INTRODUCTION

Errors are common in healthcare and can cause significant emotional and physical harm to patients (Kohn et al., 1999). Harmful errors result in the deaths of tens of thousands of patients in the United States annually and many more nonfatal injuries (Leape et al., 1991; Studdert et al., 2000; Thomas et al., 2000). Beyond this obvious harm, errors may deeply distress the clinicians involved and often raise substantial ethical dilemmas and communication challenges for physicians (Gallagher et al., 2006a, b; Waterman et al., 2007). Despite growing awareness about the deficiencies in patient safety in healthcare delivery across the globe, error prevention efforts have only made modest inroads against this complex problem (Leape and Berwick, 2005; Wachter, 2010). It is increasingly urgent that neurologists, like all physicians, develop skills to understand, prevent, and respond to errors effectively within their healthcare environment.

DEFINITIONS

The Institute of Medicine’s landmark report To Err is Human established widely accepted definitions of medical error, adverse events, and other commonly used patient safety terms (Kohn et al., 1999) (Table 8.1). Adopting common terms helps healthcare teams to investigate adverse patient outcomes and identify failed processes effectively. Clear language is particularly critical when ambiguity surrounds the preventability of the patient’s outcome.

Adverse events are defined as injuries resulting from a medical intervention, rather than the underlying disease. This term does not necessarily signify that the event was preventable. Adverse events comprise both adverse outcomes caused by errors as well as unpreventable adverse outcomes. The term medical error refers to the failure of a process, but does not necessarily mean that failure led to harm. Errors that do not reach the patient are called near misses.

Although it may be important to distinguish between unpreventable adverse events (complications) and adverse events resulting from error (harmful errors), effective responses to both categories of adverse event are closely related. Neurologists should appreciate all medical errors and adverse events in the context of a growing emphasis on transparency and safety throughout healthcare. Public reporting of outcomes, including harmful outcomes, is growing. Patient safety leaders have endorsed transparency about both errors and adverse events as a catalyst for system improvements to reduce all sources of patient harm. Furthermore, many of the fundamental communication skills required to disclose medical errors openly and apologize to patients also apply to discussions about adverse events that developed without errors.

EPIDEMIOLOGY

Studies in industrialized nations consistently demonstrate that medical care is an error-prone and potentially dangerous enterprise. Large retrospective reviews of thousands of patient charts show high rates of adverse outcomes among hospitalized patients in Australia (16.6%) (Wilson et al., 1995), Canada (7.5%) (Baker et al., 2004), New Zealand (11.2%) (Davis et al., 2002), the United Kingdom (10.8%) (Vincent et al., 2001), and the United States (2.9–13.5%) (Leape et al., 1991; Thomas et al., 2000; Levinson, 2012). Errors underlie approximately one-third to one-half of the adverse outcomes in these studies. The experience of patients who regularly require health services corroborates the findings from chart reviews, with 22–34% of chronically ill
patients reporting involvement in a medical error during the preceding 2 years (Schoen et al., 2005). Although studies of medical error from less well-developed countries are limited, it appears that similar safety problems affect patients globally (Jha et al., 2010).

Large multicenter studies that specifically address the incidence and pattern of medical errors among patients with neurologic conditions are lacking (Glick et al., 2006). However, many aspects of the growing general understanding of medical errors throughout medicine apply to the practice of neurology. For example, adverse drug events (ADEs) represent a pervasive safety concern that affect 6.5–15% of all hospital admissions, with approximately a quarter appearing preventable (Bates et al., 1995; Hug et al., 2010). In a single-center study of the safety of inpatient stroke care, medication errors were the most common type of harmful error, followed by falls, substantiating the relevance of ADEs to the field of neurology (Holloway et al., 2007). Other studies confirm that medications specifically prescribed for neurologic conditions may contribute significantly to patient harm. Antiepileptic and anticoagulant medications ranked among the top five drug classes implicated in medication-related adverse events recorded in a landmark U.S. study (Leape et al., 1991). Neurologists may also frequently prescribe other classes of drugs associated with universally high incidences of adverse events, such as antibiotics, opiates, and antihypertensives (Hug et al., 2010).

Neurologists should appreciate the potential for error in ambulatory as well as hospital-based settings (Gandhi et al., 2003; Bishop et al., 2011). Studies in general primary care practices indicate that ADEs affect as many as 27% of outpatients within a month of receiving a prescription, a finding that may generalize to other specialties in outpatient practice, including neurology (Gandhi et al., 2003). Although there are no comprehensive studies of outpatient errors in neurology, reviews of U.S. malpractice claims indicate that approximately half of lawsuits against neurologists originate from outpatient or emergency room care (Glick et al., 2005). Analysis of both inpatient and outpatient closed claims confirms that ADEs account for a significant portion of negligence in U.S. neurologists (Glick et al., 2005).

Unfortunately, U.S. malpractice reports offer only limited insight into the true nature of adverse events and medical errors in the practice of neurology. Such claims data may miss important trends because most injured patients do not sue and because poor communication, rather than medical error, may trigger many lawsuits (Localio et al., 1991; Entman et al., 1994; Hickson et al., 1994). Until more detailed and representative characterizations of errors in the practice of neurology emerge, neurologists can extrapolate findings from basic investigations into why physicians err and apply those principles to their own practice.

**CAUSES OF MEDICAL ERROR**

Most errors arise from a combination of individual and systems failures rather than a single etiology. Although essentially all clinicians intend to provide the best care possible, it is human nature that we occasionally suffer lapses in cognition, memory, and mechanic performance. Clinicians may also make mistakes in judgment while working with accurate information. When lapses and mistakes occur, safeguards in the care environment, such as human and technologic backups, typically

<table>
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<tr>
<th>Patient safety terms</th>
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<tr>
<td><strong>Adverse event</strong></td>
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<td>An injury resulting from a medical intervention rather than underlying disease (Bates et al., 1997)</td>
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<td><strong>Error</strong></td>
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<td>Failure of a planned action to be completed as intended (error of execution) or use of a wrong plan to achieve an aim (error of planning) (Kohn et al., 1999)</td>
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<td><strong>Near miss</strong></td>
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<td>An error that could have resulted in injury but did not, either by chance or timely intervention</td>
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<tr>
<td><strong>Harmful error</strong></td>
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<tr>
<td>An injury that occurs as a result of medical error; with standard medical care the injury would not have occurred</td>
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<tr>
<td><strong>Complication</strong></td>
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<tr>
<td>An unpreventable injury resulting from a medical intervention</td>
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<td><strong>Active error</strong></td>
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<tr>
<td>An error that occurs at the level of the frontline operator and whose effects are felt almost immediately (Reason, 1990)</td>
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<tr>
<td><strong>Latent error</strong></td>
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<tr>
<td>An error in the design, organization, training, or maintenance that led to operator errors and whose effects typically lie dormant in the system for lengthy periods of time</td>
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Above, redesigning personal vigilance (Weinger et al., 1998). In the example inherently fallible human functions such as memory or and designing systems to avoid excessive reliance on aimed at understanding human cognitive limitations ttered to the patient. create an active error when the wrong drug is adminis-
trated, because the pharmacist would unintentionally dispense the wrong medication. If both the pharmacist and nurse mis-
read the medication label, those unintentional visual and cognitive lapses would combine with the latent error to create an active error when the wrong drug is adminis-
tered to the patient.

Human factors engineering describes the science aimed at understanding human cognitive limitations and designing systems to avoid excessive reliance on inherently fallible human functions such as memory or personal vigilance (Weinger et al., 1998). In the example above, redesigning the packaging or stocking the drug near distinctly different medications might address this latent error. Examples of how neurologists could apply human factors engineering principles include involvement in the design of information systems (e.g., custom-
ization of an electronic record to ensure the collection of critical information such as drug allergies) or implement-
tion of checklists to standardize processes dependent on human memory (e.g., requiring a provider to document and consider coagulation parameters before performing a lumbar puncture).

Communication failures are a particularly common and important contributor to harmful errors, as they can erode the redundant safety roles played by other members of the care team (The Joint Commission, 2012). Communication breakdowns often involve a combi-
nation of human lapses and latent system errors, espe-
cially in settings lacking standardized language or communication policies. Healthcare facilities can improve safety and reliability by adopting procedures and commun-
ication tools that enhance the flow of critical clinical information. In particular, team training based on communication techniques pioneered in military aviation have been shown to reduce mortality in healthcare (Neily et al., 2010). Implementing such communication tools requires sustained organization and institutional commitment, but should become common in many practice settings. The U.S. Agency for Healthcare Research and Quality’s Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) (Agency for
Healthcare Research and Quality, 2012) communication system has entered curricula for health professionals as well as clinical practice in large institutions. TeamSTEPPS encapsulates leadership principles and techniques that foster effective feedback, timely attention to safety issues, and mutual understanding about the goals of care across a team. Neurologists should familiarize themselves with TeamSTEPPS or a similar toolkit and consider adopt-
ing the relevant techniques in their practice setting. For example, a basic tool that applies to both inpatient and office settings is the “check-back,” a simple closed-loop communication tool to ensure information conveyed by the sender is understood by the receiver as intended. Com-
pare the following two scenarios.

**Scenario 1**

*Doctor:* “The patient with the generalized tonic-clonic seizures needs more lorazepam. Would you give him another milligram?”

*Nurse:* “Sure, I’ll do that right away.”

**Scenario 2**

*Doctor:* “The patient with the generalized tonic-clonic seizures needs more lorazepam. Would you give him another milligram?”

*Nurse:* “I plan to give 1 milligram of lorazepam by IV push to Mr. Smith in room 605 to treat a generalized tonic-clonic seizure. Can you confirm that he is the patient that needs the lorazepam?”

*Doctor:* “Yes, Mr. Smith in room 605 needs the lorazepam.”

In the second scenario, both the doctor and the nurse use direct and specific check-backs to confirm mutual understanding of the care plan. In the first scenario, their vague communication creates the possibility for a mis-
derstanding about which patient should receive the medication, which could lead to a harmful error. Other prominent TeamSTEPPS techniques include SBAR (sit-
uation, background, assessment, recommendation), a technique for rapidly summarizing and relaying critical information, and debriefing, an informal and brief information exchange designed to constantly improve team effectiveness after an episode of care. Implement-
ing these tools requires training and consistent participa-
tion by all team members, including physicians. Neurologists should also appreciate that team communi-
cation training promotes firm and respectful patient advocacy by empowering any team member to voice safety concerns and to suspend care until those concerns are addressed (Agency for Healthcare Research and Quality, 2012). This approach could disrupt medical practices with rigid, hierarchic cultures as healthcare
providers might not welcome unprompted feedback or recommendations. However, embracing and adapting to this sort of culture and system change represents an important step that neurologists, like all physicians, can take to improve patient safety.

ERROR REPORTING

The science of healthcare quality improvement has developed considerably in recent decades, in part due to the adoption of analytic tools from other industries such as manufacturing and aviation. For example, root cause analysis, human factors engineering, and growing adoption of information technology all play a prominent role in understanding and preventing adverse events. Nonetheless, physicians and hospitals depend on timely and accurate reporting of errors and near misses to guide the use of these tools. Unfortunately, underreporting of errors is widespread (Leape, 2002). Although physicians agree in principle with reporting errors to their hospital, they face barriers such as time pressure from competing tasks, concerns that reporting could lead to reprimand or legal liability, and a perception that reporting will not result in meaningful safety improvements (Cullen et al., 1995; Garbutt et al., 2008). Physicians in a large American study generally viewed error-reporting systems as inadequate and were more likely to communicate error details to colleagues by word of mouth than with their healthcare institution, indicating that hospitals and clinics should engage physicians in improving error-reporting systems (Garbutt et al., 2008). Other studies attribute reluctance to report errors to a pervasive medical culture focused on “shame and blame,” highlighting a need for culture change to accompany new reporting systems (Lawton and Parker, 2002).

Neurologists, like many specialists, would particularly benefit from efforts to increase reporting of adverse events. Higher rates of adverse event reporting could lead to more representative data about errors in neurology, which might in turn inform quality improvement interventions at both a local and a national level. Healthcare institutions can facilitate error reporting by adopting “Just Culture” principles that emphasize fair treatment of workers who share information about adverse events and safety concerns (Denham, 2007). Just treatment of a clinician after an adverse event entails a respectful inquiry into the event, avoidance of prejudgment, and a focus on resolving latent systems errors. In a just environment, workers who knowingly contravene safe policies should still be held accountable individually. However, such reckless behavior is rare and workers who make unintentional errors should be invited to participate in investigating and resolving system flaws, rather than facing punishment or termination.

Healthcare institutions that promote transparency and fairness in the aftermath of an error not only support effective reporting practices; they also create an environment conducive to open disclosure of medical errors to patients by fostering collaboration across the team involved in the error.

DISCLOSURE OF MEDICAL ERRORS TO PATIENTS

How physicians explain medical mistakes to patients may have significant emotional and legal consequences for the patient, family, doctor, and healthcare system. Ethicists, physicians, and patients agree that patients harmed by errors should receive prompt, open disclosure and a full apology. However, many healthcare providers struggle to turn their intention to be forthright into an effective disclosure conversation (Gallagher et al., 2006b). Consequently, a gap exists between the expectations of patients for transparent communication and the disclosure practices of physicians. A preliminary, but growing, body of research and practical experience has begun to help physicians bridge that gap.

WHY SHOULD NEUROLOGISTS DISCLOSE MEDICAL ERRORS?

A multifaceted rationale supports full disclosure of harmful errors to patients and their caregivers. First, disclosure exemplifies patient-centered care by meeting unanimous patient expectations to learn about harmful errors made in their care (Gallagher et al., 2003). Patients worry that healthcare workers might hide errors from them, and full disclosure may help to alleviate this anxiety. Conversely, failure to disclose an error in a timely and empathetic manner could harm the patient’s trust in the physician’s honesty, compromising the therapeutic relationship.

The ethical principles of fidelity, beneficence, autonomy, and justice uphold disclosure of harmful errors. These principles resonate with physicians, who often cite a personal desire to tell the truth and a respect for the patient’s right to know the truth as motivations for error disclosure (Sweet and Bernat, 1997). Open error disclosure also honors autonomy and informed consent by assuring ongoing access to pivotal information. For example, patients would likely not assume risk or trust consent discussions if they anticipated information about the outcome of a test or treatment might be withheld. Similarly, failure to disclose errors limits autonomy about subsequent care decisions, as patients might request different providers or treatments if they understood the error fully. Finally, full error disclosure respects patients’ rights to justice by illuminating circumstances that merit compensation.
Although prominent neurologic society ethical guidelines do not specifically address error disclosure (American Academy of Neurology, 2012), many of the above principles are endorsed by multispecialty medical society guidelines (American Medical Association Council on Ethical and Judicial Affairs, 2012; Snyder, 2012). Unfortunately, such statements often describe only a general obligation to disclose errors and fail to describe specifically the best disclosure content and approach (Gallagher et al., 2007a). Many medical errors generate complex disclosure dilemmas for which solutions are not clearly described in these brief guidelines: for example, what to do regarding near misses, errors committed by other providers, or errors in hopelessly ill patients whose outcome may not have been affected by an error? Whereas patient preferences about handling harmful errors are clear, preferences regarding near misses vary, raising the complexity of decisions about these discussions. Some patients feel such disclosures would only generate worry, whereas others find it reassuring to stay informed about all aspects of their care (Gallagher et al., 2003). Currently, no consensus exists about the best approach to disclosure of near misses, and neurologists should individualize their approach to each patient. Although uncommon, physicians may already understand a patient’s preferences regarding disclosure of near misses and should act accordingly. Outside such rare conditions, disclosure is typically warranted when the patient is aware of the mistake, or when disclosure would help the patient and healthcare team to prevent a recurrence. However, disclosure of all near misses may not be practical and may erode confidence in the healthcare team. Certainly, physicians will eventually face adverse events and errors where little to no prospective evidence or specific advice exists to guide their response. Consulting with a risk manager, disclosure coach, or ethicist may help uncertain physicians.

In addition to ethical considerations and patient expectations that support transparent error disclosure, many nations, states, and oversight organizations require open disclosure as part of regulatory or legal expectations (Gallagher et al., 2007a). Because these provisions vary regionally and have evolved rapidly over the last decade, physicians should stay abreast of local regulations that apply in their practice. For example, regulations may stipulate the need for error disclosure, the content or timing of disclosure, or the legal protections surrounding an apology. In addition to the above rationale for open disclosure, neurologists concerned about litigation should appreciate preliminary evidence suggesting that full disclosure may improve, rather than worsen, malpractice risk and expenditures (Kachalia et al., 2010).

### HOW SHOULD PHYSICIANS DISCLOSE MEDICAL ERROR?

Despite widespread consensus that patients should receive timely and transparent communication about errors that occurred in their care, the disclosure practices of physicians often do not meet patient expectations (Blendon et al., 2002; Gallagher et al., 2006b). Patients expect disclosure conversations to address three domains: information about the error, an apology, and plans for follow-up (Hobgood et al., 2002; Gallagher et al., 2003). Specific disclosure content expected by patients is described in Table 8.2. Addressing these domains forms the foundation of an effective disclosure conversation.

Physicians should appreciate that healthcare providers and patients often hold divergent opinions about the nature of medical errors, and the gap between those viewpoints can hinder effective communication (Gallagher et al., 2003). Whereas physicians typically define errors very narrowly based on technical grounds, patients may conflate poor service quality and unpreventable adverse events with medical errors. Patients also tend to attribute a greater degree of severity to the outcome than physicians do (Quinn and Eichler, 2008). Because these viewpoints differ, physicians should seek to understand patients’ perceptions of all adverse outcomes. Clinicians should remain sensitive to circumstances in which no error occurred, but a patient may reasonably assume that one did. Such events require a proactive, empathic, and transparent explanation about the unpreventable complication paired with a general expression of regret for the outcome.

<table>
<thead>
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<th>Table 8.2</th>
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<tr>
<td>Disclosure content expected by patients after medical errors</td>
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<tr>
<td><strong>Information</strong></td>
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<tr>
<td>An explicit statement that an error occurred</td>
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<tr>
<td>A description of what happened</td>
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<tr>
<td>Information about what it means for the patient’s health</td>
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<tr>
<td>An explanation of why the error occurred</td>
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<tr>
<td>Plans for how recurrences will be prevented</td>
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<tr>
<td><strong>Emotional support</strong></td>
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<tr>
<td>Clear and empathic language</td>
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<tr>
<td>A sincere apology for the error</td>
</tr>
<tr>
<td>Recognition of the emotional response (e.g., anger, sadness, mistrust)</td>
</tr>
<tr>
<td><strong>Follow-up plans</strong></td>
</tr>
<tr>
<td>A description of the investigation under way</td>
</tr>
<tr>
<td>Detailed plans for the next meeting and information to expect then</td>
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GAPS IN CURRENT DISCLOSURE PRACTICES

Multiple studies indicate that physicians disclose less than half of harmful errors to patients (Blendon et al., 2002; The Kaiser Family Foundation, 2004). When error disclosure does occur, physicians often do not present all of the content desired by patients. In a large survey of U.S. and Canadian physicians that examined what physicians would say to a patient after a harmful error, many chose language identifying the adverse event rather than the error or limited their description of how the error occurred, assuming the patient would ask clarifying questions (Gallagher et al., 2006a). This study also determined that less than half of doctors would express an apology for the error and only a minority would describe their plans for preventing future errors of this type, both key disclosure elements expected by patients. Physicians also tend to limit disclosure details when the patient appears unaware of the error (Gallagher et al., 2006a). This study also determined that less than half of doctors would express an apology for the error and only a minority would describe their plans for preventing future errors of this type, both key disclosure elements expected by patients. Physicians also tend to limit disclosure details when the patient appears unaware of the error (Gallagher et al., 2006a).

Overall, physicians appear to lack consensus about the best approach to disclosure, but exhibit habits that might appear evasive or dishonest to patients.

Physicians cite multiple factors that might make them less likely to disclose a serious medical error completely. Concern about triggering litigation, a supposition that the patient would not want to know about the error, and the belief that the patient would not understand the discussion can influence physician disclosure practices (Gallagher et al., 2006b). Very few physicians report ever receiving training in error disclosure, a factor that also makes it difficult for physicians to understand and meet patient expectations (White et al., 2008a). In fact, many physicians may have received contradictory advice from risk managers to “deny and defend” errors, perpetuating a medical culture traditionally opposed to openly discussing mistakes with patients. Interestingly, disclosure habits do not differ dramatically between countries with significantly different malpractice climates, suggesting that physicians struggle with the best approach to disclosure regardless of the anticipated legal consequences (Gallagher et al., 2006b). However, growing interest in candid communication about errors suggests cultural change is under way in how the medical community perceives and approaches error disclosure.

APPROACHES TO ERROR DISCLOSURE

Emerging guidelines for healthcare institutions offer a model for guiding clinicians through effective disclosure (Gallagher et al., 2007b). The National Quality Forum (2010) has published best practice recommendations that endorse the availability of “just-in-time” disclosure coaches to help clinicians in planning for a disclosure conversation. This provision recognizes that it may not be realistic to train all clinicians to become experts at disclosure, but healthcare institutions can facilitate disclosure through targeted coaching. Healthcare institutions and malpractice insurers may recruit such coaches from risk management or clinical leadership. Coaches should develop familiarity with both the informational content expected by patients and the communication challenges and pitfalls that often arise during these potentially uncomfortable conversations. In particular, an ideal coach would help the clinician to diagnose the strengths and weaknesses of their prior disclosure experience and proposed communication approach, and then tailor advice to their needs. Although the National Quality Forum’s disclosure coach recommendations are recognized as best practice, no systematic data describe the prevalence of its adoption.

What should a neurologist do if he or she does not have ready access to a skilled disclosure coach? Although prospective trials of disclosure strategies do not yet exist, expert consensus suggests key elements of an effective approach (National Quality Forum, 2010). Immediately after the error is recognized, several priorities emerge. First, the practitioner should address the ongoing medical needs of the patient. Although this obligation seems straightforward, some clinicians may require prompting to sustain a focus on immediate clinical demands. Physicians’ attention may stray if they grow wary of the patient’s reaction to the error or become distracted by their own emotional response to the error. Failure to devote the necessary attention to ongoing care risks that the patient develops a sense of abandonment and isolation during a very vulnerable period (Gallagher, 2009). Additionally, time-sensitive opportunities to mitigate the adverse outcome may slip away.

The next priority in the aftermath of an error is to report it promptly to a vital set of individuals, including the attending physician (if that is someone other than the neurologist) and the pertinent risk manager or patient safety officer. Depending on local expectations, it may be important to notify medical leadership or quality improvement personnel promptly to mobilize support for performing a root cause analysis. Such help can be especially helpful for clinicians who need to attend to the needs of other patients immediately and will struggle to devote full attention to understanding how the error occurred. A risk manager or medical director can aid the busy clinician by assembling the care team to collect and share information about the event and its preventability.

After stabilizing the patient and notifying key personnel, the clinician should plan for the disclosure conversation. Planning should ideally cover logistics (who, where, when), content (what should be said), and contingencies
(how to respond to questions and patient reactions). Generally, planning decreases the chance that the patient’s emotional response or questions will surprise or unsettle the physician during the disclosure conversation, and can improve the chance that the physician presents the information desired by the patient. Rehearsal gives the clinician a chance to practice in a consequence-free environment, to consider how the patient might perceive the proposed disclosure, and to refine the phrasing of the message as needed. Although some physicians may worry that preparing for the disclosure conversation would produce a rote or insincere response, anecdotal experience portrays greater pitfalls around unrehearsed attempts at the disclosure. In the best circumstances, planning would take place with the guidance of a practiced disclosure coach. Even in the absence of a coach, a clinician or team should make some important preparatory decisions about whether the event merits disclosure, the timing and location of the conversation, who will participate, and what information will be shared.

Ideally, an initial disclosure conversation with the patient would occur within several hours of the adverse event. The National Quality Forum (2010) recommends no later than 24 hours after the event is discovered, and preferably sooner if possible. In some cases, a delay may be appropriate while providers wait for the patient to awaken from an unconscious state and become capable of understanding the information presented. A private and quiet location should be chosen. For outpatients, this may involve inviting the patient to the clinic if a telephone call does not seem sufficiently personal. For both inpatients and outpatients, adequate seating should be arranged to permit clinicians to sit at the same level as patients and family members. For minors and patients who require custody, the parent or guardian must be present for the disclosure. Physicians should also determine if competent adults would like to invite loved ones to the discussion to provide emotional support or ask questions.

**PLANNING WITH TEAMS**

In part because medical training engrains a deep ethic of personal accountability, many physicians have conceptualized error disclosure as a conversation between a patient and a single responsible physician. However, in today’s complex medical environment, multidisciplinary teams often collaborate to deliver care and multiple individuals may contribute to an error. As such, it may be appropriate in many circumstances to disclose errors as teams. Although team disclosure allows patients to hear information and apologies from all of the responsible individuals, preparations for group discussions may be complicated by power dynamics and divergent opinions about what information to share with the patient. Disclosure coaches, medical leaders, or risk managers may be helpful to groups negotiating these issues, as conversations involving multiple providers often require a high degree of coordination and preparation.

Teams considering error disclosure should determine which members will participate in the conversation. Bringing too many people into the disclosure conversation risks overwhelming or intimidating the patient. Leaders may avoid this issue by selecting only those who were materially involved and considering appointing a spokesperson for specific pieces of information. Team members should strive to develop a unified understanding of how the error occurred to avoid presenting conflicting or confusing information. The team should also discuss ways to support each other during the discussion. For example, if the patient probes the team to attribute culpability to a single person, they should be prepared to share accountability such that no individual is disproportionately singled out or blamed by colleagues for the error.

When appropriate, trainees involved in the error should participate in error disclosure, with supervision. Most academic medical centers establish the expectation that trainees will immediately inform their supervising physician about adverse events and wait for guidance rather than initiating disclosure independently. Although most medical students and virtually all postgraduate trainees have been involved in an error, many do not have experience of disclosing an error to a patient (White et al., 2008a). For future generations of physicians to reduce the variability and gaps in current disclosure practices, trainees will need to participate in every possible learning opportunity related to disclosure (White et al., 2011). Following an error, some educators may wish to exclude trainees from disclosure either to protect the trainee or to exert greater control over the conversation content. However, disclosure preparation and delivery represent important opportunities for senior physicians to coach trainees in communication skills. Trainees in neurology should promptly and openly engage senior neurologists and disclosure coaches when they believe an error has occurred.

**INITIATING DISCLOSURE: WHAT SHOULD BE TOLD?**

Clinicians should exercise fundamental communication skills that convey respect and openness. At the start of the conversation, this includes attention to introductions if the parties are not already familiar with each other, turning off pagers or cell phones, and sitting at eye level with the patient. The clinician should also employ clear,
jargon-free language and give information in digestible portions with appropriate pauses for questions. Initially, the physician should set the agenda and identify the purpose of the conversation, as the error may not be apparent to the patient or family. Next, the facts should be disclosed openly, such as they are known at the time, including the informational content expected by patients (Table 8.2). However, providers should avoid speculation, as the initial impression developed within hours of the event may be incomplete or even wrong. Although initiating disclosure promptly after the error reduces the risk that the care team appears to be hiding information, it may not leave the team sufficient time to assemble the definitive facts about the adverse event. Clinicians should resist the natural desire to conjecture about the event and should instead describe the limits of the available facts and what steps are under way to fill in the gaps.

After an error has damaged the patient’s trust in the healthcare team, the patient and family may have little tolerance for inaccurate information. Beyond the basic details of the adverse event, the disclosure should describe the steps taken to provide ongoing care, how the event will be investigated, and what will be done to prevent the error from occurring again. This is also an important opportunity to communicate regret for the outcome clearly and empathically. When the adverse outcome does not appear secondary to a mistake, a general expression of regret is always appropriate (e.g., “I’m sorry for what has happened to you”). When a clear error or system failure occurred, a sincere apology linked to the error is most appropriate (e.g., “I’m sorry that our mistake harmed you”). Physicians should approach the apology with a mindset focused on the patient’s need for dignity and respect, rather than any personal expectations for forgiveness or thanks. Apologies should also avoid self-serving content, such as rationalization, minimization, or justification that might cause the patient to question the sincerity of the provider.

Throughout the disclosure conversation, it is critical to stay highly attuned to the emotional experience of the patient. He or she may feel a complex array of reactions including anger, sadness, betrayal, guilt, frustration, disappointment, confusion, shock, and anxiety. Due to a natural comfort with sharing technical information, physicians may focus on presenting information about the error to the detriment of handling the patient’s emotions. Conscious efforts to identify and respond to the patient’s emotional reaction should guide the pace and content of the discussion. Patients expect disclosure to be expressed with genuine empathy and concern. Open body language and warm tone of voice may help to broadcast empathy, and should be maintained even in the face of anger that might otherwise lead to a defensive tone of voice or body posture. In recognition of the patient’s ongoing emotional turmoil, it may be appropriate to request pastoral care, social work, or other grief counselors to visit the patient in the minutes to days following the injury. Finally, physicians should prepare themselves for the possibility that, despite a candid and empathetic discussion with appropriate apology, the patient or family does not feel any resolution or attenuation of their emotional response. This does not necessarily indicate a failure of the disclosure process; rather it reflects the magnitude of emotional injury and shattered trust that medical errors can provoke.

Physicians should consider how to handle potentially challenging questions before initiating disclosure. Disclosure coaches may facilitate this step by sharing experience with questions that often surprise or confound physicians. For example, after adverse events that prolong care or cause permanent injury, patients and families may ask for restitution or assistance with medical expenses. In a few countries, no-fault compensation laws provide a system to meet these expectations. However, in most parts of the world, patients will look to the hospital, physician, or legal system for financial compensation. Even in nations with adverse litigation environments, malpractice insurers have been able to successfully implement no-fault compensation programs at a local level that may benefit some patients (Quinn and Eichler, 2008). Before making commitments to the patient, physicians should determine who in their institution has the authority to waive fees or provide compensation and work with these individuals to determine if such steps are appropriate. Other challenging questions that may emerge during disclosure include requests for a new care provider or requests for punishment (e.g., termination or suspension of employment) for involved personnel. Physicians should acknowledge the legitimacy of these questions and reply based on a response plan developed in advance. Spontaneous reactions to such questions may sour the disclosure process when well-intentioned clinicians make promises that become difficult to honor.

Neurologists and healthcare teams should regard disclosure as a process rather than a single event. Although most healthcare workers would naturally prefer to avoid the ongoing discomfort of repeated meetings with an aggrieved patient, effective follow-up plays a critical role in the satisfactory resolution of the patient’s concerns. Because results of a thorough root cause analysis are rarely available at the time of the first meeting, physicians should schedule follow-up meetings to describe the findings of the investigation and details about steps under way to prevent the error from recurring. Additionally, patients may not be able to process all of the information from the initial meeting and questions will emerge in the days that follow. Providing contact
information about a point person for questions and scheduling the next conversation at the patient’s convenience demonstrate a commitment to meeting the patient’s needs. Follow-up meetings also address important emotional expectations (Delbanco and Bell, 2007). Continuous engagement with injured patients may help to prevent a sense of abandonment. In some cases, patients who do not receive ongoing emotional support from providers may conclude that the physician is avoiding them to hide information. Although the results of the adverse event analysis may be unflattering, many physicians’ reluctance to meet with patients may stem from struggles with their own shame about the error.

**EMOTIONAL IMPACT OF ERRORS ON CLINICIANS**

Clinicians involved in a medical error may suffer a devastating emotional response, diverting attention from their efforts to support the patient. Common emotional responses include guilt, inadequacy, self-doubt, self-blame, anger, anxiety, and sadness (Newman, 1996). Beyond these negative emotions, some will experience upsetting cognitive and physical manifestations such as insomnia, incessantly replaying the event in their head, and difficulty concentrating (Gazoni et al., 2012). Although most clinicians heal from the emotional trauma, some endure long-lasting consequences such as burnout, depression, substance abuse, or social isolation. Research among residents also suggests that physicians who have been involved in an error are more likely to report involvement in future errors, suggesting a vicious cycle in which errors lead to emotional trauma, which in turn leads a distracted clinician to commit more errors (West et al., 2009). Healthcare facilities should develop support systems designed to abort this cycle.

Unfortunately, physicians often feel unsupported by healthcare institutions and their peers in the wake of errors (Waterman et al., 2007). Many institutions lack proactive and legally protected mechanisms to acknowledge the tough emotions that clinicians face. Shame, fear of litigation or punishment, and misguided advice to speak with nobody also prompt many healthcare workers to cope in isolation. However, new guidelines identify support for healthcare workers involved in an error as an important component of an institution’s plan for effective disclosure (National Quality Forum, 2010). Principally, empathic listening and a nonjudgmental institutional response represent the humane treatment clinicians desire after an error (White et al., 2008b). Additionally, attention to the clinicians’ coping and resilience may enhance their ability to focus on effective disclosure and to avoid errors in subsequent care. In the long run, effective support may also strengthen the institution by promoting trust and retention among staff (Denham, 2007).

**CONCLUSIONS**

Due to inherent human fallibility and faulty complex systems, harmful medical errors occur regularly. Although physicians often intuitively appreciate that they will commit errors throughout their career, many have not received training in the analysis and disclosure skills required to address errors. Consequently, the traditional response to errors has left much to be desired for patients, families, healthcare teams, and hospitals. However, a change towards a medical culture of greater transparency and support for victims of medical error has begun to emerge. Substantial change is still required, but neurologists can further this movement by leading local practice communities to create policies and environments conducive to open reporting, respectful disclosure to patients, and support for the healthcare workers involved. Future research should focus on comprehensive descriptions of the nature and frequency of errors in the practice of neurology as well as prospective evaluations of institutional programs designed to enhance disclosure practices and the emotional recovery of both patients and healthcare workers.

**REFERENCES**


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