Invited Article: Improving safety for the neurologic patient

Evaluating medications, literacy, and abuse

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Patient safety came to the forefront following the Institute of Medicine's 1999 report "To Err is Human: Building a Safer Health System." This report highlighted the need to improve our effectiveness in protecting patients from harmful errors, responsible for an estimated 44,000 to 98,000 hospital deaths each year.¹ In the wake of this report, a broad array of stakeholders, including the members of the American Academy of Neurology (AAN), have joined the effort to advance patient safety research and reform. The Joint Commission (JC) has added momentum by incorporating national patient safety goals into their accreditation process.²

The AAN has helped to identify and correct patient safety concerns in neurologic practice. The Patient Safety Subcommittee (PSS) has organized the Patient Safety Colloquium (PSC) at the annual meeting where patient safety issues are presented and current safety tools are provided. PSC information includes information on screening for abuse or falls and assessing for driving safety. Other resources include information on medication interactions, complementary medications and their neurologic side effects, and Internet tools for improving medication compliance. The syllabi for all PSC since 2007 are available on the AAN Patient Safety Web site.³

The PSS collaborates with groups within and outside of the AAN. For example, work with the Practice Improvement Subcommittee integrates safety measures into practice guidelines. Coordination with the Education Committee promotes safety as a priority in educational offerings. Partnering with malpractice insurance providers helps to identify delays in diagnosis or treatment, and delayed or incomplete communication. By using these proactive strategies such as education and system safeguards we can improve patient care.⁴

This article focuses on medication errors, health literacy, and abuse and neglect, which are 3 of the main focus areas for the PSS. To facilitate practice improvement, tools and tips are provided. Additional resources are identified at the end of the article. We

hope that neurologists will become more cognizant of safety issues and apply this understanding to their daily practice.

MEDICATION ERRORS A 2006 Institute of Medicine report entitled "Preventing Medication Errors" estimated that 1.5 million preventable adverse drug events (ADEs) occur each year in the United States, with estimated Medicare costs in excess of \$880 million annually.⁵ Other studies indicate 3% to 17% of hospitalized patients experience an adverse event, up to 50% of which are deemed preventable.⁶ In an effort to reduce inpatient ADEs, the JC has mandated medication reconciliation when patients enter the hospital, on transfer between services or units, and when discharged. Outpatient clinics that are in "regulated space" are also required to perform medication reconciliation.⁷

Medications most often associated with ADEs include anticoagulants, antidepressants, antipsychotic agents, analgesics, and cardiovascular drugs. These medications are commonly prescribed in neurologic practice.⁸

When choosing a medication from one of these groups, awareness of efficacy and safety profiles is advised. A meta-analysis of the efficacy and side effects of the antipsychotics, for example, revealed clear efficacy for aripiprazole and risperidone. Adverse events were mainly somnolence, urinary tract infection, incontinence, and extrapyramidal symptoms. There was a significant risk for cerebrovascular events and death, especially with risperidone.⁹ A separate 32-study Cochrane analysis of withdrawal rates and side effects of tricyclic antidepressants (TCA) and selective serotonin reuptake inhibitors found that they were equally efficacious but the TCAs had a higher withdrawal rate due to side effects.¹⁰ Neurologists should advise patients about medication risks and benefits and document this discussion. Screening for these side effects on subsequent visits is equally important.

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Most medication errors stem from a breakdown in communication. The barriers to effective communication in medication management occur at multiple points: between the patient and the provider, between the provider and the pharmacy, and among providers. The complexity of information transfer, and thus the risk of errors, increases as patients seek medical care from multiple sources. Reductions in work hours for residents have also increased the number of handoffs. As these transfers of care increase, more attention must be paid to communicate relevant information in the sign out.¹¹

The electronic medical record (EMR) can aid in preventing medication errors by minimizing errors caused by poor handwriting and misinterpretation of written abbreviations. Some EMR systems provide automatic checks for medication interactions and may also prompt the provider with practice guidelines and dosing algorithms; many systems also provide the option for electronically transmitting prescriptions to the patient's pharmacy. The EMR provides a health record that can be coordinated and accessed across systems of care as well as among multiple providers.

For providers and hospitals that do not yet have EMR, standardized forms for medication reconciliation should be reviewed and updated at each patient visit or at the time of transitions between care settings. Many Web sites, including the government-sponsored Medline Plus and the commercially available Thompson's Micromedex and UpToDate, allow for performance of drug and herbal supplements interaction checks.

A medical action plan can reduce medication errors and encourage patients to be their own health care advocates (table 1). Patients should arrive at their appointment with a list of allergies and medica-

tion. Health care providers should ask patients about over-the-counter medications and herbal product use in addition to prescription medications. Patients should leave the appointment with an updated medication information sheet that has been verified by a health care provider. Ideally, side effects of new medications should be listed on this sheet.

In an effort to reduce errors in handoffs, standardized sign out sheets for transfers of care between residents and physicians are advised. The sign out sheet should be computerized and maintained in a central location. Medications should be included on the sign out sheet and verified daily with the patient and the nurses.

HEALTH LITERACY Health literacy is the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.¹²

Health illiteracy is a growing concern. The National Adult Literacy Survey, conducted by the US Department of Education in 1992, showed that 48% of 26,000 people surveyed were functionally illiterate or marginally literate.¹³ A second study in 2003, the National Assessment of Adult Literacy (NAAL),¹⁴ looked at health literacy specifically and found that 38% of the more than 19,000 people surveyed performed at "basic" or "below basic." Examples of skills tested in the NAAL included such basic abilities as following directions for a cholesterol screening.

Poor health literacy is associated with more medication errors, poor adherence to treatment plans, and poor follow-up with scheduled procedures and clinic visits.^{15,16} The result is less preventative care, poorer control of chronic conditions with more adverse outcomes, more emergency room visits, and greater rates of hospitalization with longer lengths of stay. These, in turn, result in increased health care costs,^{17,18} estimated at \$50 to \$73 billion a year.¹⁹ Poor health literacy is also associated with higher levels of inadequate understanding of the diagnosis and treatment plan that subsequently leads to more medical malpractice claims.²⁰

Physicians should avoid medical jargon and use simple language when communicating with patients, providing patients with written summaries of their diagnosis and treatment plan. Excellent patient summaries of neurologic diagnoses may be found online and can be used as handouts for frequently encountered diagnoses. The AAN, in particular, provides downloadable patient summaries of medical conditions associated with established guidelines. Information can also be downloaded from The Brain Matters, the NIH (English and Spanish), UpTo-

Table 1 Medical action plan

1. Encourage patients to bring a written list of their medications with dosages to all appointments.
2. Ask specifically about any over-the-counter vitamins and herbal supplements as well as aspirin and birth control. Patients often do not include these on their medication list.
3. Encourage patients to notify their primary care provider when medication changes are made.
4. Encourage the use of pill boxes. These may be divided by day of the week and time of day.
5. Identify a reliable caregiver to provide oversight of the administration of medications to cognitively impaired patients.
6. Clearly write out or type all instructions when changing, initiating, or discontinuing medications.
7. Ask the patient and caregiver to repeat back the changes in medications.
8. Provide an opportunity for the patient and caregiver to ask questions.

Date, and Medline Neurology. Diagrams and pictures may also be downloaded from Google Images. These summaries and images are effective ways to convey information about diagnoses and can be used as a tool to foster conversation and questions for future visits.

Health literacy can be improved by an awareness of the cultural background and religious beliefs of the patient. Cultural competence is the ability of health organizations and practitioners to recognize the cultural beliefs, values, attitudes, traditions, language preferences, and health practices of diverse populations and to apply that knowledge to produce a positive health outcome.²¹ Competency includes communicating in a manner that is linguistically and culturally appropriate.²² Translators provide more than just interpretation, they also can convey cultural context to the medical information, which is valuable for diagnosis and treatment planning. They can write down information for patients to review at a later time and may also help in finding useful medical information online in the patient's native language.

The PSS has been actively working on educating neurologists about health literacy at patient safety colloquiums. Several members of the PSS have had specific training on health literacy and are available to teach at state neurologic society meetings. In addition, an online Continuing Medical Education (CME) program is being developed.

ABUSE AND NEGLECT IN NEUROLOGY Neurologists should be aware that abuse and neglect can cause neurologic problems or exacerbate preexisting conditions. Injuries sustained by abused persons can cause chronic neck and back pain, and migraines or other headache types.²³ According to the 2005 AMA guidelines, all physicians should be screening patients for abuse.²⁴ Obtaining this relevant information can help neurologists assess their patients and formulate appropriate treatment plans. Neurologists encounter patients who have been exposed to physical, emotional, sexual, and financial abuse, ranging from infancy to old age, and with obvious or subtle manifestations.²⁵

Patients appreciate being asked about abuse by their physician and respond best to written questionnaires that are filled out ahead of the visit.²⁶ In the outpatient clinic, it is easy to include a question or two about abuse. Prior to including these questions, physicians should understand the abuse reporting requirements for the state in which they practice. All states require reporting of elder and child abuse. A few states require the reporting of spousal abuse are California, Colorado, Kentucky, New Hampshire, New York, and Rhode Island.

Table 2 Abuse and violence resources

Recognizing abuse in your neurology patients: AAN CME course free to members
http://www.aan.com/education/webcme/
The National Health Resource Center on Domestic Violence
1-800-595-4889
www.endabuse.org/health
Centers for Disease Control and Prevention
www.cdc.gov/ViolencePrevention/index.html
Academy on Violence and Abuse
www.avahealth.org/
ACOG: Violence against Women
www.acog.org/departments/dept_web.cfm?recno=17

AAN = American Academy of Neurology; ACOG = American Congress of Obstetricians and Gynecologists; CME = Continuing Medical Education.

Some options for the questionnaire include the following: Do you feel safe at home? Have you ever had physical, sexual, emotional, or financial abuse? Local resources can be accessed by patients online and via telephone hotline (table 2).

Research in this field is expanding rapidly. One recent study revealed that childhood sexual and physical abuse were found to be more common in migraine patients who also had depression than in those who experienced migraine alone. The relationship between childhood sexual abuse and migraine and depression was greater if the sexual abuse continued through adulthood.²⁷ In addition, women with headaches commonly reported experiencing emotional abuse.²⁸ Patients with history of sexual abuse feel that questions about their abuse history are important and that this knowledge may streamline their treatment.²⁹ Further research is required to determine whether implementing treatment for a history of abuse can affect the medical course of a migraineur or whether such information can lead to a beneficial therapeutic effect.

The PSS has provided education about identifying and referring patients who have experienced abuse and neglect in the patient safety colloquiums. An online CME program has been developed to provide this information to AAN members.³⁰

DISCUSSION Patient safety has become an integral piece of the foundation of our neurologic expertise. Incorporating patient safety education at the very beginning of neurology training is therefore the best approach. This idea is supported by the Neurology Residency Review Committee, which began requiring formal training in abuse and neglect in the fall of 2004. Every patient encounter provides the neurologist with the opportunity to address several patient

safety issues and, by doing this, improve patient care and strengthen patient interactions.

Research on safety improvement measures and consequent improvements in health care outcomes are on the horizon. The PSS is working with the Quality Measurement and Reporting Subcommittee to develop tools to monitor outcomes, which will help determine the effect of patient safety initiatives on the quality of care of neurologic patients. This goal could be furthered by the development of Patient Safety Research Fellowships sponsored by the AAN.

The PSS continues to collaborate with other organizations to improve patient safety. Recently the PSS partnered with the Centers for Disease Control and Prevention to monitor for the development of Guillain-Barré Syndrome related to the H1N1 vaccine. As a result of this effort, a manual is in development for dealing with similar public safety events. The PSS is also developing patient safety modules for the Maintenance of Certification Part IV, which will affect all neurologists.

There are multiple ways for neurologists to address safety concerns in their practices. Screening forms that include patient safety information may be downloaded from the PSS Web site. Neurologists can incorporate templates into their EMR for information gleaned from these intake forms. Templates may be diagnosis-specific and linked to the laboratory and pharmacies for e-prescribing. Neurologists can utilize their nurse or physician extenders to help with medication reconciliation and education about medication side effects. Handouts with clear descriptions and pictures help physicians to counsel their patients about the diagnosis and treatment plan. Medication summaries ensure that the patient is aware of new medications and changes in dosing or administration of prior medications. Information on local resources such as physical therapy, occupational therapy, speech therapy, and social workers may be provided on take-away forms for patients. These organizational tips and educational aids can clarify and reinforce the goals of treatment, because it is through educating our patients that we empower them to understand and commit to their improved health.

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