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Otolaryngologists' Responses to Errors and Adverse Events

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Objectives: **The objectives of this study were to describe otolaryngologists' emotional reactions to errors and adverse events, their efforts to take responsibility, and their attempts to implement improvements.** ***Study Design and Methods:*** **A retrospective, anonymous survey of 2,500 U.S. otolaryngologists who were members of the American Academy of Otolaryngology–Head and Neck Surgery about errors in their practice was conducted. Respondents were asked whether an error had occurred in their practice in the past 6 months and, if so, to describe the error, its consequences, and any corrective actions taken. Two aspects of these reports stood out, which were beyond the scope of the original study: the respondents' emotional responses and their corrective actions.** ***Results:*** **The response rate was 18.6%. Two hundred ten (45%) respondents reported a total of 212 analyzable error reports and 230 corrective actions. Corrective actions included disclosure to the patient (20 [9%]), ameliorating the consequences of the event to the patient (107 [50%]), personal practice changes (14 [7%]), improvements in the respondent's practice or department (60 [28%]), and hospitalwide or broader corrective actions (19 [9%]). Emotional reactions to errors and adverse events were reported by 22 (10%) otolaryngologists, including regret, embarrassment, guilt, anxiety, loss of temper, and irritation. Legal action was mentioned by five physicians (2%).** ***Conclusions:*** **Otolaryngologists took actions not only to treat their patients, but also to improve patient care in their practice, department, hospital, or community. Emotional reactions to errors and adverse events are common and need to be addressed in medical training and practice.** ***Key Words:*** **Emotional reactions, errors, adverse events, patient safety.**

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INTRODUCTION

In medicine and surgery, human fallibility and unpredictable events can lead to poor outcomes. Incorrect care or a failure of care is termed a medical error. Injuries resulting from medical care (even when the care is optimal) are termed adverse events. Prescribing penicillin to a patient with a documented allergy is an error whether or not harm results. A rash from penicillin is an adverse event whether or not it was predictable. Most errors do not lead to adverse events, but some errors do cause harm. Even errors that do not cause harm may be emotionally upsetting to both physician and patient.

As the complexity of medical care has increased, the potential for errors and adverse events (EAEs) has grown exponentially. It is impossible to avoid EAEs in critically ill patients with hundreds of pages of medical records, dozens of medications, and multiple critical interventions. Twenty-first-century physicians will inevitably be involved in EAEs more frequently than their predecessors.[1]

Most significant EAEs will elicit two important responses in the physician. Most physicians will have an emotional response to being involved in an EAE; the magnitude of this response is likely to be related to the seriousness of the EAE. Second, an involved physician will usually want to take some corrective action after an EAE. This might be as simple as caring for a wound infection or as complicated as trying to address a system problem at the hospital level.

Surgeons are well trained in dealing with consequences of an EAE in individual patients; entire textbooks are devoted to the subject of complications.[2] Surgeons may not be as well trained, however, in dealing with the emotional consequences of EAEs either for themselves or their patients.[3] They may also be unfamiliar with taking corrective actions that go beyond the individual patient and bring about systems improvements.[1,4,5]

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Emotional Reactions

In general, physicians recognize that they are not perfect, but nonetheless believe on some level that they should not make mistakes and often experience emotional stress if they do.[6] A study of house officers, for example, found feelings of remorse (81%), anger (79%), guilt (72%), and inadequacy (60%) after EAEs.[7] Penson and colleagues suggested that emotional scars may remain afterward, including such feelings as vulnerability, guilt, anxiety, shame, and loss of self-confidence.[6] Strong emotional reactions may create a strong need for support. The kind of support needed at the time of the mistake, however, is rarely offered.[3,8] Only nine of 28 participants, for example, offered unconditional support in a hypothetical scenario involving a colleague's decision that was associated with a fatal outcome, although all subjects recognized their colleague's pain and need for support.[9]

Disclosure and Coping

Disclosing a mistake to the patient may be extremely difficult. Patients trust their physicians to provide the best possible care and may feel vulnerable in their relationship after an EAE. Patients may experience fear, anxiety, depression, isolation, anger, and frustration after EAEs.[10,11]

The majority of patients want to be informed of EAEs.[12] Patients are usually understanding when told of an error[13] but desire explanation and acknowledgment.[8,12] Disclosure and apology may help both patients and physicians deal with emotional reactions.[11,14] Physicians, however, may be reluctant to disclose EAEs for a variety of reasons, including fear of lawsuits, shame, and fear of appearing incompetent.[9,15,16] It may also be the case that the skills required to manage disclosure are not fully addressed during medical training.[8] For these or other reasons, a significant number of physicians report keeping mistakes to themselves.[17] For example, after a bile duct injury during cholecystectomy, the great majority of surgeons (83%) described the event as a complication; only 8% described the injury to patients as a mistake.[13]

Corrective Actions After Errors and Adverse Events

Physicians not only care for patients, but also constantly work to improve their practice. An EAE may be a stimulus to look for opportunities to improve. For example, 15% of surgeons reported that a bile duct injury during cholecystectomy changed their practice. The majority made technical adaptations and reported avoiding surgeries at night or when feeling fatigued.[13] In another study, 68% of surveyed physicians sought advice and 98% made at least one constructive change after an EAE.[17]

Background of This Report

In 2003, we surveyed 2,500 U.S. members of the American Academy of Otolaryngology–Head and Neck Surgery (AAO-HNS) about errors in their practice. Our goal was to develop a taxonomy of errors in otolaryngology to facilitate more rigorous study in this area. We used a broad definition of error that would encompass both errors and adverse events. The errors described here and our classification system have been previously reported.[18]

Two aspects of these reports stood out, which were beyond the scope of the original study. One was the emotional reaction that many respondents reported, and the other was the variety of successful and unsuccessful corrective actions that respondents reported. These emotional responses and corrective actions are the subject of this article.

METHODS

Methods are described in detail in Shah et al.[18] Briefly, the survey asked respondents whether an error had occurred in his or her practice in the last 6 months. Respondents were asked to describe the most recent error, its consequences and any corrective action taken, and to provide limited demographic data about themselves and the affected patient. No identifying information was collected. This study was approved by the Children's Hospital Boston Human Investigations Review Committee.

RESULTS

The overall response rate was 466 from 2,500 mailed surveys (18.6%). Two hundred ten (45.1%) respondents reported a total of 212 analyzable error reports. Demographics of patients and physicians have been reported previously.[18]

Two hundred thirty corrective actions were reported (Table I). We classified these as 1) disclosure and acceptance of responsibility, 2) patient-related corrective actions, 3) personal changes in practice, 4) practice or departmental actions, and 5) hospital-wide or other broader actions.[3]

Disclosure

Twenty otolaryngologists (9.4%) reported disclosing EAEs to the patient (Table II). Three physicians apologized, and five physicians reported that their patient was understanding. Only one physician (0.5%) reported discussion with his or her chair. No respondents reported that disclosure led to legal action.

Patient-Related Corrective Actions

One hundred seven corrective actions directed at ameliorating the consequences of the EAE to the patient were reported (50.5%) (Table II). Additional surgery was the most frequent (21 [9.9%]). Repair of injury during the

TABLE I.
Summary of the Corrective Actions Reported by Otolaryngologists.

Corrective Actions Classification	No. of Reports
Accepting responsibility/disclosure	30 (14.2%)
Actions to ameliorate harm to patient	107 (50.5%)
Changes in surgeon's personal practice	14 (6.6%)
Group/departmental improvement actions	60 (28.3%)
Hospital-wide/other improvement actions	19 (9.0%)
Total	230 (108.5%)*

*Percentages were calculated of 212 errors and adverse event reports.

TABLE II.
Corrective Actions Reported by Otolaryngologists.

Corrective Actions	No. of Reports
Responsibility and disclosure	
Acceptance of responsibility	9 (4.2%)
Personal error	6
Resident/fellow/student under supervision	2
Office/department staff error	1
Discussion with colleagues/department chair	1 (0.5%)
Disclosure and apology to patient	20 (9.4%)
Corrective actions to ameliorate patient harm	
Surgery/treatment	64 (30.2%)
Additional surgery/unplanned return to operating room	21
Repair during surgery	8
Close observation and/or wound care	4
Hospitalization or prolongation of hospitalization	11
Intensive care unit admission	2
Resuscitation	2
Surgery rescheduled	2
Patient care transferred to another doctor	1
Cancer treatment initiated after delay in diagnosis	6
Miscellaneous	7
Diagnostic procedures (magnetic resonance imaging, electroneurography)	3 (1.4%)
Consults	12 (5.7%)
(neurology, ophthalmology, anesthesiology, plastic surgery, dental)	
Medications (discontinued, restarted, or additional medications needed)	17 (8.0%)
Communication	10 (4.7%)
Repair relationship—phone calls, office visits	5
Documentation in the chart	3
Patient contacted and follow up provided	1
Doctor appointment after canceled surgery	1
Unspecified	1 (0.5%)
Changes in a surgeon's personal practice	
Surgery	6 (2.8%)
Do not operate unless anatomy is absolutely clear	1
Delay surgical procedures until infection clears	1
Get computed tomography scan before sinus endoscopy	1
Check all equipment before starting	1
Check bovie for correct assembly	1
Use longer-lasting anesthetic	1
Nonsurgical	8 (3.8%)
Review pathology reports more carefully	1
Check chart stickers	1
Screen more closely for hypertension	1
Do a more thorough physical/ask more questions	2
Have nurse in the room when with female patient	1
Improve communication (in the future)	2

(*Continues*)

TABLE II.
(*Continued*).

Corrective Actions	No. of Reports
Group/departmental improvement actions	
Administrative improvements	15 (7.1%)
Administrative improvements in tracking of external studies	6
Data recovery (billing, electronic medical records)	3
Miscellaneous	6
Improvements in surgical protocols	19 (9.0%)
Timeout policy in operating room	3
Defective equipment replaced	3
Equipment/supplies checked before surgery	6
Eyes covered and ointment used in nasal surgery	1
Nurses/technicians label all medications in operating room	1
Multiple labels on patient instrument trays	1
New policy to check first morning urine human chorionic gonadotropin before surgery	1
Changed postoperative instructions to patients	2
New protocol for handling sharps	1
Personnel	17 (8.0%)
Educating office/clinic personnel	7
Educating preoperative, operative, and postoperative care personnel	6
Residents put on notice	1
Educating physician colleagues (e.g., anesthesia)	1
Incident report	1
Miscellaneous	1
Discussed at morbidity & mortality	3 (1.4%)
Medication protocols	6 (2.8%)
Allergy sera protocol changes	3
Cross-reference old/new prescription lists	1
Zofran schedule developed	1
Intravenous Phenergan "rescue dose" developed	1
Hospital-wide and local corrective actions	
Complaint/report	13 (6.1%)
About other department	3
Lodged with hospital, unknown outcome	4
Lodged with hospital, corrective actions	1
Incident report made	2
Root cause analysis/quality improvement case review	2
Risk management notified	1
Pharmacy/medication-related	2 (0.9%)
Advising primary care groups about beta-blockers	1
Contacted regional office of pharmacy chain about error in narcotics dispensing	1
Equipment	2 (0.9%)
Contacted manufacturer—defective graft	1
Placed tracheotomy equipment in different areas	1
Unspecified	2 (0.9%)
Total	230 (108.5%)

original surgery (8 [3.8%]) and hospitalization or prolonged hospitalization (11 [5.2%]) were also frequent. Twelve consults (5.7%) were reported, including neurology (5), ophthalmology (4), and one consult each from anesthesiology, plastic surgery, and dental surgery. Medications were corrected in 17 reports (8.0%).

Administrative actions related to a patient were reported by 10 physicians (4.7%). Repair of the physician–patient relationship such as phone calls and additional office visits was reported in five cases (2.4%), for example, "elaborate concern for the patient; careful discussion and several hours of phone calls and office visits to sympathize, explain."

Personal Practice Changes

Personal practice changes were reported by 14 physicians (6.6%) (Table II). Physicians reported that they "will be more careful next time" (8 [3.8%]) by, for example, screening more carefully for hypertension, asking more questions and doing a more thorough physical, checking chart stickers, reviewing the pathology report more carefully, and improving communication. "We all need to dig for details better. I needed to do a more thorough physical and ask more questions."

Surgery-related personal practice changes were reported by six physicians (2.8%), including avoiding surgery unless anatomy is absolutely clear, delaying procedure until infection clears, obtaining a computed tomography scan before endoscopy, using a different anesthetic, and personally checking all specialized surgical equipment before surgery.

Corrective Actions in Practice or the Department

Improvements in practice or the department were reported in 60 cases (28.3%) (Table II). These included administrative, surgical, staff-related, equipment, allergy practice-related, medications, and financial corrective actions.

Respondents reported different ways to deal with lost laboratory and diagnostic test results: implementing a tracking system, reminding staff not to file reports before physicians' review, reviewing results even if a patient has an appointment, and asking a radiologist to call if findings were positive.

Administrative improvements were reported by 15 physicians (7.1%). These improvements included filing forms in the office, notifying the physician of scheduled cases, and talking with patients on the phone. Six physicians (2.8%) reported making administrative improvements to track and file the results of external studies more reliably.

There were 19 (9.0%) corrective actions in the domain of operating room protocols. Three physicians (1.4%) reported implementing a timeout policy in the operating room. Other improvements included a formal equipment test before anesthetizing the patient; verifying the patient's name, procedure, and consent; keeping two tracheotomy sets in an ambulatory center; changing standardized postoperative instructions to patients; and developing additional consent. One physician reported that nurses and technicians are now required to label all medications in the operating room after an EAE; another reported that multiple labels are now used on patient trays.

Personnel-related corrective actions were reported by 17 physicians (8.0%), including education of personnel and review of office policies.

Equipment failures were involved in three EAEs (1.4%). The most common corrective action was replacement of defective equipment. One practice made a complete change to insulated instruments after one EAE involving a noninsulated cautery.

Medication practice improvements were mentioned in six responses (2.8%). One practice implemented a policy of cross-referencing old and new prescription lists. One physician reported removing intravenous Neo-Synephrine from the operating room; another stopped using Duragesic in his practice. In addition, a Zofran schedule and intravenous Phenergan "rescue dose" were developed. Three corrective actions (1.4%) were reported in allergy practices, including a series of checks on all allergy sera. For example, "allergy serum vials are now conspicuously demonstrated to patient prior to drawing up the injection."

Other departmental corrective actions included discussion at the morbidity and mortality conference (3 [1.4%]).

Hospital-wide and Broader Actions

Nineteen (9.0%) physicians reported hospital-wide and local corrective actions (Table II). A complaint was lodged with the hospital or department by 13 physicians (6.1%). One physician tried to improve communication with anesthesia and make recommendations; this effort was unsuccessful. Other corrective actions included discussing order transcriptions with the hospital and presenting concerns to the administration. Two EAEs resulted in incident reports. Other EAEs were subjected to root cause analysis, case review by quality management, and/or risk management notification.

There were two (0.9%) corrective actions involving medications. One physician reported advising primary care physician groups that starting β-blockers in patients on immunotherapy is hazardous. Another physician contacted the regional pharmacy office when narcotics were incorrectly dispensed.

Two corrective actions (0.9%) involving equipment were reported. One physician contacted the manufacturer after receiving a defective graft. Tracheotomy equipment was installed in different areas throughout the hospital after the EAE.

Emotional Reactions

Twenty-two responders (10.4%) reported an emotional reaction to an EAE (Table III). Regret and embarrassment were most commonly mentioned with six (2.8%) and five reports (2.4%), respectively. Several responses included indicators of guilt, anxiety, loss of temper, and irritation such as "I am entirely to blame and felt very badly since," "I have no excuse and have been very angry with myself. . . ," and ". . . this case embarrassed us."

TABLE III.
Examples of Emotional Responses.

Emotional Response	No. of Reports
Regret	6 (2.8%)
"This should have been avoided . . ."	1
"In hindsight, all . . . patients should be reimaged less than 2 months before the surgery"	1
"I should have . . . and checked . . ."	1
"I would have rather performed the consult on Monday"	1
"Totally not acceptable"	1
"We all needed to dig for details better. I needed to do a more thorough physical and ask more questions"	1
Embarrassment	5 (2.4%)
"Embarrassing"	1
"We were embarrassed"	1
"It was very uncomfortable"	1
"No problem after initial embarrassment"	1
"Oops!"	1
Guilt	4 (1.9%)
". . .confession . . . I am entirely to blame and have felt very badly since . . . I have no excuse and have been very angry with myself for failing to take notice of . . . a case of carelessness on my part"	1
"I take full responsibility. I was not paying attention because. . ."	1
"I had failed to . . ."	1
"Poor clinical examination on my part"	1
Anxiety	4 (1.9%)
"This is beyond upsetting as this in every way was preventable"	1
"This was a very distressing, unexpected sequela"	1
". . .caused consternation for me"	1
"It scared the — out of me"	1
Loss of temper	1 (0.5%)
"Lost temper and used profanity . . . on phone with patient"	1
Irritation	1 (0.5%)
". . . when operating room personnel make a mistake it may be covered up, but when it involves a physician action is taken! I see a double standard here"	1
Wakeup call	1 (0.5%)
"Definitely a wakeup call for me to be more careful. . ."	1
Total	22 (10.4%)

Legal Action

Legal action was mentioned by five physicians (2.4%) (Table IV). There were two lawsuits, one threat of lawsuit that was later withdrawn, and one in which patients records were requested by legal counsel. In addition, one physician's practice filed a lawsuit against a computer company after the loss of electronic medical record data.

TABLE IV.
Legal Implications.

Legal Implications	No. of Reports
Lawsuit threatened, later withdrawn	1
Lawsuit to the computer company for lost records	1
Lawsuit	2
Records requested by legal counsel	1
Total	5 (2.4%)

DISCUSSION

The complexity of modern medical and surgical care makes EAEs inevitable.[1] Significant EAEs will typically elicit several physician responses, which may include disclosure of the EAE to the patient, an emotional reaction in the physician, and corrective actions, which can encompass a spectrum from simply caring for the patient's problem, to practice, hospital, or larger-scale systems improvements.

Disclosure and Acceptance of Responsibility

Disclosure may help both patients and physicians deal with the emotional consequences of EAEs.[11,14] Physicians, however, may be reluctant to disclose information about EAEs[13] because of the legal implications,[17] psychologic distress,[9,15] and uncertainty about the cause of an EAE.[8] Although we did not specifically ask about disclosure in our survey, 20 otolaryngologists (9.4%) reported disclosing EAEs to their patients (Table II). At least in these 20 cases, disclosure appeared to be effective, because no otolaryngologist reported a patient being angry or filing a lawsuit after disclosure. Because we did not specifically ask about disclosure in our survey, these results should be interpreted cautiously. It is probable that many additional otolaryngologists disclosed the EAE to the patient, and it is possible that in some of these cases, the patient was angry or did pursue legal action despite disclosure.

Emotional Reactions

We did not specifically ask about emotional reactions in our survey. Nonetheless, 22 physicians (10.4%) reported emotional reactions to EAEs (Table III). We believe that almost all caring physicians experience emotional reactions to EAEs in their practice. Although the number of respondents who commented on their emotional reactions was small, the intensity of some of the responses suggests that this is an important area for further exploration. It has been suggested that a failure to address providers' emotional needs may hamper the practical steps necessary to deal with an EAE,[3] making this issue all the more important for future study.

Corrective Actions of the Patient

The first priority after an EAE is to attend to the consequences in the affected patient. One hundred seven otolaryngologists (50.5%) reported corrective actions for the patient (Table II). Return to surgery and additional

surgery were the most frequently reported corrective actions for the patient (21 [9.9%]). Also frequently reported were the initiation of cancer treatment after a delay in diagnosis, consultations with other specialists, and actions to repair the physician–patient relationship, supporting the importance of taking time to mend the physician–patient relationship after an EAE.

Personal Practice Changes

Fourteen physicians (6.6%) reported implementing personal practice changes. We suspect the true number is much higher. Being more meticulous and improving personal communication were the most frequently reported personal corrective actions.

Corrective Actions in the Practice or the Department

Respondents often moved beyond caring for the individual patient and implemented changes in their department or practice after EAEs. Such improvements were reported by 60 physicians (28.3%) (Table II). Corrective actions involving lost data and financial claims were reported by three physicians (1.4%). Corrective actions related to surgery were reported by 19 (9.0%) physicians, e.g., instituting a timeout before the case and verification of procedure, consent, and patient's name. There were several reports of changes in operative room medication labeling procedures after EAEs. Seventeen physicians (8.0%) reported additional training, policies' review, reminders, meetings, and education. There were three corrective actions (1.4%) related to allergy sera administration. A series of checks on all vials and having the patient confirm that the serum vial is correct before administration may be useful in reducing EAEs in allergy practices.

Hospital-wide and Local Changes

A number of respondents acted at a hospital or broader level to reduce EAEs. Complaints and reviews were the most common corrective actions. After lodging a complaint, four physicians reported that the outcome was unknown and one physician reported an unsuccessful outcome.

Legal Action

Legal implications were not specifically queried but were reported by five physicians (2.4%) (Table IV). Failing to disclose an error may increase the likelihood of litigation.[11,12] We were unable to test this hypothesis because of the small number of reports.

Limitations

These data have several significant limitations. They were gathered from an anonymous survey with a response rate of 18.6%. This rate is roughly typical of other AAO-HNS surveys (Nielsen D, personal communication), and the demographics of the respondents were roughly typical of AAO-HNS membership, suggesting that there was not a strong response bias. More importantly, this report discusses responses that were not specifically asked for. It is likely that far more than 22 physicians had emotional responses to EAEs, which they did not report because they were not asked about this.

Additionally, the survey did not specifically ask whether a physician took any corrective actions beyond the patient involved. Therefore, these data likely understate the number of physicians who made attempts at system improvements after EAEs.

Finally, and very importantly, we did not investigate the effect of EAEs on patients. EAEs understandably elicit strong emotional reactions in patients,[9] may impair the patient's trust in the physician, and may cause other, as yet unstudied effects. How patients respond to EAEs is an extremely important issue for future study.

CONCLUSIONS

After errors and adverse events, otolaryngologists commonly take corrective action not just for the individual patient, but also to improve care in their practice, department, hospital, or community. Emotional reactions to EAEs occur in at least a substantial fraction of otolaryngologists. Important areas for future study are the impact of otolaryngologists' emotional reactions on patient care, the impact of patients' emotional reactions, and the effectiveness of different types of corrective actions.

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