Malpractice premiums for obstetricians have increased significantly in the last decades, and this increase continues to be a major concern for most obstetricians. Frivolous malpractice suits increase malpractice premiums, and many believe that tort reform is needed to eliminate these suits. In a review of 1452 malpractice claims, however, the vast majority of resources went toward resolving and paying claims that involved errors rather than toward defending and paying for frivolous suits. Most suits that involved injuries due to error resulted in compensation (653/889 [73%]), whereas most of the claims that were not associated with errors (370/515 [72%]) or injuries (31/37 [84%]) did not result in compensation [1].

If we are trying to decrease malpractice premiums, in addition to working toward tort reform and eliminating frivolous suits, it should be our goal to improve patient safety and outcome and reduce errors in obstetrics.

The Institute of Medicine report “To Err Is Human: Building a Safer Health System” [2] reported that errors in health care are a significant cause of death and injury; all health care professionals agree that patient safety is important and should be addressed by the overall health care system.

Efforts devoted to optimizing communication and collaboration among the various members of the health care team are equally important in promoting these principles of patient safety. This goal is supported by many professional organizations that have encouraged physicians to reduce errors and to incorporate elements of patient safety into their practices.

The American College of Obstetricians and Gynecologists (ACOG) Committee on Quality Improvement and Patient Safety [3] stated seven objectives to make obstetrics and gynecology safer:

1. Develop a commitment to encourage a culture of patient safety.
2. Implement recommended safe medication practices.
Improve legibility of handwriting.
Avoid use of nonstandard abbreviations.
Check for drug allergies and sensitivities.
Always use a leading zero for doses of less than 1 unit (eg, 0.1 mg, not .1 mg); never use a trailing zero after a decimal (eg, 1 mg, not 1.0 mg): “always lead, never follow.”
Write down all verbal orders received and read back the order verbatim to the prescriber to ensure accuracy.

3. Reduce the likelihood of surgical errors.
4. Improve communication.
5. Identify and resolve system problems.
6. Establish a partnership with patients to improve safety.
7. Make safety a priority in every aspect of practice.

This article outlines an approach to improve patient safety in obstetrics and gynecology, with the goal to reduce errors in labor and delivery.

Collecting quality measures: identification and recognition of adverse outcomes, errors, and near misses

The first step in the delivery of safe health care should be to identify and study the patterns of adverse outcomes and causes of error occurrence. Identifying these patterns can help obstetrician-gynecologists adopt and develop safe practices to reduce the likelihood of system failures that can cause adverse outcomes [4,5]. Table 1 [6] lists patient safety indicators that were developed by the Agency for Healthcare Research and Quality. Organizations may modify this list to meet their individual needs. Collecting safety indicators from departments may be helpful to assess progress in error reduction and patient safety, although there is no uniform agreement on this benefit [7].

Joint Commission on Accreditation of Healthcare Organizations
National Patient Safety Goals and Sentinel Event Policy

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) is an independent, not-for-profit organization that evaluates and accredits nearly 15,000 health care organizations and programs in the United States and maintains state-of-the-art standards that focus on improving the quality and safety of care provided by health care organizations.

National Patient Safety Goals

Departments should regularly review the National Patient Safety Goals, which are regularly established by the JCAHO (Table 2) [8]. Hospitals are regularly surveyed to verify their compliance with these goals.

Although many of these goals do not necessarily apply specifically to obstetrics and gynecology, it is important that each department knows the
most recent National Patient Safety Goals and, as part of the effort to improve patient safety, ensures that it adheres to these standards.

**Table 1**

Obstetric patient safety indicators developed by the Agency for Healthcare Research and Quality

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Numerator</th>
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<tbody>
<tr>
<td>Complications of anesthesia</td>
<td>Discharges with <em>ICD-9-CM</em> diagnosis codes for anesthesia complications in any secondary diagnosis field per 1000 discharges</td>
</tr>
<tr>
<td>Death in low-mortality diagnosis–related groups</td>
<td>Discharges with disposition of “deceased” per 1000 population at risk</td>
</tr>
<tr>
<td>Foreign body left during procedure</td>
<td>Discharges with <em>ICD-9-CM</em> codes for foreign body left in during procedure in any secondary field per 1000 surgical discharges</td>
</tr>
<tr>
<td>Postoperative hemorrhage or hemATOMa</td>
<td>Discharge with <em>ICD-9-CM</em> codes for postoperative hemorrhage or postoperative hematoma in any secondary diagnosis field, and code for postoperative control of hemorrhage or drainage of hematoma, respectively, in any secondary procedure code per 1000 discharges. Procedure code for postoperative control of hemorrhage must occur on same day or after principal procedure.</td>
</tr>
<tr>
<td>Selected infections due to medical care</td>
<td>Discharges with <em>ICD-9-CM</em> code of 9993 or 99662 in any secondary diagnosis field per 1000 discharges</td>
</tr>
<tr>
<td>Transfusion reaction</td>
<td>Discharges with <em>ICD-9-CM</em> code for transfusion reaction in any secondary diagnosis field per 1000 discharges</td>
</tr>
<tr>
<td>Birth trauma—Injury to neonate</td>
<td>Discharges with <em>ICD-9-CM</em> code for birth trauma in any diagnosis field per 1000 liveborn births</td>
</tr>
<tr>
<td>Obstetric trauma—cesarean delivery</td>
<td>Discharges with <em>ICD-9-CM</em> code for obstetric trauma in any diagnosis or procedure field per 1000 cesarean deliveries</td>
</tr>
<tr>
<td>Obstetric trauma—vaginal delivery with instrument</td>
<td>Discharges with <em>ICD-9-CM</em> code for obstetric trauma in any diagnosis or procedure field per 1000 instrument-assisted vaginal deliveries</td>
</tr>
<tr>
<td>Obstetric trauma—vaginal delivery without instrument</td>
<td>Discharges with <em>ICD-9-CM</em> code for obstetric trauma in any diagnosis or procedure field per 1000 vaginal deliveries without instrument assistance</td>
</tr>
</tbody>
</table>

*Abbreviations: ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification.*


Communication and team training

The JCAHO requires that accredited organizations identify and respond appropriately to all sentinel events that are defined as an “unexpected occurrence involving death or serious physical or psychological injury, or the risk
<table>
<thead>
<tr>
<th>Goal</th>
<th>Description</th>
<th>Application area</th>
</tr>
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<tbody>
<tr>
<td><strong>Goal 1: Improve the accuracy of patient identification.</strong>&lt;br&gt;1A. Use at least two patient identifiers when providing care, treatment, or services.</td>
<td>1A. Ambulatory, assisted living, behavioral health care, critical-access hospital, disease-specific care, home care, hospital, laboratory, long-term care, office-based surgery</td>
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<td></td>
<td>1B. Before the start of any invasive procedure, conduct a final verification process (such as a “time out”) to confirm the correct patient, procedure, and site using active—not passive—communication techniques.</td>
<td>1B. Assisted living, home care, laboratory, long-term care</td>
</tr>
<tr>
<td><strong>Goal 2: Improve the effectiveness of communication among caregivers.</strong>&lt;br&gt;2A. For verbal or telephone orders or for telephonic reporting of critical test results, verify the complete order or test result by having the person receiving the information record and “read-back” the complete order or test result.</td>
<td>2A. Ambulatory, assisted living, behavioral health care, critical-access hospital, disease-specific care, home care, hospital, laboratory, long-term care, office-based surgery</td>
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<td></td>
<td>2B. Standardize a list of abbreviations, acronyms, symbols, and dose designations that are to be used throughout the organization</td>
<td>2B. Ambulatory, assisted living, behavioral health care, critical-access hospital, disease-specific care, home care, hospital, laboratory, long-term care, office-based surgery</td>
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<td>2C. Measure, assess, and if appropriate, take action to improve the timeliness of reporting and the receipt of critical test results and values by the responsible licensed caregiver.</td>
<td>2C. Ambulatory, behavioral health care, critical-access hospital, disease-specific care, home care, hospital, laboratory, office-based surgery</td>
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<td></td>
<td>2E. Implement a standardized approach to “hand-off” communications, including an opportunity to ask and respond to questions.</td>
<td>2E. Ambulatory, assisted living, behavioral health care, critical-access hospital, disease-specific care, home care, hospital, laboratory, long-term care, office-based surgery</td>
</tr>
</tbody>
</table>
Goal 3: Improve the safety of using medications.

3B. Standardize and limit the number of drug concentrations used by the organization.

3C. Identify and, at a minimum, annually review a list of look-alike/sound-alike drugs used by the organization. Take action to prevent errors involving the interchange of these drugs.

3D. Label all medications, medication containers (for example, syringes, medicine cups, basins), or other solutions on and off the sterile field.

Goal 7: Reduce the risk of health care–associated infections.

7A. Comply with current Centers for Disease Control and Prevention hand hygiene guidelines.

7B. Manage as sentinel events all identified cases of unanticipated death or major permanent loss of function associated with a health care–associated infection.

Goal 8: Accurately and completely reconcile medications across the continuum of care.

8A. Implement a process for comparing the patient’s current medications with those ordered for the patient while under the care of the organization.

3B. Ambulatory, behavioral health care, critical-access hospital, disease-specific care, home care, hospital, long-term care, office-based surgery

3C. Ambulatory, behavioral health care, critical-access hospital, home care, hospital, long-term care, office-based surgery

3D. Ambulatory, critical-access hospital, hospital, office-based surgery

7A. Ambulatory, assisted living, behavioral health care, critical-access hospital, disease-specific care, home care, hospital, laboratory, long-term care, office-based surgery

7B. Ambulatory, assisted living, behavioral health care, critical-access hospital, disease-specific care, home care, hospital, laboratory, long-term care, office-based surgery

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<tr>
<th>Goal</th>
<th>Description</th>
<th>Application area</th>
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<tr>
<td>8B. Communicate a complete list of the patient’s medications to the next provider of service when a patient is referred or transferred to another setting, service, practitioner, or level of care within or outside the organization. Provide the complete list of medications to the patient on discharge from the facility.</td>
<td>8B. Ambulatory, assisted living, behavioral health care, critical-access hospital, disease-specific care, home care, hospital, long-term care, office-based surgery</td>
<td></td>
</tr>
<tr>
<td>Goal 9: Reduce the risk of patient harm resulting from falls.</td>
<td>9B. Implement a fall-reduction program including an evaluation of the effectiveness of the program.</td>
<td>9B. Assisted living, critical-access hospital, disease-specific care, home care, hospital, long-term care</td>
</tr>
<tr>
<td>Goal 10: Reduce the risk of influenza and pneumococcal disease in institutionalized older adults.</td>
<td>10A. Develop and implement a protocol for administration and documentation of the flu vaccine.</td>
<td>10A. Assisted living, disease-specific care, long-term care</td>
</tr>
<tr>
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<td>10B. Develop and implement a protocol for administration and documentation of the pneumococcus vaccine.</td>
<td>10B. Assisted living, disease-specific care, long-term care</td>
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<td></td>
<td>10C. Develop and implement a protocol to identify new cases of influenza and to manage an outbreak.</td>
<td>10C. Assisted living, disease-specific care, long-term care</td>
</tr>
<tr>
<td>Goal 11: Reduce the risk of surgical fires.</td>
<td>11A. Educate staff, including operating licensed independent practitioners and anesthesia providers, on how to control heat sources and manage fuels with enough time for patient preparation. Establish guidelines to minimize oxygen concentration under drapes.</td>
<td>11A. Ambulatory, office-based surgery</td>
</tr>
<tr>
<td>Goal 12: Implement applicable National Patient Safety Goals and associated requirements.</td>
<td>12A. Inform and encourage components and practitioner sites to implement the applicable National Patient Safety Goals and associated requirements.</td>
<td>12A. Networks</td>
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<td>Goal 13: Encourage patients’ active involvement in their own care as a patient safety strategy.</td>
<td>13A. Define and communicate the means for patients and their families to report concerns about safety and encourage them to do so.</td>
<td>13A. Ambulatory, assisted living, behavioral health care, critical-access hospital, disease-specific care, home care, hospital, laboratory, long-term care, office-based surgery</td>
</tr>
<tr>
<td>Goal 14: Prevent health care–associated pressure ulcers (decubitus ulcers).</td>
<td>14A. Assess and periodically reassess each resident’s risk for developing a pressure ulcer (decubitus ulcer) and take action to address any identified risks.</td>
<td>14A. Long-term care</td>
</tr>
<tr>
<td>Goal 15: Identify the safety risks inherent in the organization’s patient population.</td>
<td>15A. Identify patients at risk for suicide.</td>
<td>15A. Behavioral health care, hospital (applicable to psychiatric hospitals and patients being treated for emotional or behavioral disorders in general hospitals)</td>
</tr>
<tr>
<td></td>
<td>15B. Identify risks associated with long-term oxygen therapy such as home fires.</td>
<td>15B. Home care</td>
</tr>
</tbody>
</table>

thereof.” According to the JCAHO, all organizations should be engaged in conducting “timely, thorough, and credible root cause analysis; developing an action plan designed to implement improvements to reduce risk; implementing the improvements; and monitoring the effectiveness of those improvements.” A root cause analysis is a process for identifying the basic or causal factors that underlie variation in performance (including the occurrence or possible occurrence of a sentinel event) and focuses primarily on systems and processes, not on individual performance.

The JCAHO regularly publishes on their Web site a “Sentinel Event Alert” [9]. In the July 2004 alert “Preventing Infant Death and Injury During Delivery,” the JCAHO reviewed, under the Sentinel Event Policy, 47 cases of perinatal death or cases of permanent disability that were reported to the JCAHO.

Forty of the cases resulted in infant death and 7 involved permanent disability. In reviewing the root causes of these sentinel events, communication issues topped the list of identified root causes (72%), with more than half of the organizations (55%) citing organization culture as a barrier to effective communication and teamwork (ie, hierarchy and intimidation, failure to function as a team, and failure to follow the chain of communication). Other identified root causes included staff competency (47%), the orientation and training process (40%), inadequate fetal monitoring (34%), unavailable monitoring equipment or drugs (30%), credentialing/privileging/supervision issues for physicians and nurse midwives (30%), staffing issues (25%), unavailable or delayed physician (19%), and unavailability of prenatal information (11%).

Because most perinatal death and injury cases reported root causes related to problems with organizational culture and with communication among caregivers, the JCAHO recommended that organizations do the following:

1. Conduct team training in perinatal areas to teach staff to work together and communicate more effectively.
2. For high-risk events such as shoulder dystocia, emergency cesarean delivery, maternal hemorrhage, and neonatal resuscitation, conduct clinical drills to help staff prepare for when such events occur and conduct debriefings to evaluate team performance and identify areas for improvement.
3. Review and apply the ACOG “Vaginal Birth after Cesarean Delivery Practice Bulletin”; the “Standards and Guidelines for Professional Nursing Practice in Care of Women and Newborns” from the Association of Women’s Health, Obstetric, and Neonatal Nurses; and the American Academy of Pediatrics and ACOG guidelines for perinatal care.
4. Develop clear guidelines for fetal monitoring of potential high-risk patients, including nursing protocols for the interpretation of fetal heart rate tracings.
5. Educate nurses, residents, nurse midwives, and physicians to use standardized terminology to communicate abnormal fetal heart rate tracings.

6. Review organizational policies regarding the availability of key personnel for emergency interventions.

7. Ensure that designated neonatal resuscitation areas are fully equipped and functioning.

8. Develop guidelines for the transfer of patients to a higher level of care when indicated, if essential services cannot be readily provided per ACOG guidelines.

9. Use a standardized maternal fetal record form for each admission.

   It has been suggested that team training improves communication and that the principles of “crew resource management” in medicine may affect the individual’s attitude and therefore decrease adverse outcomes; however, there are different views of the impact that team training has in reducing errors in labor and delivery [10,11]. Even in aviation, the precise impact that crew resource management has on improvements in safety is uncertain [12].

   Recently, a study reviewed the impact of team training on a list of certain adverse outcomes (the “Adverse Outcome Index”). The investigators concluded that the “training, as [it] was conducted and implemented, did not transfer to a detectable impact in this study. The Adverse Outcome Index could be an important tool for comparing obstetric outcomes within and between institutions to help guide quality improvement” [13].

**Documenting events in labor and delivery**

   Good quality of care requires good documentation. In addition to improving communications among labor and delivery staff and to providing the right care, documentation of the right care is crucial. Thus, education about proper documentation is essential. Without adequate documentation, it is often difficult to show that medical care was appropriate.

**Specific issues related to patient safety in labor and delivery**

   The following are common problems leading to malpractice suits. Every institution should create guidelines and provide education and training to address each of the following issues.

   **Fetal heart rate pattern interpretation**

   Failure to accurately assess and interpret a fetal heart tracing is among the top allegations in malpractice suits. Miscommunication among providers plays a major role in these allegations. Every institution should adopt a common language for fetal heart rate patterns, preferably the nomenclature
developed by the panel of experts convened by the National Institute of Child Health and Human Development [14,15]. In addition, further training of all personnel in the interpretation of fetal heart rate tracings should be implemented. For example, the author’s institution requires that all nurses and attendings get specific training and become certified in electronic fetal monitoring.

*Induction and stimulation of labor*

Oxytocin, dinoprostone, and misoprostol are drugs used for induction and stimulation of labor and have been associated with diverse adverse outcomes such as uterine hyperstimulation and ruptured uteri. They are also disproportionally involved in adverse outcomes and malpractice suits. Institutions should develop protocols that guide clinicians in using these medications. These policies should address issues such as informed consent, uniform protocols, preparation of solutions and tablets, appropriate and safe dosing and titrations, and management when hyperstimulation occurs.

*Vaginal birth after cesarean*

Since the publication of the *New England Journal of Medicine* article on adverse outcomes with vaginal birth after cesarean section (VBAC) [16], there has been a significant decrease in VBACs in the United States. Patients contemplating VBAC should be informed of the potential complications and provide adequate written informed consent. Prostaglandins should not be used in women who have had a prior cesarean section and are undergoing induction of labor because of the significant risk of uterine rupture. Women who have had two prior cesarean sections without a prior vaginal birth should not have a trial of VBAC. The increased risk of uterine rupture in patients who received oxytocin with a prior cesarean section has led several institutions including Parkland Memorial to not allow the use of oxytocin in patients who have had a prior cesarean section [17].

*Magnesium sulfate*

Magnesium sulfate is among the most frequently used drugs used in labor and delivery, as a tocolysis and seizure prophylaxis in preeclamptic patients. There have been reports of magnesium sulfate–related deaths in labor and delivery due to medical errors [18]. Simpson [19] outlined suggestions to reduce maternal injury and death due to overdosage of magnesium sulfate:

- Use premixed solutions.
- Use separate solutions for bolus and maintenance.
- Use solutions with less magnesium.
- Use color-coded tags on lines.
• Have 1:1 nursing during first hour and 1:2 nursing during maintenance.
• Have a second nurse double check all doses and pump settings.
• During transfer, have both nurses together at bedside double check status, dosage, and so forth.
• Discontinue medication by removing line from intravenous port.
• Implement periodic magnesium overdose drills.
• Maintain calcium antidote in an easily accessible, locked medication kit.

Shoulder dystocia

Shoulder dystocia presents one of the true emergencies in labor and delivery. When there is injury to the mother or the baby, it often leads to malpractice allegations of failure to predict or perform the right maneuvers. All members of the labor and delivery staff should be versed in the recognition and management of shoulder dystocia, including McRoberts maneuvers, suprapubic pressure, episiotomy, Woods corkscrew maneuver, and delivery of the posterior arm. Fundal pressure should never be used with shoulder dystocia.

A shoulder dystocia drill is a practice run-through by a labor and delivery unit of a mock shoulder dystocia delivery. It is used as a teaching technique for all members of the obstetric team and should be considered by all labor and delivery units. The ACOG has produced a shoulder dystocia video (AVL 103) that describes and visually demonstrates a model shoulder dystocia drill. In addition, mannequins have been successfully used to train labor and delivery personnel in shoulder dystocia [20].

Maternal hemorrhage

Maternal hemorrhage is among the major causes of maternal morbidity and mortality in labor and delivery. Protocols to identify and treat maternal hemorrhage early on should be implemented by each labor and delivery unit. Attention to improving the hospital systems necessary for the care of women at risk for major obstetric hemorrhage is important in the effort to decrease maternal mortality from hemorrhage.

A good example of how to improve maternal morbidity and mortality was shown by one institution [21] that implemented process changes at the direction of a multidisciplinary patient safety team. These changes included a rapid response team and protocols for early diagnosis, assessment, and management of patients at high risk for major obstetric hemorrhage. With these changes, the institution showed a significant improvement in mortality due to hemorrhage, lowest pH, and lowest temperature. The investigators concluded that despite a significant increase in major obstetric hemorrhage cases, there were improved outcomes and fewer maternal deaths after implementing systemic approaches to improve patient safety.
Operative deliveries: forceps/vacuum

In deliveries involving a birth injury, doctors are more likely to be suspected as negligent when the baby is delivered vaginally compared with cesarean section [22], and operative vaginal deliveries such as forceps and vacuum are at the forefront of these malpractice suits. By Googling “forceps malpractice,” over 50,000 citations are revealed, and 9 of the first 10 citations lead to malpractice lawyers’ pages on which the dangers of forceps delivery are explained in full and in often graphic details. Thus, every operative forceps or vacuum delivery that is associated with any problem will likely lead to increased scrutiny and a potential malpractice suit. Patients should be informed during their prenatal visits about the potential risks of interventions during labor and delivery. Informed patient consent should be obtained before operative forceps and vacuum deliveries, with full disclosure of potential problems including maternal injuries after forceps such as vaginal and perineal tears, injury to the anal sphincters and subsequent anal incontinence, bladder and urethral trauma, and urinary incontinence. Newborn risks include injury to the head and face, including abrasions and skull trauma.

Thrombembolic diseases

Decreasing maternal mortality is a complex endeavor [23], and prevention of deep venous thrombosis (DVT) should be among the priority of all obstetric units because pulmonary embolism is among the top three postpartum causes of maternal death.

Patients at increased risk for DVT include women ages 35 years and older, black women, and women who have thrombophilia, prior DVT, lupus, heart disease, sickle cell disease, obesity, fluid and electrolyte imbalance, postpartum infection, cesarean section, and transfusion [24].

Recommendations for thromboprophylaxis during pregnancy and postpartum are usually stratified based on risks such as a history of thrombosis or the presence of thrombophilia. Others advocate prophylaxis for all postpartum patients.

Patient at risk for thrombembolism should be identified early on and prevention strategies implemented. Prevention strategies include early ambulation after a vaginal delivery and cesarean section, use of intermittent pneumatic compression for post–cesarean section patients, and heparin prophylaxis for those who have additional risk factors.

Summary

Young [25] emphasized the need to improve patient safety and listed the following seven points concerning patient safety:

1. Safety is not a disciplinary function.
2. Safety is a prospective and continuous function. It is a journey not a destination.
3. Discipline is secondary to safety, although it may be a byproduct of safety considerations.
4. Discipline is a retrospective, episodic function.
5. Safety thrives in an atmosphere of fellowship and good will.
6. Judgmental attitudes are to be avoided.
7. To err is human but, more important, inevitable.

These points underline that despite efforts over the last decade to improve quality and reduce errors in labor and delivery, we are still in the infancy of understanding the cause of these errors.

References


