

Multidisciplinary Teamwork Approach in Labor and Delivery and Electronic Fetal Monitoring Education

A Medical-Legal Perspective

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In recent years, reports of the increasing number of preventable medical errors have stimulated the healthcare delivery system to develop and implement programs to improve patient safety. Many of these medical errors become the impetus for malpractice lawsuits brought against healthcare givers. In light of the large number of cases that involve electronic fetal monitoring issues, this article reviews many of the claims involved in those malpractice cases and some of the pitfalls encountered in defense of those claims. Because many of the adverse outcomes in perinatal units are because of miscommunications, it is imperative that a “team training” approach be utilized in the education of and communication among obstetrical caregivers. Borrowing from the successful strategy of Crew Resource Management in the aviation industry, this team training approach has been applied in the labor and delivery area and in some cases resulted in fewer adverse outcomes, and thereby a decrease in malpractice claims. **Key words:** *malpractice, miscommunication, preventable medical errors, team training*

In light of the sizable number of obstetric malpractice cases that involve electronic fetal monitoring (EFM) issues, a “team training” approach is recommended for fetal heart rate (FHR) education and enhancement of communication among obstetrical caregivers. Most labor and delivery units do not function adequately as an interdisciplinary team. This article addresses how

the team training approach has been applied in the labor and delivery area and its success in lowering the number of adverse outcomes and decreasing malpractice claims. The underlying premise being that increasing the effective communication in labor and delivery in general, and specifically of FHR pattern data recognition, can decrease the number of medical errors or adverse outcomes because of miscommunication or misidentification of patterns, and thus lessen the number of malpractice cases spawned from these events.

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PREVENTABLE MEDICAL ERRORS AND MISCOMMUNICATION

In the past few years, improving patient safety and lowering the number of preventable medical errors has become a priority in the healthcare delivery system. In 1999, the Institute of Medicine (IOM) recognized the impact of these preventable medical errors and addressed them in its 2000 report on patient safety,

*To Err Is Human.*¹ Adverse outcomes not only impact patients, families, and caregivers but also become the impetus for many of the lawsuits brought against healthcare professionals.

Illuminating the problem has at least increased awareness and directed attention to the nature of these medical errors and clarified some root causes. The most common cause of preventable medical errors is miscommunication among caregivers.² These communication failures are usually caused by a disruption in the flow of critical patient-relevant information between or among caregivers, and thus an error in judgment or in the decision-making process occurs. This failure to communicate effectively is the most common cause of medical errors in the practice of obstetrics and gynecology.³

In July 2004, the Joint Commission for Accreditation of Healthcare Organizations (Joint Commission) issued an alert noting that ineffective communication was a root cause of 66% of the sentinel events reported and it was involved in 85% of the cases of perinatal death and injury.⁴ Citing the organizational culture as a barrier to effective communication and teamwork, the Joint Commission recommended that team training be implemented in perinatal areas to facilitate collaboration between staff members and increase effective communication. Among other things, they also recommended educating nurses, residents, certified nurse midwives (CNM), and physicians using standardized terminology for FHR pattern interpretation.⁴

THE SILO APPROACH TO PERINATAL CARE

Generally, these medical errors and miscommunications are because of organizational system failures, disjointed processes, and fragmented care that lead to someone making a mistake or failing to prevent one. In the 1999 IOM report, system flaws were more important in producing these errors than individual substandard performance.¹ The medical liability process, however, looks to place blame on individual performances, which in turn spawns fear in the detection or open discussion of errors committed.

These system failures are due in part to the way patient care is provided. Most caregivers today are still compartmentalized into their separate disciplines, and this "silo approach" to healthcare delivery lays the groundwork for miscommunication and errors. Specifically, in labor and delivery units, most patient information is not communicated in any formal way between providers. Handoffs and shift changes are critical times for exchange of information and involve

the transfer of patient information from one caregiver to another and usually a transfer of responsibility or authority for a patient's care. They are all too often performed within each silo, in noisy environments, with multitasking caregivers and interruptions, a situation ripe for miscommunication that can contribute to medical error.^{5,6} Frequently, nurses sign out to nurses, physicians to physicians, which rarely include anesthesiologists or neonatologists. Rounds are made by obstetricians alone or with nurses and CNMs sometimes performing group reports and sometimes not.

Each of these disciplines and pharmacists and ancillary staff often come from diverse backgrounds and have differing levels of education and training, which can contribute to terminology confusion and role ambiguity and often leads to complex hierarchical relationships in the workplace.⁷ Poor communication results and the tendency is to stay in the safety of the silo. Thus, no one has the whole picture of the functioning labor and delivery unit, and there is no team with someone from each discipline who is aware of all patient situations and the potential high-risk complication or emergency. This makes it difficult to have any organized process for the identification and prevention of medical errors and a subsequent adverse outcome. Moreover, usually each specialty attends continuing education meetings or staff trainings separately. All too often, there is not an interdisciplinary process for outcome review, which frequently leads to each silo blaming the others when an error occurs. All of this contributes directly to the leading cause of preventable medical errors—lack of precise communication among caregivers—which fuels the malpractice lawsuit business.

FETAL HEART RATE MONITORING

Electronic fetal monitors are an integral part of caring for laboring patients in this country today, and the FHR strips generated by the use of EFM are often at the crux of obstetrical malpractice cases. FHR auscultation is certainly within the standard of care, and guidelines for performing it are readily available,⁸ and while all the issues regarding documentation and communication apply to those using auscultation of the FHR, this section addresses the specific issues involved in EFM.

Unfortunately, FHR pattern interpretation and management issues are at the center of the vast majority of malpractice cases brought against obstetrical caregivers. The usual claim in EFM malpractice cases is the failure of the nurse and/or provider to properly interpret the FHR pattern and recognize a nonreassuring

situation, resulting in failure to manage it appropriately. The failure to timely perform a cesarean and thus prevent the injury is usually leveled at the obstetrician, but is often also attributed to the nurse's misinterpretation of the FHR pattern and failure to understand what the pattern indicates, resulting in a failure to clearly convey to the provider any information that may lead to indicated medical intervention. There also can be a failure to communicate adequately even when a nonreassuring FHR pattern is recognized correctly and/or a failure of the obstetrician or CNM to respond appropriately. In a malpractice lawsuit, plaintiff attorneys usually name hospitals and/or nurses as defendants and work hard to find something to blame on them to increase the potential amount of money that can be awarded in a settlement or verdict. During a deposition in cases involving FHR pattern interpretation, the defendant is usually required to demonstrate knowledge of basic concepts of FHR patterns, including terminology, identification of patterns, and appropriate interventions in nonreassuring situations.

ELECTRONIC FETAL MONITORING EDUCATION

First and foremost, in the prevention of actual negligence in interpreting FHR patterns, is competence in understanding the physiologic information that the FHR data are conveying about fetal oxygenation. Correctly labeling and interpreting FHR patterns are essential. This education usually starts with fetal monitoring courses, then mentoring, and ongoing courses or "strip-reviews," and, of course, experience. Although healthcare systems often have a competency validation process involving EFM education for nursing employment, there is often no similar process for credentialing physicians in fetal monitoring who gained their knowledge in residency programs and/or postgraduate education courses. In keeping with the "silo" approach described earlier, most EFM education is separated into each discipline obtaining what is required, if any, for employment or staff privileges. Different EFM courses, instructors, texts, terms, levels of knowledge, and experience give rise to a lack of uniformity among caregivers. This creates a fertile environment for misunderstanding, poor communication, inappropriate patient management, and errors resulting in adverse outcomes.

Electronic fetal monitoring malpractice lawsuits

The 2 most common allegations made in malpractice cases regarding EFM are the failure to recognize or act on nonreassuring FHR patterns and the misuse of oxy-

tocin. The following are some common pitfalls that contribute to the difficulty in defending EFM cases, which may be mitigated by avoiding or correcting them.

Adequate electronic fetal monitoring recordings

Although it is the entire team's responsibility to ensure an adequate recording of the FHR/uterine contractions, it is the caregiver at the bedside with primary responsibility for this. The tracing must be readable and provide interpretable data, and attempts to maintain an adequate recording must be documented in the chart. Tolerating an inadequate tracing will not be defensible in a malpractice case, and it shows unawareness or a lack of effort to obtain a recording adequate to evaluate fetal oxygenation. This results in an inability to prove that there was not ongoing asphyxia sufficient to cause damage. Not using an internal scalp electrode to obtain an adequate tracing when indicated can be found to be below the standard of care as is removing the monitor too soon prior to delivery.

Pattern identification

FHR pattern misidentification or nonidentification shows a lack of understanding of the FHR information and the underlying physiologic status of the fetus. Failure to recognize and/or label FHR decelerations correctly as in always writing just "decelerations" in an attempt to be safe from blame will be criticized in a malpractice case. Of course, monitoring maternal heart rate instead of FHR is below the standard of care. It almost goes without saying, but it is *not* enough to just label decelerations. If the FHR pattern is nonreassuring, the standard of care requires some intervention to correct it or to give reassurance that the fetus is not yet acidotic, and these interventions must be documented.

Document communications

Team communications between caregivers must be documented in the record including those about FHR patterns and fetal status. In a malpractice suit, the chart is the only contemporaneous record that documents the care of the patient. It is available to both plaintiff and defense and is admitted into evidence to defend the care as being within the standard. Only objective relevant facts provided in the communication should be recorded including the content of phone calls, and any requested treatments/actions and responses. The FHR pattern must be correctly identified with standard names for decelerations and variability. Include any request for the provider's presence and the response received in the documentation.

Dueling defendants

The primary reason that documenting communications is so crucial is to avoid errors and patient injury. Secondly though, comments such as “doctor notified of patient status” or “doctor notified” or no note about a communication is a setup for dueling defendants later. These notes do not provide enough information to avoid different recollections of the same phone call at a later date. Often, lawsuits come to court years after the actual events and memories have faded. This puts each person in the situation of trying to recall what was said in a light most helpful to his or her own defense. When the recollections differ, jurors see this as self-serving and think that something below the standard must have happened or it would not be necessary for the defendants to blame each other. This is one of the most damaging scenarios in all of malpractice defense. Once the plaintiff’s attorney can get defendants to point fingers, even when there is no care below the standard that caused damage, the case usually settles so as not to show this to the jury. Unfortunately, the content of a phone call or conversation then becomes the issue in the malpractice case instead of the care given and whether it met the standard.

Obtaining emergency medical management

Should the provider be too far away or refuse to come when asked, it is the responsibility of those with the patient to obtain emergency medical management when deemed necessary for patient safety. A chain of command policy should be used and it is crucial to document that the procedure was followed according to the protocol in effect. For the same reasons described earlier, documentation of any conversations is critical. Do not wait for an adverse outcome to review the chart for consistency in notes and times between caregivers or to document conversations. Even when FHR patterns are correctly identified and appropriately managed, these malpractice cases can be difficult to defend for many other reasons.

Terminology

There are specific recommendations to avoid using some terms altogether, like “fetal distress”^{9(p1469)} and there is the problem of those who make up terms or definitions, for example, “non reactive, but reassuring.” There are also patterns that do not fit any label category and are confusing, so must be described. Making up terms or redefining them in some way to make a nonreassuring situation seem reassuring is difficult to defend and explain in a malpractice case.

INTERDISCIPLINARY ELECTRONIC FETAL MONITORING COURSE

Many of these pitfalls could be mitigated or prevented by joint interdisciplinary courses that address them and make caregivers aware of the potential problems they create. As noted above, a major issue in FHR pattern interpretation and miscommunication is not using standardized terms to describe patterns. Using standard terms agreed upon by all caregivers in an institution to communicate FHR information among themselves would ensure that correct information is transmitted so that appropriate management can be employed. Inadequate documentation may result when terminology is ambiguous and responses are confusing.

One way to address many of these communication problems and institute standard terminology is to establish joint, interdisciplinary EFM education programs.¹⁰ These educational programs should include all personnel caring for laboring patients and provide ongoing education, mandatory strip reviews, and a review process for errors, or potential errors and adverse outcomes related to FHR monitoring. Requiring competency validation in FHR monitoring as a condition for medical staff privileges or employment using the same EFM courses for all caregivers involved has the potential of preventing some of the communication/documentation issues that come up in malpractice cases involving FHR patterns. If everyone is on the “same page” and familiar with terms used for communicating information, misunderstandings and errors in data exchange could be prevented. Just instituting joint EFM education is a big step to eliminating the silo approach to care, and thus decrease preventable errors. It would also serve to facilitate the teamwork necessary to become a highly reliable perinatal unit, with fewer errors and a lowering in the number of obstetrical malpractice lawsuits.¹¹

Fortunately, adverse outcomes in obstetrics are not common and most deliveries result in normal outcomes. This can make it difficult to institute changes in practice patterns based on “risky shortcuts” or “potential errors” without many adverse outcomes to motivate change.¹² Although the large healthcare organizations may lend themselves to instituting policy change on a systemwide basis, it is just as vital for small practices and individual hospitals to consider this approach. National certification examinations in FHR assessment exist, as do online interactive courses, or a hospital-specific course can be developed. The point is to have a comprehensive educational tool, incorporate standard terminology, and have ongoing competency validation.

The Hospital Corporation of America (HCA) is the nation’s largest single hospital system. Several years

ago the hospital developed a computer-based online interactive EFM course in conjunction with Advanced Practice Strategies.^{13,14} This course was designed for both physicians and nurses to complete and successfully pass, in order to decrease miscommunications, develop similar knowledge base in EFM, and use standard terminology. It is required for all nurses in the HCA system and it is up to the individual department regulations to require the course for physicians, but requirement is encouraged (S. Clark, MD, Women and Children's Clinical Services, HCA, written communication December 2007).¹⁴ In the years following implementation of an overall patient safety program including this course, HCA experienced a significant decrease in overall adverse outcomes.¹⁴⁻¹⁶ Not only were adverse outcomes decreased systemwide, but a decrease in obstetrical malpractice claims was reported, from a high in 2000 of about 13 reported claims per 10 000 births to just 6 per 10 000 births in 2006.¹⁵

SYSTEM FAILURES

In most discussions of system failures in healthcare organizations, there are 3 root causes that are common to organizations with a high number of occurrences of medical injury: the concept and process of the normalization of deviant behavior, hierarchy between caregivers, and failure of trust, teamwork, and communication within the organization.^{12,17}

NORMALIZATION OF DEVIANT BEHAVIOR

In the behavioral science arena, research has shown that humans have an inherent tendency to slide into unsafe habits.¹² This tendency is sometimes labeled the "normalization of deviance."^{18(p75)} The perception of risk attached to everyday behaviors gradually decreases over time, or an incorrect belief develops that the risk is justified.¹² This normalization results when usually competent caregivers engage in at-risk behaviors or shortcuts are taken in patient care. These behaviors start and are continued because there are rarely consequences for taking shortcuts because most of the time, there will not be a problem. As the sensitivity to risk lessens, deviations from the safer course are taken, and often there is an attempt to do more in less time.¹² This problem is sometimes inherent in the system where the caregiver who is able to handle many more tasks, more patients, and do it faster than others is often emulated or rewarded, even if dangerous shortcuts are taken. In

obstetrics, adverse outcomes are rare, and on a day-to-day basis, even taking shortcuts, most patients will have a good outcome. This "getting away with it" type of care allows the at-risk behavior to become common and eventually acceptable.

One of the most disastrous examples of the normalization of deviant behavior over time was the explosion of the Challenger space shuttle in 1986. Although the technical failure of the O-rings was to blame for the explosion, it was ultimately determined to be an organizational failure with a hierarchy and group culture that normalized this technical deviation over years and repeatedly reassessed and rationalized the risk into an "acceptable" category, and allowed the launch to proceed.¹⁸ The exposure of this organizational failure and identification of the normalization of risky behavior led many organizations in varied disciplines to reassess their usual processes and safeguards.

This same phenomenon is seen in FHR pattern interpretation, where caregivers know that most often, there will not be a problem because in the end, most deliveries result in a healthy mother and infant. Over time, the further away from residency or formal EFM courses, the more one tolerates FHR patterns that he or she would not have previously. As the perceived risk of a poor outcome fades, a nonreassuring FHR pattern is allowed to go on a little longer each time, until one is surprised by a poor outcome. Often, even more surprised when they are sued and find that what was thought as acceptable care is found to be below the standard. The normalization of deviance and lack of impetus to change on the basis of low numbers of adverse outcomes leads directly to the recommendation to incorporate a teamwork approach in labor and delivery units and interdisciplinary ongoing EFM education programs.¹²

As addressed above, creating an appropriate infrastructure in the perinatal unit would include joint education on EFM, use of clear and common language, and preparation of caregivers in teamwork training to facilitate staff and physicians to work together to effectively deliver highly reliable patient care.¹⁹ Integration of these concepts has been employed in a few institutions, taking some lessons learned from the military and aviation industry and using their approach to teamwork or Crew Resource Management (CRM).²⁰

CREW RESOURCE MANAGEMENT APPROACH IN LABOR AND DELIVERY

In its second report in 2001, the IOM recommended that healthcare organizations develop interdisciplinary

team training similar to that used in the aviation industry.²¹ On the basis that these successful team training programs when applied to the healthcare industry would reduce the number of preventable medical errors. The military and commercial aviation business employed teamwork skills and training and dramatically decreased the number of human error-related fatalities in the industry over the past few decades, whereas over a similar time period, medical errors increased 257%.^{16,22} CRM is used widely in the military and commercial aviation arena today. It involves teamwork at all levels and gives each individual the responsibility of stopping risky behavior. Only a few organized programs exist in perinatal care, although perinatal units are similar in complexity and highly technical and depend on effective teamwork to ensure safety.²³

A few years ago, the Harvard Medical Institutes and the Department of Defense collaborated to develop a team training or CRM approach for labor and delivery units.²² Both physicians and nurses were educated in teamwork concepts, which led to creation of an organizational structure consisting of several teams—a core team, coordinating team, and a contingency team. Ongoing situation management with an emphasis on maximizing effective communication in the labor and delivery unit between all relevant players is employed to increase awareness of potential problems. The Beth Israel Deaconess Medical Center (BIDMC) implemented this program in 2002 and in the next 2 years saw a 50% decrease in adverse events.²² Because adverse outcomes and medical errors very often lead to litigation, BIDMC also looked into their liability exposure. Not only did their adverse outcomes decrease since implementing this teamwork approach, their malpractice claims, suits, and reserve monies for potential claims dropped by 50% in the 3 years of using this strategy.²² Furthermore, their medical liability insurer agreed to a 10% reduction in premiums for physicians who completed the courses and practice in this team training setting.²²

From 2002 to 2004, these same authors and several others conducted a randomized control trial at 15 institutions across the country to assess the effect of team training on adverse outcomes in labor and delivery.²⁴ A standardized teamwork training structure based on the CRM model was implemented and an Adverse Outcome Index was developed to measure results. There was no statistically significant difference between the labor and delivery units that used team training and the control units in this study, with the exception of a better response time for decision-to-incision (DI) interval

in emergency cesarean sections after team training.²⁴ The authors did not feel this result completely discounts CRM as ineffective, and they did cite several reasons that may explain why no impact was seen in this particular study. Only a 4-hour training session was given and this may be inadequate, and more than 4 months may be needed to practice and achieve actual changes in behavior and thus improve outcomes.^{24,25} This study did not assess adverse outcomes and impact on malpractice claims as the BIDMC alone report did, and it may be that development of a more accurate tool to assess adverse outcomes is necessary for application in multi-institutional studies.

UNIFORMITY IN PRACTICE

Along with the failure to correctly interpret the FHR pattern as a major issue in malpractice cases, a related and very common allegation is the misuse of oxytocin. Often, the claim is made that the use of oxytocin has led to uterine hyperstimulation, uterine rupture, non-reassuring FHR patterns, and neurologic injury in the newborn. Many plaintiff attorneys read the entire product information insert to the jury and enter it as evidence in malpractice cases involving oxytocin use. It is made to seem that it is a dangerous drug and should not be used in pregnant patients. Although it is generally safe and the most commonly used drug in obstetrics, there is wide variation in its use, which lends itself to criticism when an adverse outcome happens and a subsequent lawsuit is brought.

Returning to the airline industry's decrease in errors and accidents and this time borrowing the highly standardized checklist-based protocol for cockpit safety, the HCA incorporated a similar uniform checklist approach.¹⁶ This checklist approach is thought to be the foundation of pilot standardization and the reason for the great success in flight safety. A uniform checklist-based approach decreases practice variations and allows the opportunity to prevent errors from occurring and thus decrease bad outcomes.

In 2004, the HCA developed and instituted a systemwide uniform, pre and in-use checklist-based protocol for oxytocin administration with dramatic results.¹⁶ The checklist-based protocol assesses the maternal-fetal response to oxytocin instead of infusion rate and was employed as a default model when administering oxytocin. It allows for variation by physician preference with prospective documentation of the rationale for deviation. After implementing this program systemwide in 2006, there was a significant reduction

in maximum rates of oxytocin without lengthening labor or increasing operative interventions, and newborn outcomes appear to be improved.¹⁶ Not only were overall adverse outcomes significantly decreased, the cesarean section rate was lowered and fell from 23.6% to 21% in 1 year.¹⁶ A decrease by half in the frequency of claims made for adverse outcomes was also seen.¹⁵ This protocol approach has a goal of eliminating ambiguity and notes that it is the uniformity in the practice pattern that is key, and not necessarily the exact details of the process.¹⁶

RAPID RESPONSE TEAMS

The concept of rapid response teams in the hospital is not a new one, specific departments such as emergency departments and critical care units have used them for sometime.^{26,27} Again in an effort to improve patient safety, and specifically in obstetrics to decrease the time for response to emergency situations, prolapsed cords, uterine rupture, obstetrical hemorrhage, and the profound FHR deceleration, the implementation of a rapid response team can be an innovative way to improve outcomes that often have devastating results.

One example of successful implementation of an obstetrical rapid response team is the Sharp Mary Burch Hospital in San Diego, California,²⁸ where the decision was made to assess the response time to obstetrical emergencies. Noting that in a recent study, many institutions met the goal of the 30-minute Decision to Incision (DI) interval in emergency cesareans²⁹ only 62% of the time, and that even meeting the 30 minutes did not prevent all adverse outcomes, they deconstructed and redesigned their response time. Areas were identified where minutes could be shaved off certain tasks, it was determined that in this institution, emergency delivery could almost always be accomplished with a 15-minute DI interval. With this goal in mind, they realized that the entire team needed to be activated simultaneously and changes were made in the order and method of paging team members. Along with other changes and education of the relevant departments—perinatal, operating room (OR), anesthesia, neonatal intensive care unit (NICU)—the policy was put into place.²⁸ A review of their data after implementation Ob Team Stat showed for the first 6 months of 2006 that the mean total DI time was 10.9 minutes, only 4 of 21 cases had a DI time more than 15 minutes.²⁸ The improved response time seen here had a positive impact not only on DI times but

also on the concept of building teamwork with a goal of better outcomes. It could be translated to other perinatal units with similar in-house staff, but even in hospitals without in-house obstetricians, OR teams, NICU, and anesthesia, response times could be assessed and reworked, team members identified, and consideration of simultaneous activation of a team in an emergency.

Implementation of safety programs is occurring in many hospitals around the country, and there are several that integrate a complex team training approach, including, for example, the TeamSTEPPS program developed by the Agency for Healthcare Research and Quality in conjunction with the Department of Defense.³⁰ Furthermore, 2 recent studies involving CRM training models specific to labor and delivery in separate hospitals have shown a significant decline in adverse events.^{31,32} The Yale-New Haven Hospital study showed both a reduction in adverse events from 3% to 1.25% and an overall medical professional liability insurance carrier cost decrease by nearly 40%.³² The goals of these programs, of course, are improved patient safety and less adverse outcomes, but as seen in several of the examples above, a significant positive aim can be a decline in the number of malpractice lawsuits in obstetrics.

SUMMARY

Understanding the root causes of preventable medical errors and increasing awareness of the frequency are central to decreasing the number of errors. In the specific area of labor and delivery where most of these errors involve miscommunications, selected strategies that can be employed. Implementing a team training approach for FHR monitoring increases appropriate communication and can decrease the number of adverse outcomes. Knowing some of the pitfalls to defending malpractice cases in obstetrics, one can prospectively mitigate them by employing good documentation and communication habits on a day-to-day basis. Striving for more uniform patient care strategies and implementing teamwork concepts and common goals among different disciplines can improve patient safety. No endorsement or recommendation of any specific program is intended and the examples described in this article were chosen because they were not only created and successfully implemented specifically in labor and delivery units but have also made an impact on malpractice claims and potential liability exposure at these particular institutions.

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