Triage Decisions Involving Pregnancy-Capable Patients: Educational Deficits and Emergency Nurses' Perceptions of Risk

Lisa A. Wolf, PhD, RN, CEN, FAEN, FAAN; Altair M. Delao, MPH; Kathleen Evanovich Zavotsky, PhD, RN, CCRN, CEN, ACNS-BC, FAEN; and Kathy M. Baker, PhD, RN, NE-BCV

abstract

Background: In areas where obstetric services are not available, emergency departments often become the default for unplanned obstetric care, yet emergency nurses are not universally trained in the identification and treatment of obstetric emergencies. The purpose of this study was to explore emergency nurses' perception of acuity in the triage of pregnant or postpartum patients presenting to the emergency department with high-risk complaints and to identify facilitators and challenges to the accurate identification and treatment of these patients. **Method:** A mixed-methods study was conducted using chart review data ($N = 12,766$) and focus group data ($N = 39$) from five emergency departments in the eastern United States. **Results:** In 86.5% of cases, pregnancy status was not documented. Ninety-four percent of pregnant patients with a systolic blood pressure over 140 mmHg were undertriaged. The overall theme of the qualitative data was acuity blindness, with identified barriers to assessment that included educational needs and triage processes and workflow issues. **Conclusion:** There are significant knowledge deficits in the care of patients presenting with high-risk conditions associated with pregnancy. [*J Contin Educ Nurs*. 2021;52(1):21-29.]

Between 2004 and 2014, 179 rural counties lost hospital-based obstetric services, resulting in significant increases in out-of-hospital births or births in nondelivering hospitals (Maternal Health Task Force, 2016). The rise of these obstetric deserts causes pregnant women to travel longer distances to find obstetric services or requires them to shift to emergency departments for care. Postpartum complications are not uncommon and may present after initial hospital discharge (Chmielewski & Gregg, 2008; Sibai, 2012). The threshold for immediate treatment in the context of hypertension is much lower in these pregnant and postpartum patients (American College of Obstetricians and Gynecologists, 2019), and thus emergency nurses need to be able to recognize the high-risk patient and intervene quickly. However, emergency nurses are not trained specifically in the identification and management of emergencies in the perinatal period, and emergencies may be underrecognized, delaying life-sustaining treatment (Kozhimannil et al., 2018). This lack of training for emergency nurses may affect the safety of care provided to those patients seeking obstetric care in emergency departments.

Emergency department triage is used to quickly identify patients who are unstable or are high-risk. Most emergency departments in the United States use the Emergency Severity Index (ESI) as their triage framework: it is a
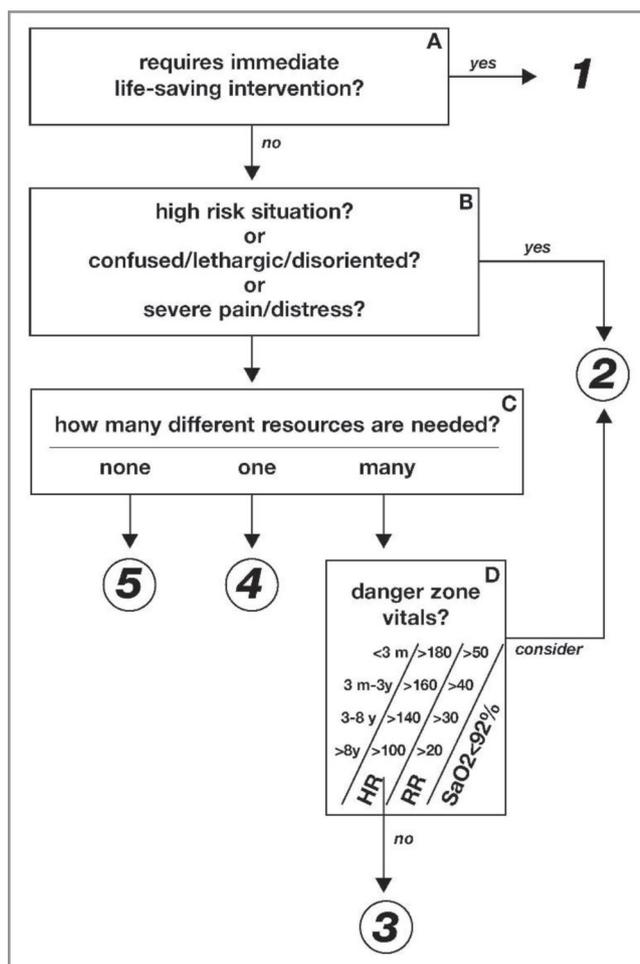
Figure 1. Emergency Severity Index triage algorithm. Note. HR = heart rate; RR = respiratory rate; SaO2 = oxygen saturation. From *Emergency Severity Index (ESI): A Triage Tool for Emergency Department Care, Version 4: Implementation Handbook, 2012 Edition* (AHRQ Publication No. 12-0014), by Agency for Healthcare Research and Quality, 2011 (https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/systems/hospital/esi/esihandbk.pdf). Copyright 2020 by the Emergency Nurses Association. Reprinted with permission.

five-level system that assigns patients an acuity level from 1 (*dying, requires life-saving intervention*) to 5 (*requires no resources, vital signs within normal limits*) (Gilboy et al., 2011) (**Figure 1**). It is critical for the emergency nurse to be able to differentiate between levels 2 (*unstable*) and 3 (*stable*) because the assigned triage level at the beginning of the emergency department encounter is the driver of the trajectory of care (Yurkova & Wolf, 2011). If high-risk patients are not identified appropriately, care may be delayed or potentially dangerous conditions may be missed. There are some tools specifically for obstetric triage (Rashidi Fakari et al., 2019), but those are used in childbirth units, not emergency departments. Thus, the

challenge of understanding the physiologic processes that inform obstetric care to assign acuity may be outside the knowledge of the emergency nurse. A search of the literature yields no studies examining the cognitive processes of emergency nurses during the triage of obstetric patients in the general emergency department setting.

The purpose of this study was to explore emergency nurses' perception of acuity in the triage of pregnant or postpartum patients presenting to the emergency department with high-risk complaints and to identify facilitators and challenges to the accurate identification and treatment of these patients.

RESEARCH QUESTIONS

Questions included:
- What is the perceived acuity of female patients presenting to the emergency department with complaints of headache, abdominal pain, shortness of breath, and/or palpitations in the presence of hypertension?
- What is the clinical decision-making process of acuity assignation in female patients presenting to the emergency department with a complaint of headache, abdominal pain, shortness of breath, and/or palpitations in the presence of hypertension?
- Is there a difference in the decision-making process when the element of pregnancy or postpartum status is part of the patient history?

METHOD

A mixed-methods study was implemented using data retrieved from electronic health records (EHR) and triangulated with focus group data.

Sample

A convenience sample of five emergency departments on the eastern coast of the United States was recruited. Each emergency department received more than 30,000 patient visits per year, used the ESI for triage, and had an EHR system that had been in place for at least 12 months prior to the start of data collection. Four of the five hospitals were part of the same large hospital system and located in suburban areas—the fifth was an urban hospital. One of the five hospitals had lost obstetric services. The EHR at each site was searched for a cohort of female patients between the ages of 18 and 50 who presented with a complaint of headache, shortness of breath, chest pain, or abdominal pain during the time frame of January 1, 2018 to December 31, 2018. Comparison of obstetric versus nonobstetric patients was made with an emphasis on systolic blood pressure (SBP) and heart rate (HR) as recorded at triage and ESI acuity level. Focus group participants (*N* = 39) were recruited from nurses working in each of

TABLE 1

FOCUS GROUP PARTICIPANT DEMOGRAPHICS (N = 39)

Characteristic	Participants
Gender	
Male	10.2%
Female	89.8%
Age (years)	
18 to 24	2.5%
25 to 34	35.9%
35 to 44	20.5%
45 to 54	7.7%
55 to 64	33.3%
Missing	15.4%
Education	
Associate	20.5%
Bachelor's	61.5%
Master's	17.9%
Primary emergency department role[a]	
Staff nurse	79.5%
Nurse	23.1%
Clinical coordinator	5.1%
Mean years of nursing experience (range)	
As a nurse in all areas of nursing (n = 39)	12.23 (1-45)
As an emergency nurse only (n = 39)	10.38 (1-43)

[a] Percentages do not equal 100 because several nurses reported being equally in the role of staff nurse and charge nurse.

TABLE 2

EMERGENCY DEPARTMENT CHARACTERISTICS OF PARTICIPATING SITES (N = 5)

Characteristic	%
Emergency department patient population	
All ages	100
Facility type	
Nongovernment, not-for-profit	100
Geographic location	
Urban	20
Suburban	80
Annual emergency department patient visits	
30,001 to 40,000	20
40,001 to 50,000	20
50,001 to 75,000	20
75,001 to 100,000	20
>100,000	20
Academic medical center	
Yes	80

the five emergency departments by an onsite coordinator. This was a purposive convenience sample of emergency nurses who were both interested in participating and available on the day that the focus group was held at a particular site.

Data Collection

Prior to data collection, institutional review board review was conducted by Advarra and determined to be exempt from oversight. A certificate of confidentiality was obtained from the National Institutes of Health to ensure the ability of focus group participants to speak freely. As part of the recruitment process, focus group participants completed a short survey that included their demographic information (e.g., age, gender, education, nursing experience) (**Table 1**). The onsite coordinator completed a short survey on the practice setting demographics (e.g., type of emergency department, number of annual patient visits) (**Table 2**). Variables collected included age of patient, SBP, HR, pain level, last menstrual period and/or days postpartum as appropriate, ESI level assigned at triage, and disposition.

Qualitative data were collected during six 1-hour focus group sessions; to ensure adequate numbers of participants per site (six to eight participants), we held one session in each of four sites and two sessions at a fifth site. Each session was facilitated by two members of the research team. A total of 39 participants were recruited from the emergency departments in the general sample. Focus groups were audiorecorded and transcribed in their entirety. Along with field notes of the sessions, the transcripts served as the data set for qualitative analysis. Participants received a copy of the study purpose, an informed consent document, and a demographics form at the start of each focus group.

Data Analysis

Demographic (nurse) and chart review (patient) data were exported to an SPSS® version 25.0. Descriptive and correlational statistical analyses were performed to explore any relationship between pregnancy or postpartum status, hypertension, and presenting symptoms, and ESI level as assigned by the triage nurse.

Members of the research team used a modified version of Mayring's (2014) eight-step approach to inductive cat-

TABLE 3

DISTRIBUTION OF PATIENT SAMPLE BY PREGNANCY STATUS AND EMERGENCY SEVERITY INDEX (ESI) LEVEL (N = 12,766)

Pregnancy Status	ESI Level					Total
	1	2	3	4	5	
Pregnant (n = 969)	0 (0%)	59 (6.1%)	902 (93.1%)	8 (0.8%)	0 (0%)	969 (100%)
Postpartum (n = 81)	0 (0%)	6 (7.4%)	74 (91.4%)	1 (1.2%)	0 (0%)	81 (100%)
Not pregnant (n = 668)	2 (0.3%)	62 (9.3%)	591 (88.5%)	13 (1.9%)	0 (0%)	668 (100%)
Unknown (n = 11,045)	8 (0.07%)	1,164 (10.5%)	9,591 (86.8%)	279 (2.5%)	6 (0.1%)	11,048 (100%)
Total[a]	10 (0.1%)	1,291 (10.1%)	11,158 (87.4%)	301 (2.4%)	6 (0.05%)	12,766 (100.1%)

[a] Total percentage does not equal 100 due to rounding.

TABLE 4

EMERGENCY SEVERITY INDEX (ESI) DISTRIBUTION OF PATIENTS WITH SYSTOLIC BLOOD PRESSURE (SBP) >140 mmHg BY PREGNANCY STATUS (N = 2,897)

ESI Level	Pregnancy Status				Total
	Pregnant	Postpartum	Not Pregnant	Unknown	
1 (n = 5)	0 (0%)	0 (0%)	1 (20%)	4 (80%)	5 (100%)
2 (n = 365)	7 (1.9%)	2 (0.5%)	17 (4.7%)	339 (92.9%)	365 (100%)
3 (n = 2,469)	84 (3.4%)	15 (0.6%)	143 (5.8%)	2,227 (90.2%)	2,469 (100%)
4 (n = 54)	1 (1.9%)	0 (0%)	4 (7.4%)	49 (90.7%)	54 (100%)
5 (n = 4)	0 (0%)	0 (0%)	0 (0%)	4 (100%)	4 (100%)
Total	92 (3.2%)	17 (0.6%)	165 (5.7%)	2,623 (90.5%)	2,897 (100%)

egory development, allowing themes to emerge from the data. Focus group transcriptions and field notes were analyzed by the principal investigator and members of the research team individually using open coding, simultaneous coding, and subcoding techniques as described by Saldaña (2009). Codes were then reexamined as a team to determine the final categories and theme by consensus. Coding used in the quotes indicate the nurse's primary role (staff nurse, clinical coordinator, charge nurse), gender (male, female), and their study identification number (1–39). Qualitative findings were sent to participants for member checking. Only a few members responded, but those who did agreed with the interpretation of data.

RESULTS

Question one, "What is the perceived acuity of female patients presenting to the [emergency department] with complaints of headache, abdominal pain, shortness of breath, and/or palpitations in the presence of hypertension," was answered using quantitative chart data.

Our data suggest that the perceived acuity of this patient group was significantly lower than it should be. Of 12,766 charts reviewed, pregnancy status (pregnant, postpartum, or not pregnant) was confirmed in only 13.5% of patients. In 86.5% of cases, pregnancy status was not documented. An acuity score of ESI 3 was assigned to 93% of pregnant patients, 91.4% of postpartum patients, 88.5% of known nonpregnant patients, and 87.4% of patients with unknown pregnancy status, indicating a perception that these patients were not at risk of decompensation. In the 92 cases of pregnant patients with an SBP greater than 140 mmHg, 84 (91%) were assigned an acuity of ESI 3; as these patients are considered to be high risk (ESI 2), this is a pattern of dangerous under triage (**Tables 3-4**). Logistic regression analysis (**Table 5**) suggests there are no significant relationships between the ESI acuity decision and pregnancy status, but significant relationships exist between ESI acuity, age, and race.

Question two, "What is the clinical decision-making process of acuity assignation in female patients presenting to the [emergency department] with a complaint of head-

TABLE 5

LOGISTIC REGRESSION ANALYSIS: FACTORS IN ASSIGNING AN EMERGENCY SEVERITY INDEX 2 TO PATIENTS

Variable	B	SE	Wald	df	p	Exp(B)	95% CI for Exp(B)
Systolic blood pressure >140 mmHg	0.135	.071	3.623	1	.057	1.145	[0.996,1.315]
Pregnancy status	0.054	.047	1.293	1	.255	1.055	[0.962,1.157]
Race	−0.072	.013	30.940	1	.000	0.930	[0.907, 0.954]
Insurance status	0.242	.103	5.535	1	.019	1.274	[1.041, 1.558]
Age (years)	0.043	.004	149.026	1	.000	1.044	[1.037, 1.051]
Constant	−4.137	.230	322.119	1	.000	0.016	

ache, abdominal pain, shortness of breath, and/or palpitations in the presence of hypertension," was answered using qualitative focus group data.

We explored the clinical decision-making process using the focus group data. The overall theme of the qualitative data was acuity blindness. Categories emerged that included incomplete assessment, paradigmatic learning and specific concerns, no consensus on danger, and mitigating actions. Participants also discussed assessment barriers that included educational gaps, language barriers, and triage processes and workflow issues. The overall data suggests both individual and institutionally driven challenges to the identification of high-risk patients (**Figure 2**).

Incomplete assessment focused on the process discussion around patient assessment. These comments focused on the patient presenting with a headache and hypertension to the exclusion of other types of presentations. Participants described an attempt to identify a pattern rather than making a judgment about the constellation of symptoms. In one site, nurses established an initial ESI acuity level based on a visual assessment during daytime hours; physicians performed the formal triage assessment, and so the nurses were not able to determine acuity themselves beyond a brief visual scan. Nurses at this site who worked off shifts were better able to discuss this process and were clearer in their understanding of absolute parameters of risk. In all sites, assessment was discussed as person driven, rather than systems driven, and suggested both a wide variability in knowledge, as well as a process of attempting to contextualize the presentation and make an acuity decision with incomplete information. Staff nurses commented:

- …unsteady gait, bad color, confusion that's new, the onset of the headache (is it sudden, or has it been there for two weeks?), right, is it a sudden onset of dizziness or light-headedness? Those, most of the time if they have a sudden onset of dizziness and headache, we call a code stroke. I also think the quality—is it a sharp headache…

versus a headache that's been around for hours? A history of migraines versus not—is this something that happens to you often or not?

- I work in triage a lot, so with the woman of child-bearing age, I always look at the way they look, and I ask, "Do you have a headache, how long have you had a headache, any associated symptoms—lightheaded? Chest pain?" I also look at them like to see any swelling of the leg, [asking] what intensity—1 to 10, 10 being the worst. And usually, I also check the vital signs to see what [is] the heart rate—it's important and so is the blood pressure important. And then I also ask them when their last menstrual period is, so it's, if they are late and the way they look, you can pretty much tell, so if they said they are not sure then I also ask them, you know, how many times they've been pregnant and stuff like that.

Paradigmatic learning and specific concerns were a category of comments described by participants as very well-delineated worst-case scenarios. The nurses in these focus groups discussed these concerns, which were person specific, as a result of a patient encounter with a poor outcome. Nurses reported learning as paradigmatic, rather than structured by evidence-based practice knowledge; each participant had some knowledge of different possibilities without having an organized, physiologic, evidence-based framework from which to make decisions. This discussion highlighted the lack of education in this area, and participants noted the challenges that stemmed from this deficit. Staff nurses commented:

- Have I seen it? I [have] seen one who coded…postpartum six days and then came in [emergency room], she didn't check back with the doctor, so she came to us, and we don't know why she died, but we know that she gave birth and she made [a] complaint of short of breath and we intubated her and everything, but she didn't make it…. Then I've seen people come in after giving birth and always try to rule out [pulmonary embolism]

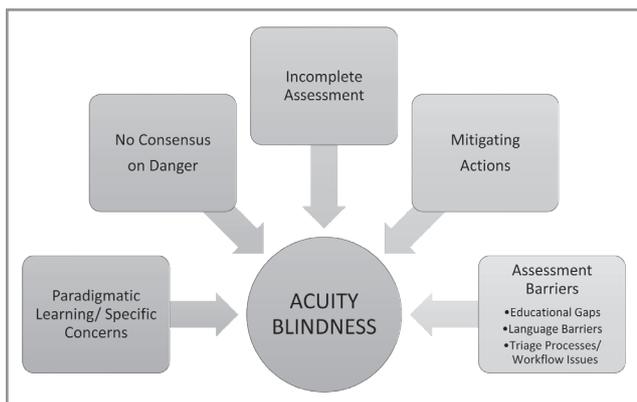- [We] had one event a couple of years ago, where a patient

Figure 2. Qualitative themes and categories.

returned multiple times for a headache, and I don't want to say they were brushed off, but I think they were getting the whole, "You're pregnant, so we can't scan anything," and she ended up dying in postpartum of an [arterial venous] malformation bleed or something.

- Basically, you're teaching the new people as you have cases and say, "This is why we treat them guilty and prove them innocent…ectopic pregnancy, until you have seen one burst and have them pasty white even with a ruptured liver from [mononucleosis] or spleen, you will never forget it, and that's why you keep it in the back of your head." But new nurses, they don't know where to go with that knowledge and what it can be. And any advice you can give them, say, "You are new, this is what it is—go home look it up, use your case that you had to compare it to what you're seeing in textbooks."

No consensus on danger underlines a lack of basic knowledge necessary to determine acuity; the understanding of SBPs that would put a pregnant or postpartum patient in the ESI 2 (unstable, high-risk) category, for example, ranged from 140 to 190. There was not enough common knowledge to get agreement among participants on what constituted high-risk presentations. Additionally, the lack of awareness was deepened by the nurse's effort to contextualize the problem to gain an understanding of the patient's condition, rather than recognizing the seriousness of the problem based on categorical parameters. A staff nurse commented:

SBP 180 or 190 is a dangerous [blood pressure]. I think it's really important to know what, you know, what their pressures had been running before, because they're going to the doctor, if they're pregnant they're hopefully, going to the doctor on a regular basis, so they kind of know where their pressures were at.

A clinical coordinator commented:

I mean, it really is based on what was their baseline. I

mean the whole thing with eclampsia, is based on, I mean, I don't even remember, but I know it's based on their baseline—30 points above? 20 points above their norm?

Participants at all sites noted that the large majority of their pregnant or postpartum patients were at the emergency department for nonemergencies, routine care, and bleeding and spotting in early pregnancy, possibly lowering the overall perception of acuity. A charge nurse commented:

But it [lack of access] definitely does change how people use us for their obstetrical emergency care. We have far more routine obstetrical problems than emergencies. I think the most common thing we see is abdominal pain in less than 20 weeks pregnant is a common complaint, or miscarriage—one of those.

Mitigating actions included actions that both moderate or lessen risk and inadvertently (and potentially) worsen the risk of these patients, as shared by participants. Although nurses do not report acting themselves, they describe handing off the patient verbally or physically to another provider or treatment space. Participants reported that actions included deferring definitive care by placing the patient under the aegis or authority of another nurse or provider; this is indicative of a lack of shared knowledge regarding elements of instability and dangerous presentations. Staff nurses commented:

- I would do an [electrocardiogram] for high blood pressure, but I would leave labs for the primary nurse and get the patient into the hallway so at least someone is watching them.

- Okay, this patient needs to be seen. At the very least, let me at least get this patient into a hallway and at least let me have a provider know like right off the bat, this patient's postpartum high-risk. Preferably we should get this patient into a room as soon as possible; at least I've initiated the start of this patient's care.

As reported by these participants, there is a lack of knowledge about nursing resources. Nurses in this study did not identify themselves or their charge nurses as clinical experts; they reported using their physician colleagues in the emergency department as primary resources and using the obstetric providers secondarily. In one site, most nurses reported a good relationship with obstetrical staff and felt comfortable accessing their expertise. Staff nurses commented:

- We hardly even use our charge nurse…, unless you really needed help for a patient, but if you're not concerned with a patient, go to our [doctors]—they're right there.

- We call up there [to the obstetrical floor] all the time, trying to collaborate on whether patients should go up, especially if they're in that gray area.

Assessment barriers consisted of three subcategories: education gaps, language barriers, and triage processes/workflow issues.

Educational gaps emerged as an observed critical lack of nursing and patient obstetric care education. Although some participants reported requesting more obstetrical-focused education, the majority note that it is not a priority for their educational or managerial supervisors. Staff nurses' comments include:

- Postpartum emergencies are not really on the radar. Formal education in the assessment and care of pregnant and postpartum patients is not available [to the nurses].
- Over the years we requested multiple times, I know I have to have more education joint with the fifth floor [obstetrical] because we delivered so many people [and] we are in constant contact with them. We offered at one point to go to labor and delivery for a shift to just see like when the baby comes out, because we all haven't done it since nursing school, and we did it on one baby. [We need this because] it's…disjointed because nobody knows what the exact process should be.

Language barriers between patients and nurses can be problematic for several reasons. Staffing and crowding levels may be such that finding an interpreter may be challenging, and translation technology may not be available or may not function. Family members who translate may have biases that impede both translation and problem identification. A staff nurse said:

> I went through the family member because we couldn't find [a translator] and no one could speak Spanish, but they kept explaining all of her symptoms as if she had a [urinary tract infection], which she kept grabbing her back and [shedding] one tear like every three minutes, and I'm like, "She's having contractions." And they kept saying, "She's not pregnant, she's not pregnant," and I ultrasounded her belly in the lobby because there was like 30 people in the lobby—I just did it like in the back room, and I'm like, "Well, there's a baby in there."

Triage processes and workflow issues can create environmental barriers that make obtaining an accurate triage assessment challenging. Some participants described "pull to full" processes, wherein patients are placed in rooms without initial triage beyond a visual assessment. The assumption is that patients will be triaged by the primary nurse immediately upon placement, but environmental conditions such as understaffing and competing demands can preclude that safety net. Participants in this study found this to be a concerning aspect of their practice environment. Comments from staff nurses included:

- So, that person who comes in with that headache and doesn't tell registration they're pregnant, but now a confirmed stroke alert and a chest pain has come in, now that patient has sat longer, so…cause if you don't know they're pregnant, they wait in the waiting room for hours because there was no spot for them.
- And if you are in an area that just opened, you can get up to five patients, six patients at one time. So, without them being triaged, you don't know what's going on, you don't know who's the [sickest], you don't even know if someone is pregnant and that person didn't even have a blood pressure [taken].

Participants at one site reported a two-tiered system where a "screener nurse" collected a chief complaint and visually determined acuity; a physician then completed the assessment process and ordered laboratory or other diagnostics to facilitate disposition. From a quality perspective, pregnancy and postpartum status information should be a "hard stop" in an electronic health record because the presence of a current or recent pregnancy can point the nurse to a higher acuity condition. Participants reported that questions about last menstrual period or pregnancy status had been removed from the triage process. Thus, the initial determination of acuity was person dependent, and the possibility of pregnancy as a driver of acuity was not accounted for in either the triage process or the nurse-driven order set. Several staff nurses commented:

- I'm not sure exactly what labs are included in the nurse-driven policy for belly pain. I know that there's a [urinalysis] included, not necessarily a [urine pregnancy test], there's no sort of like, we don't need your urine for kind of disposition of where you're going to go.
- If the patient has a complaint that doesn't seem pregnancy related, I don't ask about that in triage.

Question three, "Is there a difference in the decision-making process when the element of pregnancy or postpartum status is part of the patient history," was answered using both quantitative chart data and qualitative focus group data.

To determine whether perinatal status affected decision making about acuity, descriptive statistics, correlations, and logistic regression were run between ESI level and age, race, insurance status, pregnancy status, SBP >140 mmHg, and HR. **Table 4** presents decision-making events specifically when systolic blood pressure is measured at above 140 mmHg; the pregnant patient with an SBP above 140 mmHg should be considered high risk for pregnancy-induced hypertension and preeclampsia. Seven of the 92 patients (7.6%) who were both pregnant and had an SBP above 140 mmHg were assigned an ESI 2 designation, and two of the 17 postpartum patients with an SBP above 140 mmHg (11.76%) were assigned an ESI 2. **Table 5** presents logistic regression analysis looking at factors in assigning an ESI 2. In this analysis, significant differences were found between ESI level and age and race;

there was no relationship between pregnancy status and ESI level assigned, suggesting that pregnancy status did not affect decision making about acuity.

Qualitative analysis suggests that among our focus group participants, pregnancy increased the perception of acuity, yet this knowledge was isolated and disassociated from an overall understanding of obstetric processes and care, and the determination of pregnancy was not formalized in the triage process.

DISCUSSION

The purposes of this study were to explore emergency nurses' perception of acuity in the triage of pregnant or postpartum patients presenting to the emergency department with high-risk complaints and to identify facilitators and challenges to the accurate identification and treatment of these patients. We report barriers here; no site was free of the challenges of inadequate population-specific education and training, inadequate staffing, and ineffective triage processes.

Identification of high-risk patients at triage is critical to a safe care trajectory. Although the ESI does not have specific criteria for the pregnant or postpartum patient, it clearly delineates "high-risk, time-sensitive" situations. The revised Canadian Triage and Acuity Scale (Bullard et al., 2017) provides a specific list of obstetric complaints, including the constellation of hypertension (SBP $\geq$160 mmHG) with or without headache, edema, or abdominal pain in the pregnant patient that would generate a category of 2 (high-risk), as well as headache with or without edema, visual disturbances, or signs of stroke. The mortality and morbidity risk in these women can be significant, and so early recognition and accurate acuity assignation is necessary to set an appropriate trajectory of care (Wolf et al., 2017; Yurkova & Wolf, 2011).

Our patient sample specifically included women of childbearing age with presenting complaints that included headache, chest pain, shortness of breath, and abdominal pain, all of which would signal potential higher acuity in the pregnant or postpartum person (Bullard et al., 2017); yet, more than 90% of these patients were assigned ESI 3, meaning "may need resources, but stable." More concerning is the overwhelming proportion of patients whose pregnancy status could not be determined (86.5%), as that group represents patients who may have had serious problems missed at their emergency department visit; there is no way to track that at this time, given that the data were deidentified prior to analysis. We identified significant relationships between the ESI acuity assignation (ESI 2) and both age and race; it is well documented in the literature that race negatively influences the perception of acuity (López et al., 2010; Puumala et al., 2016; Schrader

& Lewis, 2013; Zook et al.,2016). This is a concerning finding and will require additional research to explore this phenomenon more fully.

Our participants in all sites reported a significant lack of knowledge regarding the recognition of actual and potential obstetric emergencies; this was supported by the chart review data, which suggest a decreased perception of acuity in this patient population. Participants reported no comprehensive or cohesive obstetric education, although most sites reported reactive, incident-specific education in the aftermath of a poor patient outcome. Nurses in sites with obstetrical services reported different levels of comfort with involving these services immediately.

All sites reported that inadequate staffing is a concern. A lack of absolute numbers of staff, and the deployment of available staff combined with varying levels of experience and education, are reported as impeding thorough patient assessment both in triage and also as part of continuing nursing care; this problem is supported in the literature (Wolf et al., 2017; Wolf et al. 2018). Nurses also report that the outcome of a pregnancy-related complication is often the result of the combined experience of the nurses and physicians on shift, as well as environmental conditions.

LIMITATIONS

The sample was geographically limited, and so it may not reflect the status of care nationally. Furthermore, 86.5% of the charts reviewed did not have pregnancy status noted in the triage record, and in one site it had been removed from the initial triage process altogether. This is a significant limitation to the study and also is evidence of the need for further research that could provide answers that could greatly decrease this statistic. Focus group participants were a convenience sample of nurses available at the sites on a given day and time. Those who participated may be more engaged than other nurses, and therefore their perspective cannot be extrapolated to the general emergency department nursing population.

IMPLICATIONS FOR NURSING PRACTICE, EDUCATION, AND PROFESSIONAL DEVELOPMENT

The lack of organized, evidence-based education for emergency nurses about the rapid identification of high-risk obstetrical patients and their placement into an appropriate care trajectory impedes the delivery of safe and effective nursing care to these patients. To improve practice, a coherent approach to the obstetric patient should be part of emergency nursing orientation education and repeated yearly. As a preliminary action, triage data about

pregnancy and postpartum status should be consistently collected at the initial encounter to identify these high-risk patients.

CONCLUSION

We report significant deficits in emergency nursing knowledge of the triage and assessment, rapid identification, and immediate treatment for women presenting with high-risk conditions associated with pregnancy, potentially affecting the safety of patients in emergency settings. Nurses report that their knowledge of obstetrical emergencies and high-risk patients is often directly related to their own experience with a poor patient outcome. Both individual and environmental factors are involved in acuity recognition challenges, including workflow processes and the education and experience of nursing staff.

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