Obstetric Triage: Models and Trends in Resident Education By Midwives

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Four models of resident education in obstetric triage with midwifery faculty consultants are presented. Common trends in the structure and function of these models are reviewed. The four models represent diverse settings where midwives serve as clinical teachers primarily for first-year obstetric residents and residents from other subspecialties. Each model supports a growing number of midwives working in the triage setting, functioning as both teacher and consultant for new residents. This expanded midwifery teaching role extends beyond labor assessment to include a wide range of common obstetric and gynecologic conditions in the triage setting. Additional advantages include the ability of the midwife to bill for triage services and to provide a safety net to decrease medical errors which, in a busy triage unit, occur most often during patient transfers.

Keywords: labor management, midwifery roles, obstetric triage, resident education

INTRODUCTION

The concept of obstetric triage has been well documented in the literature, and triage concepts are now fully integrated into services for pregnant women. Whether obstetric triage is a standalone unit, an extension of labor and delivery, or contained within a labor and delivery unit, the use of triage concepts pervades clinical management throughout pregnancy. Obstetric triage units have taken on multifunctional dimensions that often include patient holding, fetal assessment, after hours office evaluations, acute obstetric emergencies, labor assessment, and various obstetric procedures.

Obstetric triage is also a setting where women with non-emergent obstetric and medical conditions present when their normal source of medical care is inaccessible or unavailable. Recent changes in the Emergency Medical Treatment and Active Labor Act (EMTALA) now allow nonphysician providers to discharge pregnant women in false labor from triage settings, thereby relaxing the requirement of “physician-only” evaluation for false labor.

A 1998 survey of midwifery involvement in medical education and two recent surveys confirm the extensive involvement of midwives in medical education. Although many institutions provide triage services and teach residents, the purpose of this article is twofold: 1) to present four models of resident education in obstetric triage with midwives as faculty consultants, and 2) to explore common trends in the expanded midwifery teaching role as it relates to resident education in the triage setting.

MIDWIFERY AND ADVANCED NURSING PRACTICE IN OBSTETRIC TRIAGE

For many decades, midwives and advanced practice nurses have been at the forefront of triage when pregnant women present for labor management. This expanded role has progressively evolved to now include the assessment of obstetric conditions throughout the pregnancy cycle. A 1999 study that surveyed midwives about their role as providers in triage documented extensive midwifery involvement in triage services. A series of vignettes, published that same year, noted the active involvement of midwives in obstetric triage care.

Austin described the work of midwives in obstetric triage in one academic center (at the time, one of the busiest in the United States). In this setting, midwives participated in obstetric care for more than 25 years. Midwives evaluated pregnant women who were ≥27 weeks’ gestation, and they were considered an excellent choice of provider in this setting secondary to their full scope of obstetric practice.

The role of nurse practitioners in the obstetric triage setting has also been well documented. Arnold et al. first described the use of nurse practitioners in a triage model at an academic medical center. In this model, nurse practitioners worked closely with obstetric residents. Ciranni and Essex documented the work of nurse practitioners who collaborate with multiple care providers, including obstetric residents, in the triage setting. In this setting, the use of advanced practice nurses increased the number of billable services and payments.

Billing and reimbursement have increased in the triage setting secondary to expansion in both unit functions and procedures. Part A billing includes charges for ultrasounds, fetal monitoring, and other procedures, while Part B billing includes charges for provider care. Part B billing and reimbursement have allowed midwives and nurse practitioners to work in a supervisory teaching role, enabling them to bill for services in which the

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midwife or nurse practitioner collaboratively evaluates and manages cases with residents. An example of Part B billing is when a midwife provider evaluates and co-manages the care of a pregnant woman with a resident in triage. The resident cannot bill as the provider. Therefore, the midwife documents a separate evaluation and assessment and bills as the provider for Part B services.

**RESIDENT TEACHING BY MIDWIVES IN TRIAGE: FOUR MODELS**

Midwives and residents work in close proximity in the obstetric triage setting. This has broadened the development and use of midwives who can teach residents new skill sets and clinical content. Models using midwifery services vary in both size and complexity. Institutional data for the four midwifery triage models presented in this article are summarized in Table 1.

**Baystate Medical Center**

Triage is known as the Women’s Evaluation and Treatment Unit at Baystate Medical Center in Springfield, MA. Since November 2001, it has been staffed by midwives who provide obstetric and gynecologic care on an urgent basis with approximately 9600 patient visits per year. The care in this unit focuses on pregnancy-related problems, such as hyperemesis, first trimester bleeding, treatment of common infections, evaluation of the acute abdomen, preterm and term labor, and gynecologic conditions.

The population served includes pregnant women receiving antepartum care from both community providers and resident staff. Midwives care for approximately 70% of the women who receive care in the evaluation and treatment unit. Women who are cared for by a private practice provider and who present for evaluation of labor at ≥37 weeks are initially examined by a registered nurse. Their care is then shared between the nurse and the private provider. If these women are admitted, the completion of the medical history and physical examination is the responsibility of the midwife in triage that day. When women who are cared for by a private provider present to triage with a variety of obstetric complaints outside of labor management, the triage midwife will involve the resident in the care based on condition and status. Residents, along with midwives, evaluate all other women who present for care.

As a first-year obstetric resident, the opportunity to evaluate pregnant women in the evaluation and treatment unit occurs during the labor and delivery rotation and during the urgent care rotation (which is divided between the emergency department and the Women’s Evaluation and Treatment Unit). First-year obstetric residents are called to assess women who present in term labor. If the responsibilities on the labor unit prevent residents from leaving, the triage midwife will assume responsibility for care. The triage midwife is often responsible for teaching emergency medicine residents who also rotate through this unit for selected obstetric and gynecologic experiences.

Whenever the obstetric or emergency medicine resident evaluates a woman who presents to triage for care, the midwife serves as the faculty consultant. The midwife assists in orienting all first-year residents to the triage unit and provides continuity for care if the resident is called away. During the first half of the year, the resident and triage midwife work closely together and jointly assess and evaluate all women who present for care. This ensures that every woman is evaluated by an experienced clinician. In addition, it provides the resident with the opportunity to learn new skills. The resident is not pressured to accomplish a task that has yet to be mastered. As the year progresses and skills are refined, the first-year resident works more independently with midwifery consultation. This residency model requires that junior residents discuss the management of each case with a senior resident before presenting the case to the attending physician. These presentations are learning opportunities to practice this skill beforehand.

The midwives who work in triage are expected to participate in the formal evaluation system for residents. This is accomplished using a computerized evaluation system. Evaluations are completed after each rotation and allow for interim reports if there are pressing concerns about resident performance or if a commendation is recommended.

**Women & Infants Hospital and Brown University**

The midwifery section in the Department of Obstetrics and Gynecology employs 5.7 full-time equivalent midwives who hold faculty appointments at Brown University in Providence, RI. The obstetric residency program is affiliated with Women & Infants Hospital and Brown University. The midwifery practice has been operational since 1990 and has primary responsibilities for both medical education and clinical practice.

Obstetric triage occurs in a women’s hospital emergency unit where gynecologic and gynecologic oncology conditions are also evaluated. The unit has 12 beds and
an ultrasound room, plus an initial triage evaluation area staffed by nurses. Eighty percent of visits are obstetric in nature, ranging from early gestation to postterm pregnancy. Midwives have always been involved in resident teaching and occasionally work with emergency medicine residents in this setting. Within the last 10 years, a more formalized clinical teaching program has been initiated in which midwives teach first-year obstetric residents the clinical management of labor and the management of other pregnancy complaints. Obstetric conditions commonly assessed in triage include fetal well-being, preterm and term labor assessment, hypertension and preeclampsia, bleeding, nonaesthetic trauma, fetal growth issues, and other commonly seen obstetric complaints including nausea, vomiting, and abdominal pain and provider status in triage. Knowing what provider is

### Table 1. Triage Statistics by Institution

<table>
<thead>
<tr>
<th>Institution</th>
<th>No. of Triage Beds</th>
<th>No. of Patient Visits per Year</th>
<th>No. of CNM FTEs per Shift</th>
<th>Services</th>
<th>Gestational Age Limits</th>
<th>No. of Years CNMs Working</th>
<th>Attending Physician Coverage</th>
<th>No. of Residents per Shift</th>
<th>CNM Input Into Resident Performance in Triage</th>
<th>CNM Billing for Triage When Care Comanaged With Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baystate Medical Center</td>
<td>11</td>
<td>9600</td>
<td>1.0</td>
<td>OB, GYN</td>
<td>None</td>
<td>7</td>
<td>Yes (in-house); private attendings by phone</td>
<td>1–2</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Women &amp; Infants Hospital and Brown University San Francisco</td>
<td>12</td>
<td>30554 (includes GYN and GYN oncology)</td>
<td>1–2.5</td>
<td>OB primarily</td>
<td>≥20 wks; selected patients &lt;20 wks</td>
<td>15</td>
<td>Yes (on unit)</td>
<td>4</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>University of California San Francisco</td>
<td>5</td>
<td>9000</td>
<td>1.0</td>
<td>OB primarily</td>
<td>None</td>
<td>18</td>
<td>Yes (available in-house)</td>
<td>4</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Duke University Medical Center</td>
<td>8</td>
<td>5500</td>
<td>1.0</td>
<td>OB</td>
<td>≥20 wks</td>
<td>9+</td>
<td>Off-unit but readily available</td>
<td>1–2</td>
<td>Yes</td>
<td>Yes</td>
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CNM = Certified nurse-midwife; FTE = full-time equivalent; GYN = gynecology; OB = obstetrics.
available assists with clinical handoffs when residents are called away from the triage setting. Even after first-year residents have mastered new skills and decision-making, midwives continue to assign themselves to resident patients as the midwife faculty consultant. In this role, the midwife remains involved in clinical assessment and evaluation for patient continuity and is then able to bill for services. Provider billing (Part B) is initiated for every woman evaluated under resident care with a midwife consultant.

Midwives participate in the electronic evaluation system for residents following their low-risk obstetric rotation in both triage and labor and delivery. Likewise, residents evaluate midwifery teaching performance through an online evaluation system. Using midwives as faculty consultants in triage (and labor and delivery) has been consistently noted by resident applicants to be a positive recruitment factor for the residency program at this particular institution.

**Duke University Medical Center**

The Duke Midwifery Service is an academic teaching service within the Division of Maternal-Fetal Medicine in the Department of Obstetrics and Gynecology at Duke University Medical Center, Durham, NC. It employs nine midwives who work in a variety of outpatient settings. The midwives are available for labor and delivery from Monday through Friday from 7:00 AM to 5:00 PM at Duke Birthing Center and The BirthPlace at Durham Regional Hospital. The midwives provide education to residents in obstetrics and gynecology, family medicine, and emergency medicine in both the hospital and in outpatient settings.

Pregnant women >20 weeks’ gestation arriving in the obstetric triage unit at Duke Medical Center are assessed by midwives or obstetric residents. At varying times throughout the year, emergency medicine interns and family medicine residents also rotate through obstetric triage. A maternal-fetal medicine attending physician from labor and delivery is available as a consultant to the obstetric triage unit. The midwives attend morning board rounds and assess the number and level of learners for the day, and assignments are made between triage and labor and delivery.

Obstetric triage algorithms outlining the most common triage diagnoses serve as helpful guides for all learners in the triage unit. These include algorithms and guidelines regarding the management of term and preterm labor, preterm premature rupture of membranes, vaginal bleeding, nausea and vomiting, preeclampsia and trauma, and others.

Early in the academic year, the midwife in triage assigns low-risk obstetric complaints to the first-year residents until the residents develop a level of comfort and confidence to care for more at-risk obstetric conditions. These initial triage visits are performed by the midwife with the resident shadowing. Eventually, the midwife shadows the resident for several visits and ultimately the resident will assess and evaluate each woman and formally present the findings to the midwife. All pelvic and vaginal examinations are performed with the midwife until competency is achieved. Thereafter, the midwife makes an effort to assign higher-risk pregnant women to first-year residents to support learning needs.

Women who are discharged from triage must be evaluated by the midwife prior to final disposition. This provides for overall patient safety by minimizing errors and provides a billing opportunity because residents cannot bill for services. Documentation is entered electronically by the midwife to maintain compliance with hospital and Center for Medicaid and Medicare Services (CMS) guidelines. Residents are instructed to document a complete medical history and physical examination in the chart within 2 hours of the pregnant woman’s arrival and to follow up with documentation every 2 hours until disposition is determined.

A checklist is being created for first-year residents that includes a list of antepartum, intrapartum, and postpartum skills. In general, residents have limited opportunities to learn and practice foundational obstetric skills, such as Leopold maneuvers, assigning Bishop scores, and reviewing emergency procedures. The checklist is used to document essential obstetric content used in resident education.

Recently, the midwives created a Blackboard course which enables learners to electronically access essential information for the rotation through triage. The role of the midwife as educator in this setting provides an essential learning experience for residents. The midwife in triage models expert and efficient care in the acute care environment.

**University of California San Francisco**

The obstetric service at the University of California at San Francisco (UCSF) provides care to women with both public and private insurance. Comprehensive obstetric care is provided by a collaborative practice, called the Faculty Obstetrics and Gynecology Group. The collaborative faculty practice affords residents an opportunity to work closely with various members of a comprehensive obstetric team. There are three nurse midwives, three generalists, nine perinatologists, and three maternal-fetal medicine fellows in the group. The midwives hold faculty appointments in the school of medicine and provide clinical and didactic education for both medical students and residents.

On the labor and delivery unit, residents and two attending staff (one nurse-midwife and one physician) provide care to all women who present to triage. The team is comprised of a first-year obstetric resident who is supervised by the midwife and a second-year resident who reports to the chief resident. There are four triage beds, one examination room, and on occasion care overflows into postpartum rooms. The responsibility of the first-year resident or
the medical student is to consult with the midwife on all admissions. However, when a woman presents in preterm labor or with a highly medical emergent situation, the second-year resident usually triages and manages care.

After the initial evaluation of obstetric complaints by the first-year resident, consultation with the midwife is initiated. This includes a complete presentation and plan of care. The midwife offers advice, recommendations, discusses the management plan with the first-year resident, and assists with implementation. The goal is to encourage the resident to develop management skills and approach obstetrics with respect for the normal versus the abnormal. The system supports resident learning from an experienced midwife instead of a fourth-year resident who has not yet practiced on his/her own.

If a woman has registered for the first prenatal visit, she will be evaluated in triage and not the emergency room. Pregnant women are informed that labor and delivery functions as the emergency room for them during the pregnancy. The provision of obstetric care during the first trimester in triage provides a plethora of diverse experiences for the residents.

Patient overflow from the antenatal testing center is forwarded to triage, and on weekends, all fetal evaluations are performed there. The midwives supervise the testing and consult with the medical attending as needed. Currently, physicians bill for antenatal testing services.

Recently, UCSF initiated an emergency medicine residency program which requires that the first-year emergency medicine resident spend 3 weeks in labor and delivery. One emergency medicine resident rotates through the unit performing triage, labor and delivery management, and learns new skills. They assist with triage flow and with general medical conditions, and midwives serve as their consultants and preceptors.

One of the income streams for the midwifery practice is the billing from triage services. However, like many obstetric units, billings are often not captured because providers are not performing triage themselves. For billing purposes, all women need to be evaluated by either a midwife or physician and documentation provided. This requires face-to-face time and detailed documentation. Reimbursement for the fiscal year 2007 to 2008 increased by 67% because the midwives were instrumental in capturing those monies.

The midwife in triage provides residents with experienced and supportive clinical consultation. The resident comes to the midwife for guidance, instruction, and supervision. In the triage setting, most of the pregnant women coming for care at UCSF have the opportunity of benefiting from midwifery clinical skills.

**DISCUSSION**

Each midwifery triage model differs in organizational structure, physical layout, and patient volume. However, there are commonalities among the four paradigms that support the expanding role of midwifery faculty consultants in academic medicine who teach obstetric residents in the triage setting as noted in Table 2.

The primary teaching activities of midwifery faculty in triage cluster around clinical decision-making and procedural skills taught to obstetric residents during the first year of residency. During this period, low-risk pregnant women are co-assigned to both the first-year resident and midwife faculty who evaluate patient conditions together. Shadowing and co-management with the midwife consultant occur in all four models. Basic decision-making skills include the management of latent and active labor, assessment and management of hyperemesis of pregnancy, abdominal pain during pregnancy, preterm labor, fetal assessment, noncatastrophic trauma in pregnancy, and preterm and term rupture of membranes, among others. As a prelude to teaching in the triage setting, some midwifery models use online learning sources, simulation exercises, skills workshops, selected reading lists, and evidence-based clinical guidelines to frontload triage clinical teaching, thereby easing the role transition for new residents. Clinical protocols and algorithms accompany clinical learning, along with online learning tools. Sharing the clinical evaluation of obstetric conditions by both the midwife and the first-year resident is a teaching process that works well in all four models.

During the second half of the year in triage, more at-risk and higher-risk obstetric conditions are assigned to the first-year resident, who is then expected to provide independent management with midwifery consultation. Midwives continue to document the care given to all women presenting to triage. Working together in triage improves team communication with an appreciation by the resident for the expanded role of the midwifery academic faculty.

Because midwives are considered experts in the care of women who are low-risk during pregnancy and have a broad background in the assessment and management of commonly seen pregnancy conditions, their role as faculty consultants for first-year residents is a logical one. Having residents orally present cases to a midwife consultant can

<table>
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<th>Table 2. Trends in Midwifery Teaching of Residents in Obstetric Triage</th>
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<tr>
<td>- Expanded midwifery faculty role beyond labor management</td>
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<tr>
<td>- Formalized clinical teaching and competency surveillance during first year of obstetric residency</td>
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<tr>
<td>- Additional billing and reimbursement opportunities for midwifery faculty</td>
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<tr>
<td>- Strengthening the role of midwife as faculty consultant</td>
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<tr>
<td>- Expanded role of midwifery faculty as clinical teacher to other residents, including emergency medicine residents</td>
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<tr>
<td>- Consistent provider in triage setting assisting with handoffs, which can be a potential patient safety concern</td>
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<td>- Involvement in evaluation of resident clinical performance</td>
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be a dress rehearsal for more advanced presentations required when presenting medical situations that are more complex. The overview of resident documentation skills can also be addressed by the midwife serving in the faculty consultant role. The midwifery midwife assists in orientation and mentoring first-year residents to triage assisting with role transition, clinical decision-making, and skill acquisition. Adding a strong midwifery faculty presence to triage orientation provides a smooth transition for both resident learning and patient continuity and satisfaction so that seamless care in triage is maintained.

Midwifery faculty is involved in evaluating resident performance in triage and performance feedback for residents is conducted during the rotation in all four models presented here. The inclusion of midwifery faculty in evaluation of resident performance supports the value of midwifery input. Residents also have input into midwifery performance and evaluation as teaching faculty.

With midwifery faculty partnering with residents in the evaluation and monitoring of pregnant women in triage, a new billing source for midwifery is realized. Because residents cannot bill for services, midwives, as supervising faculty, can document in the electronic record system and bill for services as long as they have also evaluated the pregnant woman. In one study, 31.7% of midwives billed for triage services.10 This billing could be expanded and help offset midwifery salary and operational expenses and thereby support midwifery fiscal stability. Additional revenues and reimbursement can be obtained and lost revenues minimized by employing midwifery faculty in the triage setting.

Advocating the improvement of patient safety and minimizing liability in triage fall within the purview of midwifery faculty. Given the decrease in resident work hours, which currently stand at 80 hours per week, along with increased demands on resident learning experiences (i.e., in the operating room, in labor and delivery), the use of midwives provides a constant faculty presence in triage. This affords continuity of care and less interruption in patient services and provider status.

The issue of handoffs relative to patient safety in triage is a key one.16–18 Patient handoffs involve the transfer of rights, duties, and obligations from one person or team to another.19 Handoff skills often involve information transfer, and face-to-face communication is thought to be the best way to insure effective handoffs of hospitalized patients.19 Reports of patient harm during handoffs have prompted further study of patient handoffs and the use of the electronic medical record to minimize problematic handoffs.20

Decreasing medical errors and medication errors secondary to handoffs are the responsibility of all providers in triage and emergency settings. Errors in judgment, teamwork breakdowns, and the lack of technical competence during handoffs have been documented.20–22 Lack of supervision and handoff difficulties are the most prevalent types of teamwork error, and both are disproportionately more common when trainees are involved.21 Failures center on diagnostic decision-making and monitoring of the patient or situation.21 Trainee errors appear more complex than nontrainee errors and have prompted one author to call for reform in graduate medical education.21

It is rare to have residents assigned to triage without having other assignments at the same time. Having a midwifery faculty available eliminates the vulnerability associated with intermittent presence of residents who are often called away to attend births or surgeries. Limiting liability with handoffs and providing close supervision for beginning resident education is a winning combination. As a policy, using midwifery faculty to provide a consistent presence for resident education and patient care in triage settings appears to be worthwhile. More formalized studies are recommended to document the degree to which errors are averted with midwifery faculty supervising resident learners in triage.

SUMMARY

Although many institutions manage obstetric triage and resident education, four models of midwifery teaching of resident physicians in the triage setting are presented. Each model differs, but each attests to the growing use of midwifery academic faculty who teach residents in triage. Midwifery faculty has moved beyond just labor assessment in their teaching efforts with residents to a broader parameter of commonly seen obstetric conditions. The ability to initiate billing for these teaching cases adds to the financial stability of midwifery practices in these settings. The midwifery role of faculty consultant to new residents occurs in a formalized fashion as beginning residents seek out midwifery consultation. The strength of midwifery teaching models in triage is the dynamic of collegial relationships that develop when midwives work closely with resident learners. These models strengthen the future of midwifery in the academic practice setting and set a positive tone for what can be accomplished with midwifery faculty consultants in obstetric triage.

REFERENCES


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