Abstract

Objective: To raise pharmacist awareness about the needs and concerns of our patients with visual impairment and to review useful strategies to foster medication adherence.

Summary: As patient-centered pharmacists, we need to understand the challenges faced by our patients with low vision and tailor pharmaceutical care to best fit their needs. Evidence-based best practices in labeling and written communication have been developed by the American Foundation for the Blind in partnership with the American Society of Consultant Pharmacists. These recommendations include the use of specific font styles, minimum font size, and other standards known to enhance usability for those with limited vision. Recent advances in assistive technologies such as audio output and object recognition software can be used to ease the medication-taking process and effectively communicate important drug and safety information in a manner that can be understood by those with low vision. In July 2012, the Prescription Accessible Drug Labeling Promotion Act of 2012 (HR 4087) was signed into law. This new legislation is an addition to the Food and Drug Administration Safety and Innovation Act, which required the development and ultimate implementation by pharmacies of national best practices intended to improve the accessibility of prescription drug labeling for the visually impaired.

Conclusion: As a patient-centered profession, we need to advocate for our patients with special needs by partnering with government and patient groups to support and enact legislation intended to enhance people’s ability to adhere to drug therapy.

Keywords: Medication adherence, vision, visually impaired individuals, blindness, Prescription Accessible Drug Labeling Promotion Act.

Caring for visually impaired patients
Kathleen B. Orrico

Learning objectives
At the conclusion of this knowledge-based activity, the pharmacist will be able to:

■ Identify the challenges faced by people with low vision and evaluate the impact of these factors on pharmaceutical care.
■ Develop strategies to assess vision loss and customize drug labeling, treatment, and adherence coaching to best fit the needs of people with low vision.
■ Discuss how visual impairment affects a patient’s health literacy and adherence.
■ Identify gains in assistive technologies that facilitate the ease of medication taking.
■ Review legislative changes in prescription labeling requirements that will improve the accessibility of the prescription label for the visually impaired.
■ Incorporate recommendations from groups that advocate for the visually impaired into daily practice.

Accreditation information
Provider: American Pharmacists Association
Target audience: Pharmacists
Release date: April 1, 2013
Expiry date: April 1, 2016
Fee: There is no fee associated with this activity for members of the American Pharmacists Association. There is a $15 fee for nonmembers.

The American Pharmacists Association is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education (CPE). The ACPE Universal Activity Number assigned to this activity by the accredited provider is 0202-0000-13-109-H04-P.

Disclosure: Dr. Orrico and APhA’s editorial staff declare no conflicts of interest or financial interests in any product or service mentioned in this activity, including grants, employment, gifts, stock holdings, and honoraria. For complete staff disclosures, please see the APhA Accreditation Information section at www.pharmacist.com/education.
Preassessment questions
Before participating in this activity, test your knowledge by answering the following questions. These questions also will be part of the CPE exam.

1. People with severe visual impairment typically:
   a. Receive vocational training to help them obtain meaningful employment.
   b. Live with a caregiver or assistant.
   c. Understand braille.
   d. Value their independence.

2. Patient handouts for the visually impaired should be printed:
   a. The same as those for other patients.
   b. In red to enhance the text.
   c. Using appropriate spacing between lines of text.
   d. Using all capital letters.

3. Which of the following methods of designating medications is unsafe for a patient with visual impairment?
   a. Using tactile identifies on the top of the cap or on the side of the bottle
   b. Obtaining unit–dose or blister pack medications from their pharmacy
   c. Using touch and smell of the tablet or capsule
   d. Obtaining audio labeling devices and radiofrequency identification tags for medication bottles

Adhering to medication regimens is difficult for many patients, and one can imagine how visual impairment further complicates safe and appropriate medication taking. When sight is limited, patients may not be able to distinguish the color, shape, or markings on a tablet or capsule; see the calibrations on a syringe; read the name, strength, and directions on a label; or read printed safety information. As pharmacists, we need to assess all patients’ ability to see and to develop strategies that help patients with visual impairment better meet the challenges of adhering to drug therapy.

Understanding the needs of people with visual impairment
The American Community Survey (2010) showed that 21.5 million American adults (~7% of the population) reported blindness and serious visual difficulties that were uncorrected by glasses or contacts. Much like any population with special needs, communicating with patients who are visually impaired requires an understanding of their unique situation. The American Foundation for the Blind (AFB; www.afb.org) is a nonprofit organization that offers great insight into the concerns and lifestyles of those with limited sight. Founded in 1921, AFB has a long history of advocating for the needs of the visually impaired. Their mission is to work to remove barriers, create solutions, and expand possibilities, thereby enabling people with vision loss to reach their full potential. They also review products and services designed for the visually impaired, including assistive technologies and medication administration devices. The AFB website is a useful resource for connecting pharmacists with patients who have limited sight.

Severe visual impairment or “low vision” runs a continuum of diminishing capacity through to the extreme of complete blindness. Legal blindness is defined as a visual acuity measure of no better than 20/200 in either eye after correction or a limited field of vision measuring 20° or lower at its widest point. The normal field of vision spans approximately 100° in either direction from the nose out to the periphery. Various diseases and injury can shrink this window of vision. The visual acuity ratio represents the ability to correctly read the varying-sized rows of letters on the Snellen eye chart at a distance of 20 feet; a measure of 20/20 represents “normal” vision and is used as the comparator. For example, a person with 20/200 vision can read a given letter size at a distance of 20 feet that a person with 20/20 vision would be able to read at a distance of 200 feet. As an approximation, a person with 20/20 vision can see print in Courier New at a font size of 9 points from a distance of 4 feet. In countries that use the metric system, the Snellen ratio usually is expressed with the top number representing a testing distance of 6 meters and normal vision indicated as 6/6. The Snellen acuity test examines the ability to see letters displayed at the highest contrast with black letters on a white background. Visual impairment is defined as the inability to read letters or numbers of the line 20/50 or lower on the Snellen visual acuity chart in either eye. It is estimated that approximately 18% of the visually impaired are classified as totally blind or have only light perception.

Other factors that affect the acuity of vision, especially among older patients, include surrounding glare, decreased illumination, and low contrast. Glare occurs when high intensity direct or reflected light overwhelms the eye and causes a loss of sight and discomfort. The occurrence of a bright spot in a dark field triggers the pupil to constrict and actually reduces the amount of light sent to the retina. The light that does get through scatters and results in a reduction of contrast between the visual field and the background. Often people with low vision or macular degeneration are more sensitive to glare than others and may limit outdoor activities and driving because of it. Strategies that minimize glare include polarized lenses, curtains, and filters that diffuse light and the use of nonreflective or matte surfaces. Well positioned illumination and the use of halogen lighting, which is white and intense, can be beneficial to people with low vision. For example, lighting from above to provide spot or direct lighting over a work surface such as a countertop can improve visibility. Using a clamp-on light that can direct light into a cupboard where medications are stored can help prevent mix-ups. The balance between illumination and glare must be individualized for each person.

Understanding the challenges faced by people with low vision is important so that we can tailor pharmaceutical care to best fit the needs of this special population. Surprisingly, it was not until 2004 that information about blind Americans was first summarized using data from the National Health Interview Survey of persons with disabilities conducted in 1994 and 1995. Although outdated, this interview of 779 legally blind adults still provides us with useful insight. Key findings from the report characterized blind Americans as...
evenly split between men and women, of an average age of 62 years, almost half of which (49%) were married. Independence was and is of paramount importance to the visually impaired, and many live alone with little assistance. At the time of the survey one in five blind men lived alone while blind women were more likely to live alone as they got older. The average education level was 11.4 years, with almost none reporting that they had received vocational rehabilitation, occupational therapy, or any other services to help them cope with vision loss. All of the adults surveyed had been either paid or volunteer employees at some point during their lifetimes, with 19% employed at the time of the survey. Economically, one in five visually impaired adults lived in poverty, and the number is likely greater today.

The survey also assessed the health status of blind Americans by asking about health conditions apart from visual impairment. Of those surveyed, 94% reported at least 1 health problem, and patients had on average 3.3 health conditions. When asked to self-rank their health status on a 5-level scale, 45% rated their health as fair to poor compared with 9.5% of the general US population measured in 2007. Most people with severe visual impairment were not born blind but lost their vision because of disease or injury. As our population ages, it is expected that age-related eye disease will further increase both the size and average age of the visually impaired population. In 2006, one of every six Americans older than 70 years was visually impaired, and the prevalence more than doubled among individuals 80 years or older compared with those aged 70 to 79 years.

Some of the leading causes of new cases of legal blindness include macular degeneration, glaucoma, diabetic retinopathy, cataracts, and optic nerve atrophy. These conditions vary in the way they compromise the visual field. Simulations of these differences are depicted on various websites, including the National Eye Institute, and can be found using the search terms “vision” and “simulation” with the name of the condition.

**Types of vision loss**

Oval and yellow in color, the macula is the cone-rich region that surrounds the retina and is responsible for the sharpness and much of the color of central vision. Age-related macular degeneration (AMD) is the most common disease affecting the macula of the eye and is the leading cause of blindness in people older than 60 years. AMD first presents as light-sensitive cells break down, causing blurriness in the bull’s-eye center of the visual field. It progresses from this “dry” to a “wet” form where new blood vessels proliferate under the macula and leak fluid that obscures the center to a greater extent. People with macular degeneration have difficulty reading and recognizing people’s faces because they cannot focus on the center of the visual field.

Glaucoma applies to a group of eye diseases caused by an increase in intraocular pressure that if left untreated can progress and permanently damage the optic nerve. It is the leading cause of blindness in the United States. The vision loss caused by glaucoma has nearly the opposite presentation as that caused by AMD, where vision in the center of the field is maintained while the peripheral vision fades. Symptoms may or may not be present and can include halos around lights, blurred vision, and a need to turn the head to see objects on the near right or left. As the range of the visual field contracts, the narrow region of sight makes reading increasingly difficult.

Diabetic retinopathy results from a compromise of the circulation to the retina and can affect the entire visual field. It is a long-term consequence of both type 1 and type 2 diabetes that is caused by the microvascular changes associated with poor glycemic control (glycosylated hemoglobin [AIC] >7%). Diabetic retinopathy is usually asymptomatic until late in the process, when vision changes include blurred vision, “floaters” (i.e., drifting spots or specs), “holes” in the visual field, and difficulty seeing shadows or at night.

The Action to Control Cardiovascular Risk in Diabetes (ACCORD) Eye Study examined a subset of 2,856 people with type 2 diabetes from the larger randomized multicenter ACCORD trial. One of the aims of the study was to investigate the association between level of glycemic control and progression of diabetic retinopathy. After 4 years of treatment, 7.3% of the group receiving intensive glucose control (average A1C 6.4%) showed progression of retinopathy compared with 10.4% of the group receiving standard glycemic control (AIC between 7.0% and 7.9%; adjusted odds ratio 0.67 [95% CI 0.51–0.87, P = 0.003]). Although the trial was terminated early because those receiving the intensive glycemic control had a higher incidence of mortality and cardiovascular events, the link between glyemic control and progression of retinopathy was demonstrated.

In addition to glucose control, other treatments that help prevent progression to blindness, such as photocoagulation, are best implemented before symptoms present. Every patient with diabetes should have an annual eye exam to screen for retinopathy, as part of the recommended comprehensive diabetes management effort.

Cataracts are a clouding or yellowing of the clear lens of the eye that produce blurry vision, glare, and a loss of contrast. Most cataracts can be corrected easily through outpatient surgery and lens replacement. Finally, because the optic nerve carries the impulse from the retina to the brain, where vision is interpreted, damage to this extension of the central nervous system can result in a loss of contrast or color vision or, if severe, total blindness. Regardless of the cause of low vision, techniques used to improve medication adherence typically require a substitution of audio and tactile modes of communication for visual prompts and printed information.

Pharmacists have a responsibility to convey important drug and safety information in a manner that can be best understood by each individual patient. The Agency for Healthcare Research and Quality defines pharmacy health literacy as “the degree to which individuals are able to obtain, process, and understand basic health and medication information and pharmacy services needed to make appropriate decisions and act on them”.

**Pharmacy health literacy**

Pharmacy health literacy is a critical component of patient care. It is the degree to which individuals are able to obtain, process, and understand basic health and medication information and pharmacy services needed to make appropriate decisions and act on them.

**Components of pharmacy health literacy**

1. **Pharmacy literacy**
   - Understanding prescription labels
   - Following instructions for medication administration
   - Understanding medication interactions
   - Following instructions for medication monitoring

2. **Pharmacy numeracy**
   - Understanding dosage instructions
   - Calculating dosages
   - Understanding medication schedules

3. **Pharmacy numeracy**
   - Understanding drug side effects
   - Understanding medication prevalence
   - Understanding medication risks

**Best practices for improving pharmacy health literacy**

1. **Cultural humility**
   - Understanding the patient’s cultural background
   - Avoiding assumptions about cultural practices
   - Communicating in a way that respects cultural differences

2. **Simplify language**
   - Avoiding technical jargon
   - Using simple language
   - Avoiding medical terms

3. **Visual aids**
   - Using diagrams
   - Using graphs
   - Using charts

4. **Technology**
   - Using digital resources
   - Using online tools
   - Using mobile apps

5. **Patient education**
   - Providing written information
   - Providing written instructions
   - Providing written reports

6. **Patient empowerment**
   - Encouraging patient participation
   - Encouraging patient decision-making
   - Encouraging patient self-management

**Conclusion**

Pharmacy health literacy is a critical component of patient care. It is the degree to which individuals are able to obtain, process, and understand basic health and medication information and pharmacy services needed to make appropriate decisions and act on them.

**References**


health decisions.” Typically, we think of health literacy as the cognitive ability of our patients to understand health information. For patients with visual impairments, comprehension may not be at a deficit, but the ability to make practical use of written or printed drug information is limited. This is especially true of older patients as eyesight diminishes. In addition, older patients may not be forthcoming regarding their needs.

The best way to verify patient understanding is to take the time to have a conversation with each patient. Our goal should be to assess people’s ability to see by simply asking them about their abilities. Pharmacists should ask patients whether printed drug information is useful to them. Ask if enlarging the font or increasing contrast makes a document usable. Unfortunately, required Medication Guides also are not available in audio form currently; however, accessing the guides on the FDA website and enlarging the view on a computer screen by repeatedly zooming in on the image is possible. Manufacturer websites for branded items often allow enhanced computer screen display options that may help some with low vision. Of note, the website NIH Senior Health contains basic health information, allows for displaying the screen in a very large font, and offers a button to display content in high contrast.

Communication techniques that address low health literacy usually involve a translation of information from complex to plain terms into a patient’s primary language and, in the case of many patients with visual impairment, to a format other than print. The time to explain concepts verbally must be taken, as it may be the only communication a person with low vision receives about his or her medications. One plain-language technique that can be used to address varying levels of health literacy in all patients is to explain a concept twice—once by introducing the medical term and then immediately defining it in simpler terms. For example, when counseling a patient about an antihypertensive drug, a pharmacist could say, “This medication is used to lower your high blood pressure, which also is called hypertension.” Plain-language references are available to help model these translations. Ask Me 3 from the National Patient Safety Foundation (NPSF) is a literary resource that includes a guide containing lists of words to avoid because they are typically confusing to patients, and a list of potential alternative words is provided. NPSF’s Words to Watch guide also is available for Spanish-language medical terms.

The use of translation services and language phone lines are of great importance when consulting with non-English-speaking, visually impaired patients, as oral communication may be their sole source of drug information. Presenting the most important points first, such as boxed warnings and key drug interactions, also may be helpful so that the information is more likely to be committed to memory. The Spanish version of the National Institute of Health’s MedlinePlus is a wonderful resource for Spanish language health information, although audio options are not available currently.

The speak-back method is particularly well suited when working with the visually impaired. Most are accustomed to committing information to memory, and for many, this is where their medication list is housed. Asking patients in a respectful manner to repeat back to you important administration and safety points will help assess their understanding. For example, you may ask, “When was your blood pressure last measured and what was the result?,” to assess patient engagement and knowledge of their current health status. Once again, the time needed to conduct wellness assessments and medication therapy management needs to be incorporated into pharmacists’ workflow. Conducting teaching conversations with patients and offering practical workarounds can help to remove feelings of helplessness and empower people.

Fostering adherence

The steps to medication adherence are basic to all patients and include providing each patient with a current list of all medications and important safety information and assisting with set up or physical arrangement of medications in the home in a fashion that supports adherence. Accomplishing these steps by developing both simple and high-tech approaches specific to the needs of the visually impaired can be a creative and rewarding endeavor. Ever-emerging smartphone applications and advances in assistive technologies promise greater autonomy for people with low vision and can be used to improve the safety of medication taking.

The first step to assist all patients with adherence to drug therapy is to present them with an accurate and comprehensive medication summary, which typically is written or printed. Printed lists often are generated from the pharmacy dispensing record, the hospital discharge summary, or the medication list documented in the electronic health record. The formatting of these lists is rarely tailored for medication self-administration and often renders them illegible to people with low vision.

The American Society of Consultant Pharmacists (ASCP) and AFB have developed Guidelines for Prescription Labeling and Consumer Medication Information for Persons with Vision Loss that should be reviewed by all pharmacists. In addition, the European Commission, which regulates the member states of the European Union, also has issued guidelines to improve the readability of medicinal product labeling.

Recommendations to improve legibility include using Arial or Verdana font types at the largest possible size allowed by the label or document area, with 18 point considered the minimum font size. A study conducted in Glasgow, U.K., in 2004 measured the ability of people with various visual acuity abilities to read the directions on an eye drop bottle. The study found that comprehension and adherence of older patients with a best visual acuity reading of 20/60 (6/24 meters) to 20/80 (6/24 meters) were significantly improved if the labeling was printed in 22-point Arial font. Currently, most prescription directions are printed in a font size that is two to three times smaller than this 22-point Arial font.

The guidelines also recommend avoiding the use of ital-
ics, underlining, and condensed font because these style options make distinguishing between similar letters and numbers more difficult (e.g., by obscuring the “tail” on the letter “g” or “q”). The use of all capital letters should be avoided because the human brain reads or recognizes the “shape” of a word. The contrast between the text and the background should be maximized. Use of black letters on a white or pale yellow background is suggested while avoiding the use of red, yellow, and blue font color choices. Text should not be placed over background graphics because this also reduces contrast, making type more difficult to read. Because glare can diminish the visual field, do not cover labels with tape or use labels with a high-gloss finish.

The formatting of the text in a patient handout can be optimized for clarity by using appropriate spacing between lines of text. The spacing should be approximately 1.3 to 1.5 times the font size. Paragraphs should be aligned to the left and not justified because justified text creates uneven spaces between words, thereby reducing readability. Use of a column format on a landscape layout and the addition of headings may help people locate specific information within a document. The reality for many people with low vision, however, is that they cannot use written information and often commit their medication list and drug information to memory or substitute an audio recording.

The visually impaired navigate daily life by becoming masters of organization and strategic positioning. The physical placement, arrangement, and storage of medication containers become extremely important safety steps. For example, some people group their medication containers by administration time and store them upright in flat baskets, in bins, or on separate shelves or cabinets. Housing medications taken in the morning together in the bathroom in a bin that protects them from moisture might be one useful tactic. Evening medications might be placed on secure kitchen shelves away from heat. When appropriate, linking the placement of the medication to a daily activity such as teeth brushing and mealtimes improves adherence.

Another option for some people is the use of brailled pill boxes with distinctions that can be felt, such as MORN, NOON, EVE, and BED. Like many standard weekly pill boxes, a unit for each day can be removed and easily carried.

For those with low vision that can distinguish color, the MedCenter System Talking One Month Medication Organizer combines the pillbox with an audible medication reminder timer. The system audibly reminds patients up to four times each day to take their medication and has them verify that they have done so by pressing a red button. All precautions regarding the appropriate storage of medications must be kept in mind when designing placement, and assistance may be necessary when setting up a system, filling pill boxes, and replacing refilled medications.

Labeling the container in a manner that identifies the medication without sight is paramount in keeping our patients safe. In the past, patients with limited sight often knew the feel or even the smell of many medications, but as round, white, generic tablets become increasingly ubiquitous, identifying drugs in this manner is very difficult. Placing tactile identifiers on the top of the cap or sides of the vial is a low-tech means to designate medications. Specialized tactile markers that leave a raised pen swath can be used to place a letter or other identifier on the container or cap. Raised touch dots or anything that can be clearly felt can be affixed to the container in a meaningful number to designate dose.

AFB presents a list of audible prescription labeling devices and their suppliers in the appendices of their Guidelines for Prescription Labeling and Consumer Medication Information for People with Vision Loss. Relatively low-cost, reusable devices are available that hold standard-sized prescription vials and allow audio recording of a medication’s name, strength, and directions that can be replayed upon the press of a button. One device, Talking Rx (www.talkingrx.com), is available to fit a 40- or 60-dram prescription bottle and contains a memo recorder that allows the pharmacist, family member, or patient to record and rerecord information about the medication.

Although extremely challenging, patients with visual impairment can self-administer liquids and injectables. Several insulin syringe filling aids are available that magnify the scale on the syringe barrel or aid in withdrawing the correct dose into the syringe. Count-a-Dose is a device that holds one or two bottles of insulin and a 0.5-mL syringe. Through the use of raised “plus” and “minus” tactile markers on the device, the patient “clicks” the number of units of insulin needed for a dose. As they do this, each click of the dial toward the plus sign draws 1 unit of insulin into the syringe. Several insulin pen systems designed for people with low vision are available, and the AFB periodically reviews these products.

Setting up medications typically requires help from a sighted person, and inquiries should be made as to the frequency and extent of assistance.

Many independent community pharmacies provide true patient-centered care to the visually impaired by offering medication repackaging services. For a nominal fee, these pharmacies can add unit–dose or blister pack medications into daily card sets or fill sectioned pill boxes. Often, insurers will pay for these services. Knowing which specialty pharmacies in your area offer services such as these is important so that you can direct visually impaired patients.

**Assistive technologies**

Advances in assistive technology and smartphone functionality promise a future of increased independence for the visually impaired. Phones and devices with improved voice activation controls are becoming increasingly available. Object recognition technology built into hand-held scanners and applications (apps) can convert pictures and text into spoken word and read labels, barcodes, and even the value of currency. Portable electronic magnifiers and digital magnification apps can amplify labeling and drug information. Many of these technological advances can be used to improve medication taking, and staying up to date about newly available...
and affordable assistive technology can be accomplished by consulting the AFB website. AccessWorld is a free publication available and searchable on the AFB website that seeks out and evaluates new technologies designed to support independent living for people with vision loss.

**Magnification**

Using a magnification lens may help patients with low vision orchestrate reading and fine work and assist with medication identification. Magnification simply enlarges the size of the image by a given multiple but does not address image clarity. Nonetheless, magnification can help some people better differentiate and identify their medications or read calibrations on a syringe barrel. Video magnifiers actually are closed-circuit television cameras mounted on a stand or incorporated into a portable device that scan a document and enlarge the image on a screen or monitor. Newer models are available as pocket devices that can be kept in a purse and used to read menus or medication labels. Some allow a hands-free option and the ability to adjust contrast. Smartphone and tablet apps are available that use the camera on the device to photograph an image, such as a Medication Guide, and enlarge it on the display screen.

**Audio technologies**

For people who cannot make use of printed information, voice recognition and audio output technologies are extremely useful. Systems are available that use radiofrequency identification (RFID) tags to aid medication taking for the visually impaired. The RFID tag is specific to a given medication and contains the package labeling and safety information, which is converted to audio output by a reader device in patients’ homes. Recent advances in voice command activation and text-to-speech technology have quickly made smartphones and tablets accessible to the visually impaired. A true opportunity exists for creative people to leverage the portability and relative affordability of these devices and design useful apps to help the visually impaired navigate their medication regimen.

**Patient-centered labeling and legislation**

The legibility of the typical prescription drug label is unacceptable. AFB has a long history of advocating for the needs of the visually impaired, including participation in the Rx Label Enable Campaign. Conducted in partnership with ASCP, the campaign strives to improve the legibility of prescription labeling and drug information by supporting legislation that requires the implementation of evidence-based recommendations such as the use of specific font styles, minimum font size, and other standards known to enhance usability for those with limited vision. In 2010, the California Board of Pharmacy voted to make California the first state to mandate use of a minimum type size on prescription labels. Although many lobbied for more stringent requirements, it was decided that print in at least 12-point font be made available upon patient request and that outreach be conducted so that patients know this option is available.

In July 2012, the Prescription Accessible Drug Labeling Promotion Act of 2012 (HR 4087) was signed into law. This new legislation is an addition to the Food and Drug Administration Safety and Innovation Act, which required the development and ultimate implementation by pharmacies of national best practices intended to improve the accessibility of prescription drug labeling for the visually impaired. The legislation calls for the formation of an expert group of stakeholders who will work together to develop nonmandatory recommendations within one year’s time, intended to provide the visually impaired with prescription drug “labeling” that is safe, consistent, reliable, and independently accessible. Alternatives to print will be considered such as auditory technologies, RFID tags, and braille. Representation for the working group will be sought from older patients and visually impaired advocacy groups, pharmacist organizations, and the retail drug industry. After recommendations are developed, the National Council on Disability will conduct an education campaign directed to the visually impaired and pharmacists, and the best practices will be posted on the FDA website.

The legislation was followed by an overlapping effort launched in November 2012 with the release of U.S. Pharmacopeial Convention (USP) Chapter <17> (Prescription Container Labeling), which is available for downloading at www.usp.org. These patient-centered labeling recommendations were the result of a joint effort by the USP panel of experts in patient safety, health literacy, pharmacy, medicine, human factors research, labeling technology, and the Institute of Medicine. They incorporate many of the principles for clear communication previously discussed and include standardization for auxiliary safety labeling as well as the contents and style of the prescription directions.

The USP guidelines recommend reorganizing the label in a manner that provides access to the most critical safety and correct use information and in a more prominent and patient-friendly way. Use of plain language to describe dosages and intervals also is suggested. Formatting recommendations address the needs of people with low vision and limited English comprehension. Most importantly, the standard specifically states that the needs of the visually impaired be addressed and that alternative access be provided through tactile, audio, or enhanced visual technology means. Enforcement of the standard will be relegated to the decision of individual state boards of pharmacy. It is extremely likely that the FDA recommendations will bear a close resemblance to the USP guidelines.

As a patient-centered profession, we need to advocate for our patients with special needs and support legislation that enhances people’s ability to adhere to drug therapy. We should partner with government and patient groups to determine best practices in drug labeling and communication. We should request that drug safety information such as Medication Guides be accessible in audio format. We need to continue our efforts to demonstrate to payers the humanistic
and economic benefits of pharmacist-conducted medication management with the visually impaired and other people with adherence challenges.

As patient-centered pharmacists, we need to be willing to examine and change our traditional processes to facilitate the ease of medication taking and stay current regarding assistive technologies that support adherence. Most importantly, we need to assess, ask, and listen to our patients with visual impairment and partner with them to surmount the many hurdles to medication adherence that they face.

References
CPE assessment

Instructions: This exam must be taken online; please see “CPE information” for further instructions. The online system will present these questions in random order to help reinforce the learning opportunity. There is only one correct answer to each question.

1. Severe visual impairment:
   a. Is defined as an individual having only light perception.
   b. Encompasses a continuum of diminished capacity of sight to complete blindness.
   c. Is extremely rare.
   d. Usually occurs at birth.

2. The American Foundation for the Blind website (www.afb.org):
   a. Is sponsored by the Agency for Healthcare Research and Quality.
   b. Offers resources for adults with visual impairments and those who serve them.
   c. Is the homepage for a relatively new organization.
   d. Cannot be adjusted for readability.

3. People with visual impairment navigate their activities of daily living by doing which of the following?
   a. Organizing and strategically positioning frequently used items
   b. Obtaining the constant guidance of caregivers
   c. Guessing placement of items by their family or caregivers
   d. Residing in a group home setting

4. People with severe visual impairment typically:
   a. Receive vocational training to help them obtain meaningful employment.
   b. Live with a caregiver or assistant.
   c. Understand braille.
   d. Value their independence.

5. Which of the following best defines the concept of health literacy?
   a. The ability to read documents such as Medication Guides
   b. Possessing a minimum of a fifth-grade literacy level
   c. The capacity to obtain, process, and understand basic health and medication information
   d. The ability to research the health care literature independently

6. Which of the following is correct regarding a patient with a right eye visual acuity ratio of 20/80?
   a. The patient is legally blind in the right eye only.
   b. The patient is visually impaired.
   c. At a distance of 80 feet, the patient can read the chart as well as a person who is 20 feet away from the chart.
   d. Visually acuity must be measured first in the left eye and averaged with the ratio from the right eye.

7. Patient handouts for people with visual impairment should be printed:
   a. The same as those for other patients.
   b. In red to enhance the text.
   c. Using appropriate spacing between lines of text.
   d. Using all capital letters.

8. Which of the following is correct regarding glare?
   a. People with lighter eye color experience more difficulties with glare.
   b. Glare occurs when intense light reaches the retina.
   c. Ultraviolet light causes the most glare.
   d. Older patients and those with low vision are often more sensitive to glare.

9. Which of the following is correct regarding age-related macular degeneration (AMD)?
   a. It causes blurring of the center of the visual field by affecting the macula of the eye.
   b. It causes peripheral vision loss.
   c. It is caused by increased intraocular pressure.
   d. Its symptoms include halos around lights and needing to turn the head to see objects on the near left or right.

10. Which of the following is correct regarding glaucoma?
   a. It causes blurring of the center of the visual field.
   b. It is reversible with accurate diagnosis and correct treatment.
   c. It is caused by increased intraocular pressure.
   d. Its symptoms include halos and blurred vision before vision loss occurs.

11. Which of the following conditions is a long-term consequence of poor glycemic control?
   a. Glaucoma
   b. Low vision
   c. AMD
   d. Retinopathy

12. Which of the following methods of designating medications is unsafe for a patient with visual impairment?
   a. Using tactile identifies on the top of the cap or on the side of the bottle
   b. Obtaining unit–dose or blister pack medications from their pharmacy
   c. Using touch and smell of the tablet or capsule
   d. Obtaining audio labeling devices and radiofrequency identification (RFID) tags for medication bottles

www.pharmacist.com APRIL 2013 • PharmacyToday 87
13. For patients with visual impairment, the steps to medication adherence:
   a. Are different than those for sighted patients.
   b. Should include a comprehensive mapping of the medication regimen.
   c. Should be enacted by individuals who are specially trained to work with patients with visual impairment.
   d. Cannot be achieved.

14. Which of the following improves the legibility of prescription container labels?
   a. Italics and underlining to help emphasize words
   b. All capital letters
   c. Text placed over graphics
   d. A minimum font size of 18 points

15. Which of the following improves the usability of printed drug information?
   a. Distributing key points throughout the text to avoid overwhelming the patient
   b. Printing materials on high-gloss paper to better capture light.
   c. Using yellow letters on a black background.
   d. Aligning paragraphs to the left and avoiding justifying text.

16. Assistive technologies available to aid patients with visual impairment include:
   b. Halogen lights.
   d. Tactile markings.

17. Which of the following is correct regarding using smartphone cameras to assist patients with visual impairment?
   a. They are not useful for patients with severe visual impairment because these patients cannot manipulate touch screen commands.
   b. They are not closed-circuit cameras and therefore can’t be used to provide magnification.
   c. They can be used to photograph a capsule or tablet to identify a medication.
   d. They can be used to convert the device into a portable magnifier through the use of apps.

18. Which of the following is correct regarding audio technologies?
   a. They include voice activation and are popular with people with adequate vision.
   b. Text-to-speech converters are in the development or “beta” phase.
   c. They are not typically incorporated into devices but can be added.
   d. They are cost prohibitive.

19. Which of the following is a correct statement about U.S. Pharmacopeial Convention Chapter <17>?
   a. It will be enforced by FDA.
   b. It lists mandatory universal standards for prescription container labeling as well as auxiliary labeling.
   c. It includes recommendations developed by an expert panel with participation from the Institute of Medicine.
   d. It must be implemented by state boards of pharmacy by 2015.

20. The Prescription Accessible Drug Labeling Promotion Act of 2012 (HR 4087) will mandate:
   a. That an RFID tag be affixed to all medication containers for patients with visual impairment.
   b. The formation of an expert panel to develop best practices.
   c. Pharmacist-conducted medication therapy management for all patients with low vision and receiving three or more medications.
   d. The adoption of the USP guidelines at all pharmacies.