From Bishop, 1964

---

**Nurse Work Force Factors:**

  – Competence, experience & education of the nurse
    • EFM Competency
    • Labor support
  – Contingency plan for census fluctuation
  – Staffing pattern and support
• **System Factors:**
  - Number of scheduled procedures per day
    - Discouraging elective inductions
    - Elective procedures only after 40 weeks gestation
  - Evidence-based oxytocin practices
    - Discontinuing oxytocin when labor is established
  - Augmentation practices

---

### Assessing the cost of staffing

• How do I assess the cost effectiveness and efficiency of my RN staffing for women receiving oxytocin?

---

### Assessing Staffing Cost Effectiveness and Efficiency

**Patient Outcomes:**
- Length of time in labor
- Appropriate intervention for tachysystole, non-reassuring fetal status
- Patient satisfaction
Actual Nurse Staffing:

- Labor support time
- Maternal and fetal status assessed every 15 minutes
  - Number of late entries ("catch-up" charting)

Opportunities

- Triage data points
  - Outpatient capture
- Staffing data points
- Standard terminology use
- Interfaces
References

• Guidelines for Professional Nurse Staffing for Perinatal Units available from: http://www.awhonn.org/awhonn/content.do?name=04_ConsultingTraining/04_StaffingGuidelines.htm


Graphics Sources

• http://creativecommons.org/licenses/by/2.0/
• http://www.flickr.com/photos/bitchcakes/4179498310/sizes/z/in/photostream/