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Obstetric Triage: A Systematic Review of the Past Fifteen Years: 1998–2013

Abstract

Background: Triage concepts have shifted the focus of obstetric care to include obstetric triage units. The purpose of this systematic review is to examine the literature on use of triage concepts in obstetrics during a 15-year time frame.

Methods: A systematic review was completed of the obstetric triage literature from 1998 to 2013 using the electronic online databases from PubMed, CINHAL, Ovid, and Cochrane Library Reviews within the English language. Reference lists of articles were reviewed to identify other pertinent publications. Both peer-reviewed and non–peer-reviewed documents were used. Inclusion criteria: articles specifically related to obstetric triage or obstetric emergency practices in the hospital setting. Exclusion criteria included: manuscripts that focused on general, nonobstetric emergency and triage units, telephone triage, out-of-hospital practices, other clinical conditions, and references outside the time frame of 1998–2013.

Results: Key categories were identified: legal issues and impact of Emergency Medical Treatment and Active Labor Act (EMTALA); liability pitfalls; risk stratification (acuity tools); clinical decision aids; utilization, patient flow, and patient satisfaction; impact on interprofessional education and advanced nursing practice; and management of selected clinical conditions. Components of a best practice model for obstetric triage are introduced.

Conclusion: Seven key triage categories from the literature were identified and best practices were developed for obstetric triage units from this systematic review. Both can be used to guide future practice and research within obstetric triage.

Key words: Interprofessional education; Obstetric emergency services; Obstetrics, Triage.

Obstetric triage has now become part of the fabric of obstetrics. As a specialty within perinatal care, it came of age in the 1980s–1990s in the United States and internationally, and flourished during the early part of the 21st century. The past 15 years have demonstrated significant changes in how triage concepts have been applied to obstetric care. We undertook this review because development of new triage facilities and role changes among providers in the obstetric triage setting have now altered how obstetric care is both assessed and provided. We felt the timing was right to review the changes in obstetric triage care as a composite. The purpose of this systematic review of the obstetric triage literature from 1998 to 2013 is to delineate key categories of content, which have influenced obstetric triage during this time frame.


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Background

In the United States, obstetric triage has emerged to serve multiple functions within obstetric care. A major factor in the development of obstetric triage was the introduction of the Emergency Medical Treatment and Active Labor Act (EMTALA), which took effect in 1986 (The Consolidated Omnibus Budget Reconciliation Act of 1985) and instituted practice mandates in the emergency setting. Obstetric triage is primarily a screening platform for labor evaluation. However, in many settings, it is used to manage early, mid, and late pregnancy complications as well as emergent obstetric conditions. Obstetric triage units are often the "gatekeeper" for initial assessment of obstetric complaints.

Factors responsible for this movement toward use of obstetric triage units include: the need to improve utilization of obstetric bed capacity, provide less turnover of patients in the labor/delivery setting, allow for more immediate rapid response to obstetric emergencies, prevent unnecessary labor admissions, decrease waiting times, and provide heightened assessment of fetal and maternal well-being (Angelini, 2013).

Location of obstetric triage units varies across institutions. Most units are within close proximity to labor and delivery, yet there is discrepancy as to where such units are best located, whether close to or remote from the labor unit (Angelini, 1999a; Angelini & LaFontaine, 2013). In some settings, obstetric triage services may come under the role of the laborist, hospitalist, or midwife. A recent draft of core competencies for the Society of OB/GYN Hospitalists, part of the American College of Obstetrics and Gynecology (ACOG), lists obstetric triage services coming under the role of hospitalist/laborist (Jancin, 2011).

Pregnant women presenting to an emergency room setting are often at a gestational age less than viability (23–24 weeks). Many of these women are evaluated in a general emergency department. However, most women with pregnancy complaints at 20–24 weeks gestation or greater are evaluated in an obstetric triage unit (Angelini, 1999a). In larger birthing facilities, a separate obstetric triage unit often exists to evaluate all obstetric complaints regardless of gestational age; in smaller birth settings, labor and delivery may be the appropriate area to assume obstetric triage functions, specifically labor assessment (Angelini, 1999a; Angelini, 2013).

Access to multiple clinical services makes obstetric triage a highly functional and desirable adjunct to overall obstetric services. Use of direct imaging, laboratory services, fetal evaluation (both fetal monitoring and ultrasound usage), availability of consultants, and immediate care by an obstetric provider make obstetric triage units valuable in providing high reliability perinatal care (Angelini, 2013; Angelini & LaFontaine, 2013).

Beyond regulations from the federal government, professional associations offer recommendations for obstetric triage care. The Association of Women's Health Obstetric and Neonatal Nurses (AWHONN) recommends that for the initial triage process (10–20 minutes), 1 nurse to 1 patient should be the staffing ratio; however, this may change to 1 nurse to 2–3 pregnant women as maternal fetal status is assessed and conditions determined (AWHONN, 2010). It is further recommended that fetal assessment and status be included in that initial triage assessment before the level of care is determined. This is in keeping with ACOG and American Academy of Pediatrics (AAP) *Guidelines for Perinatal Care* that any woman who presents to the labor and delivery area should be evaluated in a timely manner. Minimally, this includes maternal vital signs, frequency and duration of contractions, and documentation of fetal well-being (AAP & ACOG, 2012). If the woman is suspected of being in labor or has ruptured membranes or vaginal bleeding, further assessment is required promptly (AAP & ACOG, 2012). The *Guidelines for Perinatal Care* (AAP & ACOG, 2012) outline the components of a comprehensive evaluation based on maternal–fetal status, when the responsible healthcare provider should be notified, and what should be documented in the medical record.

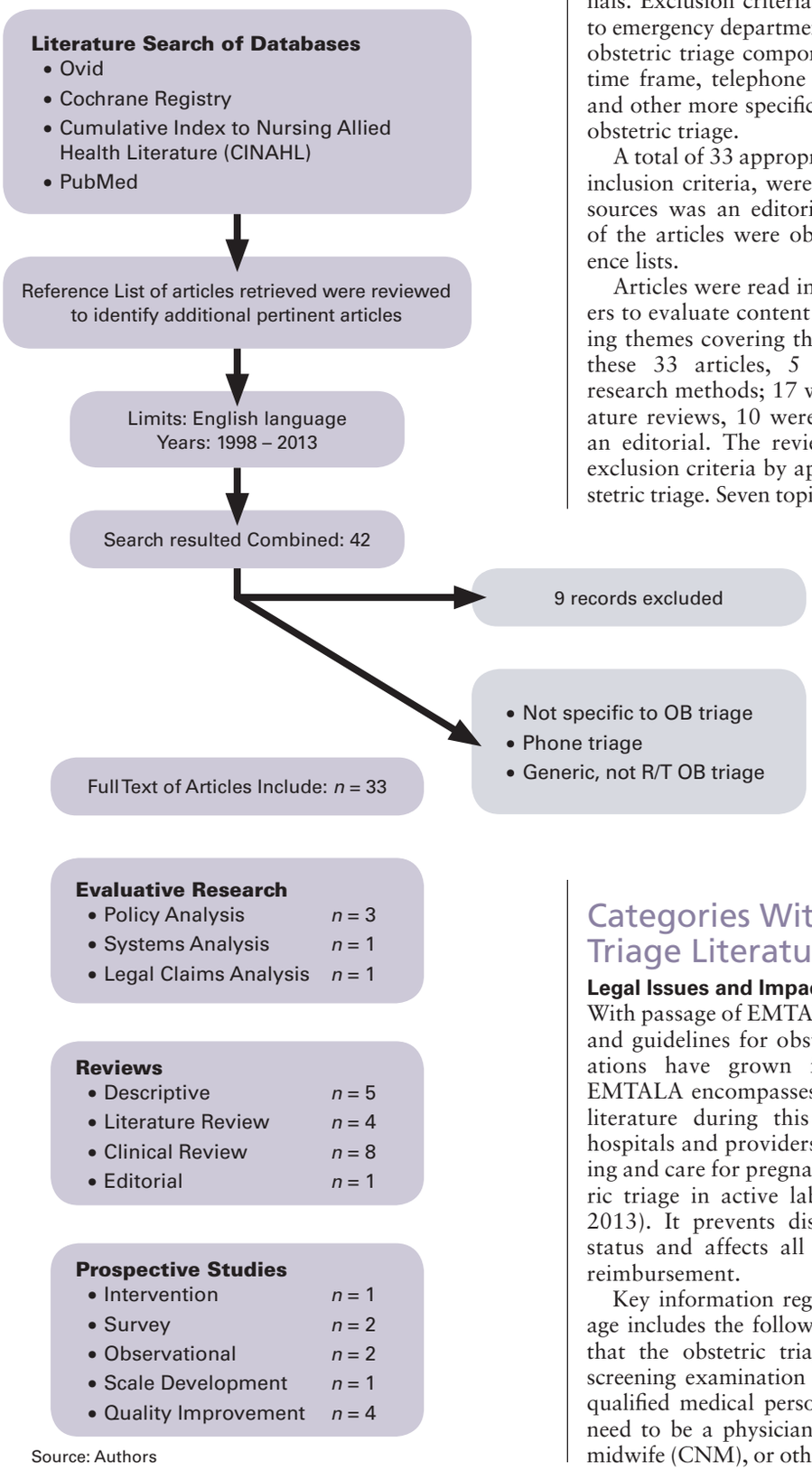
Women with nonemergent medical conditions can also present to obstetric triage or to an emergency department setting when their normal source of medical care is inaccessible or unavailable. In a 2008 study of 287 women presenting to an ob/gyn emergency room/triage unit with nonemergent medical complaints, 36% came for care because they believed they had a true emergency, 42% presented secondary to physician referral, and 21% came secondary to access barriers (e.g., lack of primary provider) (Matteson, Weitzen, LaFontaine, & Phipps, 2008). Seventy percent reported a reason for the visit that was unrelated to either obstetrics or gynecology (Matteson et al., 2008).

Obstetric triage has clearly become one of the most critical perinatal service innovations to emerge in the last 15 years (Angelini & LaFontaine, 2013). Additionally, EMTALA has helped to reshape the care provided to active labor patients who are evaluated in the obstetric triage setting (Angelini, 2006; Angelini & Mahlmeister, 2005; Caliendo, Millbauer, Moore, & Kitchen, 2004; Glass, Rebstock, & Handberg, 2004; Kriebs, 2013; Mahlmeister & VanMullem, 2000) and to some extent parallels the development of obstetric triage. Over the decades, role responsibilities within the obstetric triage setting have changed as nurses, physicians, midwives, and other providers have become part of a more collaborative model of obstetric triage care (Angelini, 2006; Angelini, Stevens, MacDonald, Wiener, & Wieczorek, 2009).

Methodology

A review was systematically conducted using the following electronic databases: PubMed, CINHAL, Ovid, and Cochrane Library Reviews with search limits set to locate studies related to obstetric triage published in the last 15 years, from 1998 to 2013 in the English language. Obstetric triage is defined as a specialty area/unit within obstetrics with multifunctional aspects (Angelini & LaFontaine, 2013). Two investigators screened titles and abstracts in both peer-reviewed and non–peer-reviewed publications, including commentaries and one book. Reference lists of each article were scanned to locate any additional or supplemental sources. The search was modified using the inclusion terms: obstetric triage, obstetric emergency room, obstetric services, and obstetric emergency care. Other specific words used as inclusion criteria were: midwifery, advanced practice role, and interprofessional/interdisciplinary education within the 15-year time frame.

FIGURE 1
Flow Diagram of Study Selection.



Source: Authors

Journal articles were retrieved primarily from nursing, advanced nursing practice journals, and medical journals. Exclusion criteria were: general articles pertaining to emergency departments that do not have an integrated obstetric triage component, articles outside the 15-year time frame, telephone triage, out-of-hospital practices, and other more specific clinical conditions presenting to obstetric triage.

A total of 33 appropriate publication sources, that met inclusion criteria, were reviewed (Figure 1). One of the sources was an editorial, and one was a book. Three of the articles were obtained perusing additional reference lists.

Articles were read in full by two independent reviewers to evaluate content relevance and to identify emerging themes covering the time period of 1998–2013. Of these 33 articles, 5 were comprised of evaluative research methods; 17 were descriptive, clinical, or literature reviews, 10 were prospective studies; and 1 was an editorial. The reviewers determined inclusion and exclusion criteria by appropriate content specific to obstetric triage. Seven topical categories, as listed in Table 1, were developed from the review and include the following: legal issues and impact of EMTALA; liability pitfalls; risk stratification (including acuity tools); clinical decision aids; utilization, patient flow, and patient satisfaction; the impact of obstetric triage on interprofessional education and advanced nursing practice; and selected clinical conditions in the triage setting.

Categories Within the Obstetric Triage Literature

Legal Issues and Impact of EMTALA

With passage of EMTALA, as well as national standards and guidelines for obstetric triage care, legal considerations have grown for obstetric triage providers. EMTALA encompasses a large segment of the scanned literature during this time period. EMTALA holds hospitals and providers accountable for prompt screening and care for pregnant women who present to obstetric triage in active labor (Glass et al., 2004; Kriebs, 2013). It prevents discrimination based on financial status and affects all hospitals that accept Medicare reimbursement.

Key information regarding EMTALA that affects triage includes the following content. EMTALA mandates that the obstetric triage provider perform a medical screening examination (MSE). This provider is called a qualified medical person (QMP). This person does not need to be a physician. This could be a certified nurse midwife (CNM), or other qualified person such as a labor

TABLE 1. Characteristics of Triage Studies (1998–2013)

Article	Setting	Purpose	Methodology	Key Findings/Highlights
CATEGORY 1 LEGAL ISSUES AND EMTALA				
Angelini, D. J. & Mahlmeister, L. R. (2005)	U.S.	Reviews liability in the triage setting from the perspective of EMTALA regulations and commonly seen obstetric complications in the triage setting.	Policy Analysis	Presents challenges with EMTALA law and describes strategies to modify risks in the obstetric triage setting.
Bitterman, R. A. (2004)	U.S.	Purpose of supplement is to explain the changes made to the EMTALA regulations in 2003 and how practitioners are affected by such changes.	Policy Analysis	Detailed background and information on specifics within EMTALA law.
Kriebs, J. M. (2013)	U.S.	Provides overview of legal acts affecting obstetric triage: EMTALA and HIPAA.	Policy Analysis	Covers the MSE, requirements for transport, labor and birth, record keeping and follow-up in EMTALA and disclosure of health information electronic media, HIPPA, and care of the adolescent under HIPPA.
Glass, L., Rebstock, J., & Handberg E. (2004)	U.S.	Provides a basic overview of EMTALA and specific strategies for risk reduction.	Literature Review	Details principal mandates, enforcement and violations, clinical situations that violate EMTALA with selected cases, and case analysis with risk reduction strategies.
Caliendo, C., Millbauer, L., Moore, R., & Kitchen, E. (2004)	U.S.	Provides basic review of EMTALA as pertains to obstetric triage and experience of one birth center.	Clinical Review	A case presentation used. Key components so as to not violate EMTALA; use of EMTALA friendly initiatives.
CATEGORY 2 LIABILITY PITFALLS				
Simpson, K.R. & Knox, G. E. (2003)	U.S.	Provides a framework for reviewing protocols and developing up-to-date policies that decrease risk exposure; common foci of perinatal liability claims.	Review of Liability Claims Analysis	Provides common foci of liability claims in obstetrics.
Angelini, D. J. (2013)	U.S.	Provides overview of obstetric triage liability pitfalls.	Clinical Review	Provides functions of obstetric triage units and categories of risk in OB triage.
Angelini, D. J. (2006)	U.S.	To review the state of practice in the obstetric triage setting.	Editorial	Future key areas in triage: abdominal assessment in pregnancy, increased liability in obstetric triage, effects of EMTALA, and the future of obstetric triage.
Ventolini, G. & Neiger, R. (2003)	U.S.	Provides scenarios on areas of increased risk in OB triage.	Literature Review	Discusses maternal symptoms that require special evaluation in abdominal pain, trauma, vaginal bleeding, vaginal fluid leakage, motor vehicle accidents, and decreased fetal movements noting areas for potential error and appropriate strategies to be used.
Mahlmeister, L. & Van Mullem, C. (2000)	U.S.	Presents the overall triage process and nursing competencies; obstetric triage in ambulatory and emergency department (ED) settings.	Clinical and Case Law Review Legal Review	Identification of triage pitfalls in ambulatory, ED, and mother infant units; reviews nursing competencies and role of charge nurse.

(continue...)

TABLE 1. Characteristics of Triage Studies (1998–2013) *(Continued...)*

Article	Setting	Purpose	Methodology	Key Findings/Highlights
CATEGORY 3 RISK STRATIFICATION (Including Acuity Tools)				
McCarthy, M., McDonald, S., & Pollock, W. (2013)	Australia	To evaluate the standard of documentation for triage assessment of women presenting to ED with preeclampsia or antepartum hemorrhage and to determine whether the introduction of algorithms with decision aids and an education program improved assessment and documentation.	Observational Study	Introduction of the triage decision aid section of the algorithm and education improved quality of documentation and assessment.
Paisley, K. S., Wallace, R., & DuRant, P. G. (2012)	U.S.	A process improvement intervention is described within a multicampus hospital system, producing an obstetric triage acuity tool.	Quality Improvement Project	Assigning acuity to patients in the form of an obstetric triage acuity tool improved the processes for all data points; however, still not optimal.
Smithson, D. S., Twohey, R., Rice, T., Watts, N., Fernandes, C. M., & Gratton, R. J. (2013)	Canada	Presents a 5-category obstetric triage acuity scale (OTAS) developed with a comprehensive set of obstetrical determinants.	Scale Development	By standardizing assessment, the OTAS improves performance and flow
CATEGORY 4 CLINICAL DECISION AIDS				
Lyons, A. (2010)	United Kingdom	To describe the educational needs of ED staff regarding obstetric emergencies.	Quality Improvement	The development of guidelines to manage pregnancies and births in EDs requires the involvement of multidisciplinary care teams. To imbed guidelines into practice, emergency drills should be initiated for staff.
Angelini, D. J. & LaFontaine, D. (2013)	U.S.	Narrative of evidence-based protocols and guidelines for use in obstetric triage and emergency settings.	Clinical Review	Expert clinical guidance on more than 30 clinical situations requiring obstetric triage or emergency care.
CATEGORY 5 UTILIZATION, PATIENT FLOW, AND PATIENT SATISFACTION				
Molloy, C. & Mitchell, T. (2010)	United Kingdom	Obtain views of women using OB triage and identify areas of best practices and areas in need of improvement.	Survey	Most women were satisfied with waiting times and time with provider; issues within environment of triage were identified.
Matteson, K. A., Weitzen, S. H., LaFontaine, D., & Phipps, M. G. (2008)	U.S.	Study designed to examine factors associated with women seeking treatment for medically nonemergent conditions in a primarily obstetric and gynecologic emergency facility.	Prospective Observational Study	Of the 287 women presenting with nonemergent issues: 36% of women believed they had a true emergency, 42% were physician referral, and 21% because of access barriers. Common reasons and symptoms revealed.
Paul, J., Jordan, R., Duty, S., & Engstrom, J. L. (2013)	U.S.	Quality improvement project initiated at a tertiary care center to determine whether LOS and patient satisfaction in an obstetric triage unit could be improved by using CNMs to manage and organize care on the unit.	Prospective Intervention Study	Patient satisfaction was measured. The CNM-managed care group reported increased patient satisfaction with care including wait time, time spent with provider, LOS, and overall care received. LOS shorter in CNM group (94 minutes vs. 122 minutes)

(continue...)

TABLE 1. Characteristics of Triage Studies (1998–2013) *(Continued...)*

Article	Setting	Purpose	Methodology	Key Findings/Highlights
Zocco, J., Williams, M. J., Longobucco, D. B., & Bernstein, B. (2007)	U.S.	Examination of variables involved in obstetric triage with goal of creating more efficient system.	Systems Analysis	Designating specific space (room) for triaging as well as standing orders did not decrease LOS. The triage process is strongly dependent on the provider's ability to assess, triage, and discharge patients.
Loper, D. & Hom, E. (2000)	U.S.	Quality improvement project aimed at providing seamless, single site care for pregnant patients.	Quality Improvement/ Evaluation Research	Effective patient classification systems can help determine staffing needs, improve patient flow, and define staff member roles and responsibilities. Preliminary analysis of the patient classification system supports its validity as a useful tool for determining staffing needs.
Thrall, T. H. (2007)	U.S.	Description of how development of an obstetric triage unit solves a patient flow issue.	Quality Improvement	Development of an obstetric triage unit had a large financial impact on hospital by eliminating OB diversions. It was estimated that the hospital avoided going on OB diversion 27 times during the unit's first 7 months of operation.
CATEGORY 6 INTERPROFESSIONIAL EDUCATION AND ADVANCED NURSING PRACTICE				
Angelini, D. J., O'Brien, B., Singer, J., & Coustan, D. R. (2012)	U.S.	Describes a 20-year successful collaborative academic practice between obstetrics and midwifery in the education of residents and medical students.	Descriptive/ Historical Analysis	Midwives in medical education are in a pivotal position to have an impact on the education of obstetricians and consultants.
Angelini, D. J., Stevens, E., MacDonald, A., Wiener, S., & Wieczorek, B. (2009)	U.S.	Common trends in structure and function of four distinct models of resident education in obstetric triage are reviewed.	Descriptive/ Review	Midwifery teaching role in obstetric triage has expanded beyond labor assessment to include a wide range of obstetric and gynecologic conditions. Patient safety and ability to bill for services are additional advantages.
Ciranni, P. & Essex, M. (2007)	U.S.	Discussion of the value of nurse practitioners in a full-service obstetric gynecologic triage unit regardless of gestational age.	Literature Review/Case Examples	Nurse Practitioners can be an asset both clinically and financially in the ObGyn triage setting.
Angelini, D. J. (1999a)	U.S.	Results of a national survey on CNMs as providers of obstetric triage services.	Survey Research	Presenting initial benchmark data on obstetric triage units and the role of the CNM.
Angelini, D. J. (1999b)	U.S.	Midwifery role in 10 triage units across the country is described.	Descriptive/ Review	Midwifery roles in triage have expanded, are diverse, and determined by the setting of obstetric triage.
Angelini, D. J. (2000)	U.S.	Reviews the history of obstetric triage, the role dimensions of advanced practice nurses in triage (specifically midwives), the increased clinical risks associated with obstetric triage, risk reduction strategies, and obstetric triage practice trends and liability issues in the future.	Descriptive/ Review	Obstetric triage is a rapidly growing area of obstetric care where most pregnancy complaints are evaluated starting at 20–24 weeks' gestation. This renewed interest in establishing obstetric triage units and using advanced practice nurses as care providers has heightened the visibility of obstetric triage for administrators and practitioners alike.

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TABLE 1. Characteristics of Triage Studies (1998–2013) *(Continued...)*

Article	Setting	Purpose	Methodology	Key Findings/Highlights
CATEGORY 7 SELECTED CLINICAL CONDITIONS				
Lutgendorf, M. A., Thagard, A., Rockswold, P. D., Busch, J. M., & Magann, E. F. (2012)	U.S.	Determine the prevalence of domestic violence (DV) in a pregnant military population presenting for emergency obstetric care; identify factors correlated with DV; and acceptability of DV screening.	Survey Research	Pregnant women presenting for unscheduled emergency care were screened for DV with Abuse Assessment Screen. The prevalence of DV in this population is higher than previously estimated (22.6%).
Angelini, D. J. (1999c)	U.S.	Review of common nonobstetric abdominal complaints in triage.	Clinical Review	Anatomic and physical changes of pregnancy can challenge the clinical assessment of nonobstetric conditions. Key points are reviewed to assist in accurate clinical assessment and management of these conditions.
Angelini, D. J. (2003)	U.S.	Four of the most frequently encountered nonobstetric clinical conditions warranting surgical intervention are reviewed with updates on evaluation and management.	Literature Review	Pregnancy often masks abdominal complaints; provides assessment and management of abdominal pain in the triage setting.
Howard, E. (2013)	U.S.	Review of clinical labor management issues.	Clinical Review	Review of evaluation and management of PROM, latent labor, active labor, and imminent delivery.
Caren, C. & Edmonson, D. (2013)	U.S.	Review of general surgical emergencies.	Clinical Review	Review of evaluation and management of general surgical emergencies in pregnancy with tables for assessment of presenting complaint by abdominal quadrants.
LaFontaine, D. (2013)	U.S.	Review of intimate partner violence in pregnancy.	Clinical Review	Review of assessment and evaluation of intimate partner violence and sexual assault with key clinical resources itemized.

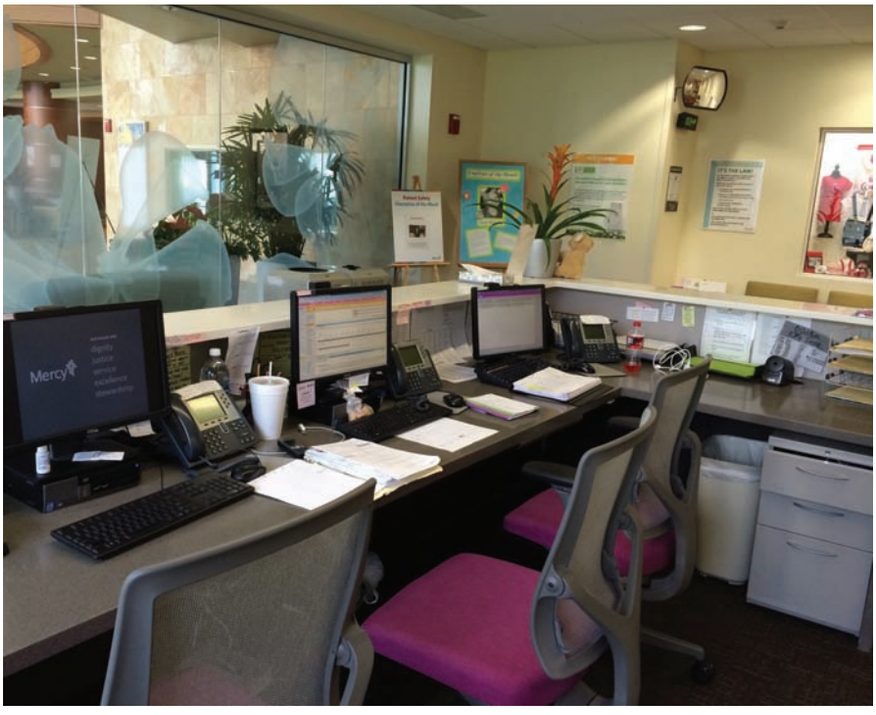
Source: Authors

and delivery nurse who is covering the triage unit. However, state rules and regulations for advanced practice and hospital bylaws need to be clearly reviewed to ensure competent credentialing of all providers and roles. The credentialing committee in each hospital must approve that person to take on this role. Physician consultation may be necessary for some advanced practice providers. The main components of EMTALA, however, center on overall clinical evaluation and transfer of care. Anyone presenting for care must receive an MSE. For pregnant women, the process requires assessment of both the mother and the fetus (Angelini & Mahlmeister, 2005). Any pregnant woman must be treated and/or stabilized for transport. EMTALA violations carry stiff penalties for hospitals and/or providers (Angelini & Mahlmeister, 2005; Glass et al., 2004; Kriebs, 2013). Bitterman (2004) notes that Centers for Medicare and Medicaid Services (CMS), who govern EMTALA, are concerned only if rules regarding overall care and transfer are violated.

Delay in timely response from consultants and not having lists of consultants available who are on-call can also be EMTALA violations. Delay in relaying urgency to the consultant, communication issues, or unclear consultation expectations all add to delays. On-call lists, patient logs (manually or electronically), and a record of all transfers must be available upon request.

The Technical Advisory Group of the Centers for Medicaid and Medicare implemented further recommendations to the EMTALA law in October 2006 (CMS, 2006). It notes that a CNM or other QMP acting within the scope of his or her practice can certify that a pregnant woman is not in active labor. Prior to this, the CMS stated that only a physician could certify prodromal and latent labor versus active labor (Angelini & Mahlmeister, 2005). Common allegations over treatment failures with EMTALA, as noted in the literature, encompass: failure to comply with EMTALA rulings, failure to perform an MSE, failure to accurately assess both maternal and fetal status, and transferring a woman in active labor who is unstable or based on the inability to pay (Simpson & Knox, 2003).

Liability Pitfalls



Given the rapid changes since EMTALA was established, liability risks and pitfalls have emerged as key considerations. The main areas of risk assessment in obstetric triage are: assessment in a timely manner, discharge from obstetric triage without evidence of fetal well-being, recognizing active labor, timely response from consultants, and effective use of clinical handoffs (Angelini, 2013; Angelini & Mahlmeister, 2005; Ventolini & Neiger, 2003).

Assessment in a timely manner affects pregnant women who are contracting and need to be evaluated urgently. Women who present with contractions and in active labor come under the active labor component of EMTALA (particularly for patients with acute conditions such as hemorrhage or seizure activity). Avoidance of treatment delays is key.

Each triage unit benefits from a standing policy on fetal assessment. This policy/guideline should not be too specific because it must be performed with every patient to effectively meet the standard of care. All guidelines need to be able to govern every patient each time the scenario arises. If providers cannot meet the guideline or standard each time, that will be problematic and present liability concerns.

Discharging a pregnant woman from an obstetric triage unit without evidence of fetal well-being presents a risk. Failure to adequately assess the fetal heart rate tracing as well as failure to respond to a category II or III tracing are two liability pitfalls commonly seen in the obstetric triage setting and noted in the literature. Documentation of fetal well-being prior to discharge must be in keeping with any specific triage unit guidelines.

Failure to recognize active labor is another liability pitfall. Evaluation of active labor is part of the EMTALA act and triggers an emergency medical condition that needs to be assessed by a qualified medical provider. Regulations clearly state that a woman who presents with contractions is only stable when the baby and placenta are delivered, contractions have ceased, or it is certified that the pregnant woman is not in active labor. One way to document this is to note that the patient is discharged to home in stable condition, not in active labor. Labor nurses acting in this role need to ensure they are credentialed by hospital bylaws and are within their scope of practice as detailed in the state nurse practice act.

The most critical component in liability pitfalls is clinical handoffs (Angelini, 2013). Much has been written on clinical handoffs (Kitch et al., 2008; Solet, Norvell, Rutan, & Frankel, 2005). There are reported cases of patient liability during clinical handoffs and an increase in errors with those in training (Kitch et al., 2008). These errors with trainees focus on: errors in judgment, teamwork breakdowns, clinical competence, and communication breakdowns. For example, the increased potential for errors during resident sign-outs has been noted (Angelini et al., 2009).

Multiple other safety- and liability-related risks in the obstetric triage unit cluster around excessive waiting times, crowding, transport, and stabilizing treatments (Angelini & LaFontaine, 2013; Angelini & Mahlmeister, 2005; Kriebs, 2013). Having a surge policy to deal with overcrowding and use of fast-track, observation, and holding rooms, equipped with monitoring capability, are all helpful in managing overcrowding.

Risk Stratification (Acuity Tools)

Triage is the process of assigning the order in which patients receive medical attention (McCarthy, McDonald, & Pollock, 2013). It requires an assessment of the presenting problem, including vital signs to determine clinical urgency. Such determination of acuity has been the subject of numerous quality improvement projects (Ciranni & Essex, 2007; Paisley, Wallace, & DuRant, 2011; Zocco, Williams, Longobucco, & Bernstein, 2007). Determination of acuity is not only essential for safe, effective prioritization of patient care, but can be used to correlate with appropriate staffing.

Prior to 2007, there were no published obstetric acuity tools. Standard emergency room acuity tools were relied on in the obstetric triage setting (Paisley et al., 2011; Zocco et al., 2007). A five-tiered obstetric triage acuity tool was developed by Paisley et al. (2011) in an effort to improve quality

A valid and reliable obstetric triage tool is needed to promote timely and appropriate care for the pregnant woman and her fetus.

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of care and efficiency of time to provider. The numeric acuity assignment is made by the nurse initially assessing the pregnant woman, and the tool is divided into five levels of acuity: 1) immediate: resuscitative measures needed, trauma, hemorrhage, prolapsed cord, impending birth, seizing; 2) urgent (within 15 minutes): rule out active labor, preterm, bleeding, fetal well-being, blood pressure, mental/psychosocial; 3) semiurgent (within 30 minutes): r/o labor, vaginal discharge, fetal well-being, blood pressure; 4) less urgent (within 60 minutes): r/o early labor, vaginal discharge, non-ob complaints, common discomforts; 5) procedure/testing. This tool has implications for education and assessment of competence and readiness of staff to appropriately assign level of acuity. The tool has assisted nurses in the accurate identification of acuity and appropriate prioritization/evaluation of pregnant women to improve patient flow. The primary outcome measure following implementation of this tool was time to initial nursing assessment.

The need for a reliable and valid obstetric triage tool is crucial to eliminate time delays, not just patient to initial nursing assessment time, but patient to provider delays. With these main outcome measures in mind, the reliability of the Obstetric Triage Acuity Scale (OTAS) was tested in 2011 (Smithson et al., 2013). Patient flow was assessed by additionally measuring overall length of stay (LOS). This tool standardizes the manner in which pregnant women are triaged. It provides an acuity distribution score that takes into consideration an understanding of staffing needs. This tool, like the aforementioned tool of Paisley et al., was developed with a comprehensive set of obstetric determinants modeled on the 5 categories of 1—Resuscitative, 2—Emergent, 3—Urgent, 4—Less Urgent, 5—Nonurgent. This Canadian assessment tool has a high degree of reliability and validity and is widely implemented in Canadian emergency departments (overall reliability 0.71).

Clinical Decision Aids

Obstetric triage occurs in a dynamic, fast-paced atmosphere requiring rapid and accurate clinical assessment skills (Paul, Jordan, Duty, & Engstrom, 2013). The development and implementation of triage screening tools, algorithms, and practice guidelines have been shown to improve documentation and clinical assessment (Lutgendorf, Thagard, Rockswold, Busch, & Magann, 2012; McCarthy et al., 2013). The handbook, *Obstetric Triage and Emergency Care Protocols* (Angelini & LaFontaine, 2013) is a recent publication focusing exclusively on topics encountered in obstetric triage and developed as narrative protocols with decision algorithms by both timing in pregnancy and clinical topic. It is one format that provides clinical guidelines as decision aids in obstetric triage practice. Standardized algorithms and approaches to clinical problems have been shown to improve both flow of patients and overall care (Smithson et al., 2013).

Guidelines enable all staff members to assess and provide care to pregnant women quickly and with the appropriate multidisciplinary staff. Examples of emergency team-based "drills" include management of ruptured ectopic pregnancy, eclampsia, unexpected or imminent birth, and hemorrhage. The coordinated use of protocols, drills, simulations, and team training are effective ways in which to improve safety. In all cases, the use of guidelines enables timely assessment, action, and coordination of multidisciplinary teams to ensure appropriate outcomes (Lyons, 2010).

Utilization, Patient Flow, and Patient Satisfaction

Emergency room overcrowding is an issue that affects both quality of care and patient flow issues. Two major contributors to the problem of overcrowding are 1) access to care within the community and 2) LOS for nonemergent conditions. A study was conducted to examine factors associated with women seeking treatment for medically nonemergent conditions in a primarily obstetric and gynecologic emergency facility (Matteson et al., 2008). Access to care was an issue in 21% of these nonemergent conditions, whereas 42% were referred by their provider, suggesting an additional layer of inadequate access to office visits. Analysis of patient volumes demonstrates there are peak flow times between 10 a.m. and 7 p.m., suggestive of a correlation with clinic referrals, booked inductions, and other scheduled events (Smithson et al., 2013).

Obstetric triage has the potential to decrease a hospital's tendency to resort to diversion status by appropriately assessing labor status of a woman outside of the labor unit itself. For example, a hospital in Denver with an 18-bed labor unit was constantly at full capacity until they opened a triage labor evaluation unit (Thrall, 2007). Through the appropriate clinical identification of those in latent versus active labor, the labor unit was able to avoid diversion status an estimated 27 times in the first 7 months of the obstetric triage unit's operation (Thrall, 2007).

Credentialed providers are essential to manage adequate patient flow. In a quality improvement project initiated in a tertiary care obstetric triage unit, LOS and satisfaction with

provider were noted for patients cared for by CNMs (Paul et al., 2013). The LOS in patients cared for in the CNM group was significantly shorter than for women in the standard care model, and there was higher patient satisfaction with midwifery providers (Paul et al., 2013). Less acute visits may have a shortened LOS by use of a fast track, or access to a more appropriate level of provider to evaluate and assess care in the triage setting (Smithson et al., 2013). All of these factors combine to improve overall patient satisfaction (Molloy & Mitchell, 2010).

In both the Paisley et al. (2011) Acuity Tool as well as the OTAS (Smithson et al., 2013), initial time to nursing assessment was decreased, whereas time to secondary healthcare provider in cases of increased acuity was not. To improve LOS and the time to secondary healthcare provider assessment for more acute patients, the feasibility of a "fast-track" pathway for less acute patients was investigated (Smithson et al., 2013). The results showed that "fast-track" units and pathways have been adopted in other emergency rooms and shown to decrease LOS in low acuity patients (Smithson et al., 2013). The OTAS (Smithson et al., 2013) used computerized simulation modeling of changes in staffing, and specific care pathways for the most common presentations within each OTAS level.

Impact of Obstetric Triage on Interprofessional Education and Advanced Nursing Practice

In many academic tertiary care settings, triage concepts are fully integrated into obstetric services for pregnant women and have an impact on interprofessional education and advanced nursing practice (Angelini, O'Brien, Singer, & Coustan, 2012; Angelini et al., 2009). Obstetric triage units serve as a valuable training arena for advanced practice nurses (APNs), midwives, medical students, and resident physicians (Angelini, 2000). In addition to facilitating patient flow, midwives and obstetricians in the triage setting provide a needed safety net for new resident learners (Angelini et al., 2012; Angelini et al., 2009). Growth of these models coincides with the decrease in resident work hours and demand for interprofessional collaboration (Angelini et al., 2012).

Several provider mixes have been described in the triage setting with midwives as teachers of obstetric residents. One example, in a large tertiary care setting, the provider team consisted of one midwife and one third or fourth year resident, with the addition of an emergency medicine resident, and a student physician assistant. This type of coverage exists mainly during daytime hours and during peak patient flow times. The strength of collaborative teaching models, such as midwifery in obstetric triage, is the development of collegial relationships, the ability to increase safety by having a consistent provider supervising and decreasing handoff errors, and ultimately, decreasing wait times and increasing patient satisfaction.

In 2009, a targeted survey of midwives working in Level III centers performing obstetric triage was performed, and several models of care were described (Angelini et al., 2009). Most commonly, midwifery evaluation occurred with pregnant women who were greater than 20 weeks gestation. All midwives billed for services as well as had significant supervisory input into resident physician performance in the triage setting. Trends in midwifery presence in obstetric triage within the tertiary care setting include: expansion of role beyond labor management; formal teaching and competency surveillance for first year obstetric residents; billing and reimbursement opportunities; expansion of clinical teaching role beyond obstetric residents to emergency department residents; minimization of handoffs with consistency of provider; and evaluation of resident and new learner clinical performance (Angelini, 1999b; Angelini et al., 2009).

Management of Selected Clinical Conditions in the OB Triage Setting

Several commonly presenting clinical conditions emerged in this review. In addition to a book dedicated entirely to narrative clinical protocols (Angelini & LaFontaine, 2013), specific clinical issues included in this text are: a) domestic violence screening, b) abdominal pain in pregnancy, and c) assessment and management of latent labor. A comprehensive overview of clinical conditions and possible acuity levels within the obstetric triage setting may be seen in Table 2.

Domestic violence is an underreported women's health issue (LaFontaine, 2013) and may affect up to 23% of pregnancy women (Lutgendorf et al., 2012). The incorporation of routine domestic violence screening in obstetric triage is an essential first step in identifying women affected by domestic violence. Standardization of domestic violence screening with provision of updated regional resources is integral to any obstetric triage unit.

Abdominal pain in pregnancy (Angelini, 1999c) is a common presenting complaint in obstetric triage. Often, this discomfort has a benign etiology (Caren & Edmonson, 2013). Understanding common discomforts of pregnancy and their origins as well as management of more acute conditions are essential in the triage setting. There are excellent resources in the form of decision aids available to providers, such as tables describing possible differential diagnoses for acute pain in pregnancy by abdominal location (Caren & Edmonson, 2013). Consideration of the anatomic and physiologic changes that take place during pregnancy needs to be taken into account during evaluation, diagnosis, and treatment (Angelini, 1999c; Angelini, 2003; Caren & Edmonson, 2013). Emergent abdominal surgery is performed rarely in pregnancy (0.2%), and includes most commonly: acute appendicitis, acute choloecystitis, and bowel obstruction (Caren & Edmonson, 2013).

The determination of active labor and differentiation of latent phase from active phase are recurring themes in this review. Safe and thorough evaluation of the pregnant woman at term requires appropriate knowledge of the necessary components of maternal and fetal assessment (Howard, 2013). Labor triage requires a comprehensive understanding of the labor process, an evaluation of the maternal and fetal response to labor, and when to safely discharge a woman who is not in active labor (Loper & Horn, 2000). Incorrect identification of active labor may result in unnecessary interventions, including cesarean birth, as well as violations of the EMTALA law (Howard, 2013). For the 5% of women who experience a prolonged

TABLE 2. Clinical Conditions and Acuity Level

Less than Viability	Overall Clinical Incidence	Range of Acuity Levels
Ectopic	2%	1–5
Vaginal bleeding	25%	1–4
Postabortion complications	<1%	1–3
Abdominal pain (surgical)	0.2%	
Pregnancy loss	15%	1–4
Nausea/vomiting/ Hyperemesis of pregnancy	70–85% 2–5%	1–4
Medical conditions:		
Pyelonephritis	1–2%	1–3
Nephrolithiasis	<1%	1–3
Pancreatitis	0.1%	1–3
Greater than Viability		
Fetal evaluation	n/a	
Limited/no prenatal care	4–7%	1–4
Preterm labor	12.3%	1–3
PPROM	3%	2–3
Trauma (total)	5–20% of all pregnancies (include blunt and nonblunt)	1–4
Preeclampsia/eclampsia/ hypertensive	6–8%	1–4
PROM at term	8–10%	1–3
Severe medical complications	n/a	
Vaginal bleeding	5%	1–3
Throughout Pregnancy		
Common surgical emergencies	0.2%	1–3
Partner violence/sexual assault	20–23%	1–3
Substance use/psychiatric disorders	12.4%	1–3
Sexually transmitted infections	11%	1–3
Commonly Seen in OB Triage		
Postpartum preeclampsia	6% of women who develop PEC do so in the PP period	1–3
Postpartum breast complications	2–33%	2–5
Secondary PPH/endometritis	0.5–2%	1–3
Psychiatric complications in postpartum	19.2%	2–4

Key: 1–Immediate; 2–Urgent; 3–Semiurgent; 4–Less Than Urgent; 5–Procedure/ Testing

Adapted by authors from

Angelini, D. J. & LaFontaine, D. (2013); Paisley, S., Wallace, R., & DuRant, P. G. (2011)

latent phase, it may be beneficial to admit them for therapeutic rest.

Discussion

In this review of obstetric triage from 1998 to 2013, there were 33 sources examined. Five manuscripts focused on legal issues and EMTALA; five on liability pitfalls; three on risk stratification (acuity tools); three on decision aids; five related to utilization, patient flow, and patient satisfaction; six on interprofessional education and advanced nursing practice; and six related to selected clinical conditions in the triage setting. Recognition of a best practices model within the triage setting has also been identified. Table 3 summarizes the components of best practices in obstetric triage from 1998 to 2013. Anyone initiating a new obstetric triage unit or remodeling components can use this best practices model to enhance quality and unit effectiveness.

A large section of publications during this time period detailed the many aspects of EMTALA and legal issues as they affect active labor and day-to-day operations in obstetric triage. Aspects of the EMTALA law affecting obstetric triage specifically are the MSE, requirements for transport, documentation of active labor, recordkeeping, various mandates, and enforcement violations.

Specific areas of liability risk in obstetric triage are noted. The use of both clinical and administrative protocols that (a) align with the EMTALA law and (b) address best evidence for care of pregnant women in the triage setting can lower liability risk exposure and minimize risk of patient harm. A standardized clinical risk assessment tool used in conjunction with decision aids is paramount to address both safety and efficiency. The quest for the best acuity tool specific to obstetric triage is evolving. However, at this time, it appears that the OTAS, in conjunction with specific obstetric modifiers, has good reliability (0.71). Its replicability in a range of settings still needs to be determined.

Risk stratification, utilization, and clinical decision aids are interdependent concepts in obstetric triage. The overwhelming need for standardized assessment in the form of decision aids is apparent in the publication of an entire book dedicated to narrative, obstetric, evidence-based protocols (Angelini & LaFontaine, 2013). Drills and standardized responses to the most common obstetric emergencies are essential to improve quality and promote safety.

Reduction of resident physician work hours resulted in the growth of advanced practice nursing roles in triage, both as providers and teachers (Angelini et al., 2009). Innovations in provider mix have added to the provision of

TABLE 3. Clinical Implications Best Practices Model in Obstetric Triage

• Use of an acuity scale specific to obstetric triage
• Standardization of assessments
• Adequate staffing
• Measurement of patient flow via analysis of acuity distribution
• Creation of fast track for nonemergent obstetric conditions
• Development of clinical and administrative protocols to reduce risk and align with EMTALA rules and regulations, especially for active labor
• Establishment of a collaborative, interprofessional practice model and provider mix
• Identification of liability pitfalls in each triage setting (including handoffs)
• Development of team training with ongoing multidisciplinary clinical simulation drills
• Quality improvement that tracks acuity, LOS, and patient satisfaction

Sources: Angelini, D. J. (1999a); Angelini, D. J. & LaFontaine, D. (2013); Angelini, D. J. & Mahlmeister, L. (2005); Angelini, D. J., O'Brien, B., Singer, J., & Coustan, D. R. (2012); Glass, D. L., Rebstock, J., & Handberg, E. (2004); Kriebs, J. (2013); Paisley, S., Wallace, R., & DuRant, P. G. (2011); Paul, J., Jordan, R., Duty, S., & Engstrom, J. L. (2013); Smithson, D., Twohey, R., Rice, T., Watts, N., Fernandes, C., & Gratton, R. (2013); Ventolini, G. & Neiger, R. (2003)

continuity and safety in triage. Such interdisciplinary environments are high-quality learning environments, promoting interprofessional collaboration (Angelini et al., 2009).

Limitations

This review reflects the current state of the science in obstetric triage, which is an evolving field with numerous systems-based analyses and involves both staffing and educational needs. This review identifies a significant gap in the literature in terms of outcomes-based research in obstetric triage. Now that such concepts as evidence-based guidelines, quality improvement interventions, and best practices are identified, randomized controlled trials would be recommended to test these practices.

Only literature during a selected time period was studied. There exists a larger body of clinical triage conditions that is not presented in this review. Critical systems that may improve triage utilization and flow such as telephone triage were not reviewed. Practices that have proven useful to patient satisfaction, provider mix, or implementation of fast-track services in general emergency settings were not included, although it is likely that many of these concepts are generalizable to obstetric triage.

Recommendations: Clinical and Research

After reviewing the major categories in the literature affecting obstetric triage in the last 15 years, the following recommendations are offered. Within the content of EMTALA and legal issues, a reevaluation of EMTALA violations and treatment failures specific to obstetric triage would be useful to improve quality. Errors in handoffs at the point of service in triage are reflective of the biggest challenge in a setting with multiple learners. In addition, an updated survey on how obstetric triage units function, especially in a Level III perinatal center or large volume birthing service, is warranted (none has been performed since 1999). There is a paucity of data on just how these units function, who provides care, timing of care, patient satisfaction, survey tools, and more.

Cost effectiveness of obstetric triage care is another area for further review. What does triage cost per patient, what does future reimbursement for this service cover, what happens when triage overflows, and how does this impact clinical outcomes and cost effectiveness? What is the ideal LOS? What is the appropriate average time frame for the safe determination of patient disposition? Difficulty transferring pregnant women in a timely manner and use of triage as a holding area, as well as the constant potential for emergency births when the system is fully impacted, all warrant further consideration and simulation data analysis.

Research to date has focused on validation of acuity tools and the education and training of providers. However, there remains a gap in the literature addressing actual patient flow in relation to acuity in obstetric triage (Smithson et al., 2013). A comprehensive acuity tool that includes performance outcome measures, including LOS and patient satisfaction, needs to be developed and implemented. However, the OTAS is an excellent beginning (Smithson et al., 2013). Evaluation of context-specific contributors to LOS with emphasis on determining processes that facilitate and disrupt flow (contributing to LOS) would be a meaningful undertaking to any obstetric triage department. A facility-specific time analysis of each point on the care pathway to complete principal steps from registration to discharge is a starting point.

The role of the advanced practice provider in obstetric triage has been documented. However, an updated survey on role changes, advanced practice responsibilities, and interprofessional collaboration needs to be initiated. The role of the physician laborist/hospitalist within obstetric triage services or that of the midwifery laborist requires future exploration.

Management of latent labor is a topic specific to the realm of obstetric triage. There are a number of complexities involved in managing early labor effectively. Best clinical practices in early, latent labor management especially need to be defined as they relate to the triage setting.

Determination of an ideal provider mix in obstetric triage is a topic that warrants further study. It is probable that this mix will vary depending on region, hospital, patient demographics, flow, and acuity distribution. However, more research on use and effectiveness of midwives, and other APNs, in both the teaching of residents and other healthcare professionals in the obstetric triage setting is necessary to evaluate both cost issues and improve education and clinical outcomes. ✣

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