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Perinatal Safety: From Concept to Nursing Practice

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Abstract

Communication and teamwork problems are leading causes of documented preventable adverse outcomes in perinatal care. An essential component of perinatal safety is the organizational culture in which clinicians work. Clinicians' individual and collective authority to question the plan of care and take action to change the direction of a clinical situation in the patient's best interest can be viewed as their "agency for safety." However, collective agency for safety and commitment to support nurses in their advocacy role is missing in many perinatal care settings. This paper draws from Organizational Accident Theory, High Reliability Theory, and Symbolic Interactionism to describe the nurse's role in maintaining safety during labor and birth in acute care settings, and suggests actions for supporting the perinatal nurse at individual, group, and systems levels to achieve maximum safety in perinatal care.

Keywords

Patient safety; Perinatal nursing; High reliability

Introduction

Patient safety and the nurse's central role in providing safe care have been on the forefront of national and international health care discussions for several years. [1–4] In 2000, the Institute of Medicine (IOM) estimated that between 44,000 and 98,000 deaths occur in the United States (US) each year as a direct result of errors in care. [1] The IOM and others have acknowledged the importance of nurses' work in maintaining safety through preventing complications and errors. [2,3] However, the exact nature of nurses' safety work has only recently begun to be concretely defined. [5–8] "Agency" is the capacity to act or exert power. [9] Clinicians' "agency for safety" is their individual and collective authority to question the plan of care combined with their ability to take action to change the direction of a clinical situation in the patient's best interest. [10,11] This ability to recognize problems and take action toward safety is critical to creating and maintaining maximum safety in perinatal care. [12,13] However, collective agency for safety and commitment to support nurses in their advocacy role is missing in many perinatal care settings.

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The purpose of this paper is to present a conceptual approach to understanding the specific contributions of registered nurses to the safe delivery of inpatient perinatal care. A case study is used to illustrate how different approaches to patient safety highlight differing aspects of breakdowns in perinatal care. We propose that an integrated approach, combining the strengths of High Reliability Organizations, Organizational Accident Theory, and Symbolic Interactionism best describes the nurse's role in perinatal safety and the challenges to implementing that role effectively.

Theoretical Approaches to Patient Safety

Organizational Accident Theory (OAT) is the overarching framework for understanding medical error, as adopted by the IOM in 2000.[1] The OAT approach moves analysis of health care accidents away from a sole focus on the individual bedside provider(s), the so-called "sharp end" of care, when an accident occurs. From an OAT perspective, accidents are set in motion by the consequences of decisions made at levels far removed from the clinician. Unforeseen, unintended consequences of decisions about allocation of resources, organizational processes and priorities, equipment maintenance and replacement cycles, and responses to regulation become latent failures. These unseen problems are transmitted through the organization, creating local conditions that set the stage for active failures at the bedside. [1,14] Latent conditions can be thought of as "resident pathogens" [14, p. 197] lying dormant in the system until a cascade of events triggers their destructive potential. Most latent failures are deflected from patients in complex systems such as hospitals, which have multiple layers of defenses designed to maintain safety. However, gaps in the layers of defenses can "line up" allowing latent errors to combine with local breakdowns in human performance to become active failures with potentially catastrophic consequences.[14]

Two principle lessons of OAT are: a) errors are unavoidable side effects of how humans think and process information, and b) analysis of error in any given accident should focus on systems level failures in order to understand the underlying problems that gave rise to individual errors and violations. These lessons have become the primary framework for the patient safety movement.[1] Other theorists warn that redesigning systems based on analysis of specific individual, unique accidents can dangerously increase system complexity without fundamentally improving safety, because no two accidents evolve in the same way.[15–17] Rochlin [11] argues that an overly narrow focus on systems-level elimination of error and risk undermines safety by masking the effects of individual and collective actions in detecting and deflecting sources of danger. An example of a systems-level intervention to improve patient safety is the development of computerized provider order entry (CPOE) to minimize errors in medication ordering. This intervention potentially eliminates the risks posed by poor handwriting, misheard, misinterpreted, or misspelled orders, and unrecognized medication conflicts. However, recent research suggests that CPOE may interfere with communications among team members by minimizing face-to-face interaction and discussions about patient management.[18] This is an example of how a system-level focus that entails a substantial investment of time, resources, and training can inadvertently reduce individual and group interactions that help create and maintain safety.

Another approach to improving safety focuses on generating successful adaptation to constantly changing conditions, as defined by theories of High Reliability Organizations (HROs).[15,16,19] HROs operate without accidents for long periods of time in high-hazard, dynamic domains such as nuclear operations and military aircraft carriers.[19,20] Safety is not conceptualized as the elimination of risk in an HRO. Rather, risk is perceived as ever-present and to some degree unknowable. HROs recognize that latent conditions may not be known before they surface to cause harm: therefore there must be collective responsibility for identifying and managing continuously evolving threats. Safety is understood as a social,

individual, and collective responsibility belonging to all team members regardless of status; and agency for safety is the ability to detect and actively manage these evolving and unpredictable threats.[11] Critical safety behaviors thereby include commitment to inquiry and assertion.[19] This is in contrast to many healthcare settings where physicians and midwives may order treatments with an expectation that nurses administer them without questioning; and nurses may be fearful of challenging those directives.[21–23]

HROs cultivate collective agency for safety by focusing on potential as well as actual failures; resisting oversimplification and the downward drift in standards described by Vaughn as the “normalization of deviance.”[24] HROs maintain an infrastructure of respect, attentiveness, communication, and competence.[19] HRO theory highlights a gap between the current reality of many healthcare settings and the desired conditions of collective responsibility for safety and effective communications. In studies of healthcare safety climates and behaviors clinicians report remaining silent about concerns, fearing retribution for speaking up, suppressing reporting in the interest of maintaining good working relationships, and other conflict-avoidance behaviors that can impair safety.[22,25–30] Long-term improvements in perinatal safety culture may be difficult to achieve without better understanding of these issues.

Framing safety as a dynamic social process of collective responsibility and adaptation calls for a theoretical approach that considers individual, group, and organizational interactional processes. Symbolic Interactionism (SI) is a framework that does this through studying the importance of meanings for behavior, self-concept, and interactional processes, considering individual and group action within the context of societal constraints.[31,32] Symbolic interactionists assume that people act toward things on the basis of their meaning to the person, and that meaning arises through the process of interaction with self, others, and environment.[31] Self-concept is recognized as an important motive for behavior, and is influenced by social interaction. Individual and group actions are also influenced by attitudes and subjective definitions of the situation.[31,33] Thus SI provides a framework for understanding how individual, group, and organizational interactions can affect perceptions of clinical events. Figure 1 provides a conceptualization of the interaction between OAT, HROs, and SI.

The Perinatal Nurse’s Role in Maintaining Safety and Challenges to Executing that Role

The IOM report and subsequent analyses consistently identified communication problems as a leading cause of system breakdown in patient care.[1,2] This trend is evident in the perinatal arena as well. In its sentinel event database, the Joint Commission has identified communication problems as a primary contributing factor in 70–80% of preventable infant morbidity and mortality, and in 65–85% of maternal deaths and injuries.[34,35] There is also evidence from at least one large US perinatal care network that provider factors contribute to preventable maternal morbidity and mortality.[36,37]

Simpson and Knox used OAT to integrate practical experience reported from HROs in the analysis of perinatal accidents.[13] This work uses an OAT perspective to identify system-level problems, particularly around the use of high-risk medications. However, the application of HRO concepts to perinatal care also highlights assertive communication as central to maintaining safe operations and key for creating patient safety and effective teamwork in the perinatal environment.[12,13,38] Assertive communication may be considered a proxy for agency because it is a manifestation of a clear sense of action toward the assurance of safety. However, in their review of patient safety, human factors, and adverse obstetric events, Simpson and Knox identified four repetitive themes in near-misses

and injuries: 1) concerns were not directly expressed; 2) problems were not clearly stated; 3) actions were proposed, but not taken; and 4) decisions were either not reached or not acted upon. Based on these findings and experience with team training techniques in other industries, training in assertive communication has become a major focus of interventions to improve safety in perinatal care.[12,13,20,39] In this context, assertion is defined as, “an individual provider asserts their opinion (through questions or statements of opinion) during critical times,”(p. i59) [40] or “individuals speak up and state their information with appropriate persistence until there is a clear resolution.” [41]

The nurse is usually the primary gatekeeper of observations, interventions, treatments, and often the management of labor in the inpatient perinatal setting.[2,42] The active role of identifying, communicating, and assertively deflecting the slips, lapses, and organizational problems that place the patient in harm’s way,[14,43] falls disproportionately to the perinatal nurse.[44] Emphasizing assertive communication is an appealingly simple strategy for improving perinatal safety. However, studies of healthcare providers have consistently demonstrated substantial problems with communication, respect, and conflict in inter-professional relationships in health care settings.[21,22,45–47] Knowledge about the abilities of nurses to assertively engage clinical problems and their strategies for doing so is also limited.[10] Thus efforts to promote effective communication must go beyond instructing nurses to use structured communication formats (such as Situation Background Assessment Recommendation, or SBAR, and Context History Assessment Tentative Plan, or CHAT) assertively. Looking carefully at the complex factors that support or limit nurses’ ability to take assertive action toward safety is critical to improving interdisciplinary communication, and to building and maintaining safe patient care systems.

Conditions for acting on safety concerns

Assertive communication is needed when there is a breakdown in understanding among team members about which actions or plans are in the patient’s best interest. Three conditions are fundamental to the nurse’s ability to take action and communicate assertively on the patient’s behalf: a) adequate knowledge and clinical preparation, b) accurate understanding of the clinical situation, and c) power to take a stand on issues of concern.[48] In theory, perinatal nurses working on a clinical unit have the necessary knowledge and preparation for safe practice. This condition will be considered a baseline requirement for nursing practice and will not be discussed here.

Accurate clinical understanding

Cognitive psychologists and nurse researchers have described the importance of an intuitive understanding of the overall clinical situation. Benner, Tanner, and Chesla [49] call this understanding clinical grasp, while cognitive psychologists call it situation awareness (SA) [50,51]. In either model, this understanding, or “knowing what’s going on” [50] is fundamental to the dynamic reasoning and decision making [48] required of healthcare providers facing evolving clinical circumstances. Attainment of SA requires perceiving cues in the environment; combining, interpreting, storing, and retaining multiple sources of information; determining meaning and relevance of cues and information to operational goals; and forecasting near future situation events and dynamics from the present situation. [50]

Factors influencing successful attainment of SA include elements within the nurse, such as level of experience and expertise, expectations about self and team-member behaviors, previous positive and negative interactions with team members, and physiologic state. [51,52] Cue-related factors such as the typicality of patient presentation and behaviors, and environmental issues such as organizational and/or team hierarchy, organizational

production pressures, competing demands, communication patterns within the setting or team environment, and work schedules also influence SA.[51,52] Threats to SA may occur at any of these levels.[50,51] Typical SA threats in inpatient birth settings include expectations for self and other team member roles and behaviors, the nature of relationships with childbearing families, communication patterns, and team hierarchy. Other common threats to SA include sleep deprivation and fatigue as well as fixation on particular cues. [41,50] An example of cue-fixation occurs when a nurse is focused on managing acute pain after cesarean birth and does not recognize the woman's vital sign changes may suggest internal bleeding. An example of the role of expectations occurs when one clinician defers to the expertise of another, allowing that expertise to override their clinical concerns.

The nurse is influenced by multiple factors in developing a definition of the situation, and takes action based on the meaning of the factors perceived to be most relevant to the problem at hand. Various elements in a situation may promote or inhibit attainment of SA. Specifically, the nurse's sense of power to assert concerns is influenced by perceptions of the safety and the importance of expressing those concerns with persistence. This is complicated by the dynamic nature of perinatal patient care situations that continue to evolve as the nurse strives to maintain SA and effective team communication, all while engaging in a complex negotiation of interactional processes with the patient, other providers, and the organization.

Agency: The capacity to act or exert power

Physicians, nurses, and midwives all take the role of "patient advocate" in their charge to act in the best interest of the patient. Their individual agency for asserting their concerns derives from this role. However, their individual and organizational authority for agency as a patient advocate differs. While the roles of physicians and midwives can be ambiguous depending on their private attending versus employee status with the hospital, they usually have a clear regulatory and organizational sanction to act on the patient's behalf in treatment decisions. They assert their agency through determining treatment plans and ordering specific types of treatment. In many US settings physicians and midwives are also not employed by the hospital(s) where women give birth, but are independent attendants who are viewed as highly valued, revenue-generating customers.[53,54]

Nurses also have regulatory and ethical authority for acting in the patient's best interest. US nurses' agency to assert their concerns "with appropriate persistence until there is a clear resolution" [41] flows directly from licensure and the American Nurses Association (ANA) Code of Ethics, both of which direct them to intervene when they believe a patients' safety or other interests are threatened. [55] However, nurses' ability to persist can be impaired by their subordination to the medical profession and low organizational status. Nurses' contributions to patient outcomes and safety have also been traditionally under-recognized and under-valued within hospital systems.[53,56] Nurses are placed in a difficult bind when their historical position in the medical hierarchy conflicts with their legal and ethical duty to "advocate for, and strive to protect the health, safety, and rights of the patient." [22,53,55] This mandate is often not coupled with administrative support for its achievement.[22,57] Multiple barriers to nurses' power to assert their concerns exist in healthcare settings in the form of oppressive hierarchies and fears of job loss, discipline, harassment, and retribution [22,53,57]. Nurses are therefore likely to experience significant role conflict in executing action toward safety because their competing role expectations may logically call for opposing behaviors (self-protection versus patient advocacy).[58,59]

Stryker argues that any social structure consisting of partially overlapping and partially independent networks of interaction, such as the inpatient birth setting, "is fertile soil for the

production of role conflict.” [58, p.73] He describes two primary mechanisms for managing role conflict: withdrawing from relationships, and isolating conflicting expectations through structuring or phasing interactions to separate conflicting expectations. There is minimal opportunity for the perinatal nurse to withdraw from or control interactions in the course of clinical practice. This emphasizes the importance of social structure in conditioning the possible responses to role conflict.[52] Stryker theorized that people manage role conflict by establishing interactional role bargaining to minimize the costs of conflict. This strategy may be used by perinatal nurses in “the doctor-nurse game.” In this dynamic, nurses use manipulative communication techniques to make suggestions without appearing to threaten the physician’s position as the authoritative decision-maker.[60] Nurses may also maintain silence in the face of safety concerns in deference to authority or organizational norms,[59] or redefine their understanding of the situation in response to being discounted.[30]

Contributions of an Integrated Approach

Returning to the view of perinatal safety as a dynamic social process of collective responsibility and action, the perinatal nurse plays a central role in maintaining safety by scanning for and detecting emerging threats, deflecting them before they reach the patient, and coordinating team communications.[8,13,61,62] Understanding the conditions that create and inhibit successful error-trapping by perinatal nurses is therefore essential, and may also be applicable to other perinatal clinicians. No single analytic approach captures the full complexity of the accident trajectory presented in the clinical illustration (Box 1). Integrated analysis of this case study using SI’s focus on social interaction with concepts from OAT and HROs (Figure 1) provides a directed analysis of how latent defects in clinical systems become threats when clinicians miss opportunities to adapt, or select actions that fail to address threats to patient safety in complex patient care situations. An integrated approach may also be more useful than studying errors in identifying when and why clinicians successfully adapt to dynamic conditions.[16,17]

This combined approach can be fruitful. The illustration raises important questions about communication, teamwork, and the function of the safety net in perinatal environments. During debriefing, several safety problems were identified: multiple and competing patient care demands occurred simultaneously on the unit; communication breakdowns resulted in confusion about who had been paged and when; the primary and charge nurses were not effective in communicating their level of concern to the attending physician; and the chief resident and the attending physician appeared to misjudge the urgency of the situation. This case exemplifies some of the human elements that pose evolving threats to patient safety during the course of routine operations in dynamic patient care environments, and the limitations of using only a systems-level analysis. These types of problems can occur in any type of hospital, on any sized team, and in any dynamic clinical situation. Almost an hour elapsed between the expression of concern over maternal-fetal status and the birth. Key concerns include what actions might have been taken to improve the situation, what prevented these actions from occurring, how the answers to these questions apply to other patient care situations, and what changes will improve individual, group, and system-level resilience to future safety threats.

Implications for Practice & Research

Overt adverse events are relatively rare in perinatal care. Because of this, inpatient birth settings are vulnerable to downward drift in standards for care processes that have the potential for catastrophic outcomes for mothers and infants.[20] Communication and teamwork problems are the leading cause of documented adverse outcomes in the perinatal environment. An essential component of patient safety is an organizational culture in which

all clinicians have individual and collective authority to question the plan of care and power to “stop the line” [38,63] or change the direction of a clinical situation in the patient’s best interest. Nurses play a central role in identifying, communicating, and correcting safety threats; [6–8,62] yet collective agency for safety and commitment to support nurses in executing their advocacy role is a distant reality in many, if not most, perinatal care settings. [2,53,64]

Complex individual, interpersonal, and systems issues potentially promote and inhibit the professional nurse’s effective use of agency to maintain safety.[30] In many other high-hazard domains, all personnel have both the authority and the responsibility to question superiors and make real-time adjustments to maintain safe operations as a top priority.[19] In contrast, a culture of autonomous decision-making by physicians is dominant in hospital culture, and nurses’ concerns are often not stated clearly or are ignored.[13,30,54] The status inequality inherent in the situation where nurses are employees and physicians are historically viewed as revenue-generating customers is often reinforced by differential treatment by administrators and deeply entrenched in work routines and physical arrangement of work spaces.[27,30,54] Understanding the day-to-day impact of these differences on patient safety is a necessary step toward creating an environment in which nurses can effectively enact the patient advocate role as needed to maintain safe care.

Influences on nurse agency include the contributions of personal and environmental factors, the dominance of traditional communication patterns, previous interactions between providers, and organizational responses to speaking up. These areas of concern need to be taken seriously as latent conditions in local birth settings. Staff nurses need to be actively involved in designing and testing solutions that promote safety without increasing complexity and workload. Attention should be given to individuals, groups, local and historical conditions, and factors such as race, class, gender, ethnicity, cultural differences, institutional power, and other oppressive conditions that may influence human interactions. [33] Identifying and removing currently underappreciated, taken-for-granted barriers to developing safety as a driving social construct and maintaining collective agency for safety in inpatient perinatal units are essential for maximizing patient safety in perinatal care. This will require a fuller understanding the differences between inpatient perinatal settings and other high-hazard, high-reliability environments.

Multilevel strategies for addressing safety

Strategies for taking an integrated approach to safety include identifying downwards drift in practice standards or “normalization of deviance,” [24] studying the effects of human interaction on local safety practices; and systematically assessing both the health of structural systems nurses interface with at the bedside, and the unintended consequences of systems change. Standardization to “best practices” and simplification of clinical processes are known safety principles that many perinatal units have struggled with implementing yet they can yield improvements in aggregate outcomes.[63,65]

The effects of human interaction on safety practices are well documented. Theory and evidence indicate that current interactions affect both the immediate clinical situation and how nurses and other clinicians handle future interactions.[21,22,30,66] Clinical leaders should consider the failure mode effects for human interactions in their facilities. This includes determining whether nurses are confident and supported when they raise questions about orders and patient management plans versus hesitant for fear of retaliation or damaged relationships; whether people suppress reporting or gloss over problems to protect what they perceive as important working relationships; whether nurses are listened to respectfully

when using SBAR or other communication techniques; and whether nurses, physicians, and midwives respond appropriately to expressions of concern and requests for help.

The very processes that make humans good thinkers and problem solvers create human factors vulnerability to error.[14][also Mahlmeister this issue] External conditions create distractions and pressures that interfere with good problem-solving. For example, while many perinatal nurses perceive central fetal monitoring as a critical safety net for “knowing what’s going on” (situation awareness at the unit level), having another patient’s fetal heart rate tracing displayed at the bedside can alter clinicians’ understanding of what is happening in the room they are in, or impair their ability to pay full attention to the woman and family in front of them. When nurses’ workflow is continually interrupted by the need to retrieve missing supplies, replace broken equipment, or take multiple phone calls at the bedside on cell phones (a technical solution to improve communications), their situation awareness and memory may be affected, impairing their ability to maintain and promote safety.[10]

To address these issues and identify unique challenges in their own units, managers can conduct “Work Rounds”[8] - working side-by-side with nurses and other clinicians giving direct care - to gather first-hand information about the unit’s strengths, vulnerabilities, and opportunities for increasing resilience to error. In doing so they can maintain an approach that considers individual issues, team and interpersonal dynamics, as well as system-level problems and supports. Nurses can be vigilant about pushing for clinical collaboration and interdisciplinary dialogue. They can insist on representation by staff at perinatal steering or practice committees, quality improvement committees and all safety re-design initiatives. Nurses must bring problems forward to management consistently rather than making do, and must take responsibility for creating a shared culture of asking questions, supporting each other, and refusing to tolerate intimidation from peers or clinical colleagues. Administrators must also openly and actively support nurses, physicians, and midwives in creating and maintaining their commitment to collective agency for safety.

The synthesis of Organizational Accident Theory, including the characteristics of High Reliability Organizations, with Symbolic Interactionism, is well suited to the examination of the perinatal nurse’s ability to effectively express agency for safety, and for identifying the multiple levels on which action is needed. The contributions of early OAT direct analysts’ attention to levels of the organizational system that may be far removed from the “action” of patient care. The High Reliability framework for understanding how dynamic systems operate without error for long periods of time points back again to the individuals and collectives that function at the “sharp end” of patient care. It is here that we can observe how groups develop individual and collective agency for safety, and maintain this over time despite the continuing force of other organizational pressures and priorities. Integrating both types of inquiry with a deep appreciation for the effects of human interaction provides a robust framework for navigating the complex problem of the perinatal nurse’s ability to effectively advocate for women and infants, and consistently take action toward maintaining safe care.

Clinical Scenario

At the change of shift, an experienced nurse came on duty in the birth center in a community teaching hospital and took over the care of a woman who was in active labor with an oxytocin infusion and an epidural in place. The woman was admitted the evening before for induction of labor with no risk factors, normal vital signs, and a normal fetal heart rate tracing. On initial assessment the nurse noted the mother’s heart rate in was 110 (up from a baseline of 70) and the fetal heart rate baseline was 165 (up from a baseline of 140) with minimal variability and recurrent late decelerations. The woman

was not febrile, but complained she did not feel well. Concerned about the maternal and fetal heart rate indicators and maternal complaint of not feeling well, the nurse requested a bedside evaluation by the attending obstetrician. The attending obstetrician evaluated the patient, who had progressed to the second stage of labor. No management changes were proposed, and the attending obstetrician planned to return in one hour to check on the woman's condition. At that time the nurse thought an hour was too long to "watch and wait," but trusted the attending physician's expertise and agreed to the plan without voicing this misgiving.

The nurse stayed at the bedside to monitor maternal-fetal status closely, and administered fluids, positioned the woman laterally, encouraged rest and pushing with every-other contraction, and applied oxygen.

During this time, the charge nurse was managing a full unit with several urgent patient care demands occurring simultaneously. The charge nurse periodically checked the fetal heart rate tracing on the central monitor over the next 30 minutes and noted the tracing was worsening, but also trusted the expertise of the nurse and attending physician working with this patient. The charge nurse was confident the situation would be handled appropriately.

After closely monitoring maternal-fetal condition over the next 30 minutes, the nurse called for a reevaluation. Fetal heart rate variability was minimal to absent and the decelerations were deepening. The attending obstetrician came in and the team (now including a resident physician) agreed to move to the operating room and attempt an assisted vaginal birth. As the team moved the patient to the operating room (OR), the attending physician left the unit briefly and the team was not aware of this. In the OR the nurse was thinking about how much time they had to get the baby born, noting further deterioration of the fetal heart rate tracing with increasing urgency. She was concerned that the resident was consenting the patient in a non-urgent fashion and the attending physician was not present to supervise the birth. She said, "We've got to *MOVE* [get this baby born] now!"

The charge nurse entered the operating room and immediately paged the attending obstetrician, who came in and took over the birth. The infant was born vaginally with forceps and had evidence of metabolic acidosis. In a retrospective review, both nurses identified a point on the fetal monitor tracing where the heart rate became very worrisome and called for intervention almost an hour prior to the time of the birth.

OAT approach to analyzing latent failures - focus on strengthening the effectiveness of communications systems as a layer of defense against accidents. Actions might include:

- Developing policies or procedures for the attending physician to communicate their location to the nursing staff.
- Improving reliability of the paging system, as it was unclear whether and when the attending had been paged to the OR.

Such activities would likely generate improvements in the organization's safety net, but might not prevent future adverse events because no two accidents evolve in exactly the same way, and each addition or change in system defenses has the potential to produce unanticipated consequences and increased system complexity. [9,12]

HRO approach - might recognize that a clinical judgment went unchallenged by a concerned team member. Corrections would likely focus on:

- Teamwork training to enhance team members' skills in assertive communication.

- Interdisciplinary fetal monitoring training to enhance the development of shared understanding of the meaning of fetal heart rate findings.
- Assessment of the unit's safety culture and attitudes [15,49,58]

These activities could also be expected to generate some improvement in the organization's safety net by improving the likelihood of effective communication among clinicians. However, neither the traditional systems nor the high reliability perspective explains *why* the nurses did not communicate their initial concerns in a manner that convinced the physicians of the urgency of the situation.

Symbolic Interactionist analysis - focuses on the social processes involved in negotiating complex clinical environments. Areas to work on would include:

- Improve listening and assertive communication skills.
- Address specific clinical situation and not rely on trust of the clinician (the nurses stated their perception of the situation was profoundly influenced by the expertise of the obstetrician). Both nurses may have doubted or actively silenced their concerns in response to previous interactions and experience with the medical hierarchy. [55,59]
- The primary nurse may have experienced a lack of clarity around role expectations in a hierarchical and expertise-driven organizational structure.

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Figure 1.
Theoretical Foundations for Perinatal Safety
Developed from Rochlin,¹¹ Reason,¹⁴ Woods & Cook,¹⁶ Dekker,¹⁷ Weick & Sutcliffe,¹⁹ Knox et al,²⁰ Blumer,³¹ Musolf,³² and LaRossa and Reitzes.³³