A Collaborative Project of

American Society of Consultant Pharmacists Foundation

and

American Foundation for the Blind

These Guidelines provide pharmacists and pharmacies with specific recommendations for making important medication information accessible for patients with vision loss. The Guidelines also serve as a resource for persons with vision loss and organizations serving this population.
GUIDELINES FOR PRESCRIPTION LABELING AND CONSUMER MEDICATION INFORMATION FOR PEOPLE WITH VISION LOSS

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INTRODUCTION
The American Society of Consultant Pharmacists Foundation, in collaboration with the American Foundation for the Blind, developed Guidelines for Prescription Labeling and Consumer Medication Information for Persons with Vision Loss (“Guidelines”). The purpose of the Guidelines is to provide pharmacists and pharmacies with specific recommendations for making important medication information accessible for patients with vision loss. The Guidelines will also serve as a resource for persons with vision loss and organizations serving this population.

There are many medication safety issues associated with vision loss. Low vision and blindness affect the ability to read prescription labels and information sheets about medications; determine the color, shape, and markings distinguishing a medication; or see markings on measuring or testing devices. People who cannot read prescription labels or distinguish among different medications must rely on memory, use compensatory strategies or devices, or depend on someone else for help when managing medications.

Lack of access to prescription information due to vision loss is a problem that cannot be ignored by pharmacy. A concerted effort on the part of pharmacists and pharmacies is needed to address the problem, which will increase in magnitude as the population ages. The leading cause of vision impairment and blindness among older adults in the U.S. is age-related eye disease. These conditions—including age-related macular degeneration, cataracts, diabetic retinopathy, and glaucoma—affect more Americans than ever before. The number of persons at risk for age-related eye disease is increasing as the baby boomer generation ages, and the number of Americans with age-related eye disease and the vision impairment that results is expected to double within the next three decades. In addition to age-related eye disease, physiologic changes in vision that occur with age, such as loss of near focus (presbyopia), reduced contrast sensitivity, and visual field impairment contribute to a reduction in visual acuity.

Most older people who lose their vision due to age-related eye disease are not aware of services that can help them cope with vision loss or techniques and devices that can make their activities of daily living easier. In order to ensure access to prescription information, pharmacists and pharmacies must take steps to identify and accommodate their patients with vision loss. In addition, pharmacists and pharmacies have an important role to play in directing their patients with vision loss to rehabilitation services, assistive technology, and other resources.

The components of the Guidelines and specific recommendations were developed by an advisory board comprised of individuals from vision loss organizations, government, pharmacy, and pharmacy system vendors. The draft Guidelines were circulated to stakeholders in pharmacy, vision loss organizations, and other relevant organizations for comment. In addition to specific format recommendations for prescription labeling and consumer medication information (CMI), the Guidelines also provide suggestions for making information accessible to people for whom larger print is not useful and
general information on assistive technology, resources, and services that pharmacists and pharmacies can share with their patients with vision loss (See appendices).

CONSIDERATIONS FOR MEETING NEEDS OF PERSONS WITH VISION LOSS
To best meet the needs of persons with vision loss, consider:

• Who will benefit from large-print prescription labels and large-print CMI.
• Who may require enhanced magnification.
• Who are braille readers (only a small percentage of people with vision loss).
• Who has access to Internet resources.
• Who has access to assistive technology, such as audible prescription label readers, recorders, or scanners.
• Who has other impairments in addition to vision loss, such as cognition, physical function, or hearing, which may affect the ability to access prescription information or manage medications.
• Who may require assistance of another person to manage medications.

GENERAL RECOMMENDATIONS FOR PRESCRIPTION LABELS

• Use the largest font size label will allow.
• Use sans serif, standard font (not narrow or condensed), such as Arial, Verdana, or APHont™. APHont™ was developed specifically for low vision readers and embodies characteristics that have been shown to enhance reading speed, comprehension, and comfort for large print users. Available free at www.aph.org/products/aphont.html.
• Use upper and lower case, not ALL CAPS.
• Use **bold typeface** for labels. Do not use *italic, oblique, or condensed type.*
• Use non-gloss paper and label stock. Do not cover label with tape.
• When affixing labels to a manufacturer-supplied bottle, do not cover medication name and strength on original label.
• Provide written description of medication and picture of medication, if possible. In the alternative, refer patient to Web sites that provide pictures of medications, such as http://www.mypillbox.org/mypillbox.php; www.healthline.com; www.webmd.com.
• If the pharmacy offers prescription label information in large print, this should be prominently posted at the prescription counter or communicated directly to each patient.

See Table 1 for specific format recommendations.
SPECIFIC RECOMMENDATIONS FOR LARGE-PRINT PRESCRIPTION AND AUXILIARY LABELS

In addition to the General Recommendations for Prescription Labels, the Advisory Board recommends that a minimum of 18-point type be used for people with vision loss. The Advisory Board recognizes that standard prescription label size will not accommodate the required labeling information in 18-point type. Therefore, the Advisory Board recommends that pharmacies:

- Provide “duplicate labels” (prescription and auxiliary) printed in a minimum of 18-point type on paper stock.
- If pictograms are used, these should also be provided in “large print” format and high contrast (saturated black on white background).
- The “duplicate labels” should be matched in some way to the prescription container, such as by using a large-print number or colored sticker on both the duplicate label and the corresponding medication container.

See Table 1 for specific format recommendations.

SPECIFIC RECOMMENDATIONS FOR CONSUMER MEDICATION INFORMATION

- All information required to take a medication correctly and safely should be provided verbally and in accessible format directly to every patient with vision loss, including precautions and information about medication preparation and/or storage.
- Print drug monographs in minimum 18-point type.
- Provide drug monographs in electronic format if patient has computer access.
- Refer patients to specific consumer medication information Web sites if patient has Internet access.
- Provide consumer medication information in braille or refer to service that provides braille “translation” for individuals who can read braille (See Appendix 7).

See Table 1 for specific format recommendations.
Table 1. Format Recommendations for Prescription Labels and CMI for People with Vision Loss

<table>
<thead>
<tr>
<th><strong>Contrast</strong></th>
<th>Text should be printed with the highest possible contrast.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>– Use black letters on white or pale yellow background.</td>
</tr>
<tr>
<td></td>
<td>– Avoid the use of red, yellow, or blue type and backgrounds other than white or yellow.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Paper Finish</strong></th>
<th>Paper with a glossy finish can lessen legibility because of glare.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>– Use uncoated paper/label stock.</td>
</tr>
<tr>
<td></td>
<td>– Do not cover prescription label with reflective tape, which may cause glare.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Case</strong></th>
<th>Use upper and lower case, rather than ALL CAPS.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Font Family</strong></th>
<th>Sans Serif fonts are fixed-stroke width fonts providing consistent letter contrast to aid reading acuity and efficiency.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Use sans serif font, such as Arial, Verdana, or APHont™. APHont™ was developed specifically for low vision readers and embodies characteristics that have been shown to enhance reading speed, comprehension, and comfort for large print users. Available free at <a href="http://www.aph.org/products/aphont.html">www.aph.org/products/aphont.html</a>.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Letter spacing</strong></th>
<th>Use standard spaced fonts, not narrow or condensed.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Type Style</strong></th>
<th>– Use <strong>bold typeface</strong> for the most important information on prescription labels and CMI.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>– Do not use <em>italic</em>, oblique, or condensed type.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Leading (spacing between lines of text)</strong></th>
<th>Font size plus 30%; 24 pt leading for 18 pt font. Alternative: 1.5 lines between text.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Type size</strong></th>
<th>Use minimum <strong>18-point type</strong>. Note: There may be patients who require larger font size for readability, or for whom large print is not useful.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Format CMI</strong></th>
<th>– Use single column, left justified text.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>– Minimum one inch margins.</td>
</tr>
<tr>
<td></td>
<td>– Avoid bullet points; instead left justify text and use extra spacing between lines to differentiate between points and sections.</td>
</tr>
<tr>
<td></td>
<td>– Make meaningful headings boldface in larger font.</td>
</tr>
<tr>
<td></td>
<td>– Bold critical portions of narrative sections within text.</td>
</tr>
<tr>
<td></td>
<td>– Provide a summary of most critical points for quick reference</td>
</tr>
</tbody>
</table>
RECOMMENDATIONS FOR DISTINGUISHING AMONG PRESCRIPTION CONTAINERS

Persons with vision loss can use a variety of methods and tools to identify and distinguish among medication containers. A combination of labeling methods—visual, tactile, and audible—can be used with environmental modifications, such as organization of medications and use of adequate lighting. Techniques may be as simple as placing a large-print, bold letter on the container, to using an audible labeling system. A person with vision loss may require assistance to use these techniques and devices.

Pharmacists can assist patients with, or make recommendations for, visual, tactile, or audible labeling to differentiate medication containers. Some people may prefer a system with both visual and tactile cues; others may need audible prescription label technology. Once the patient has established a personalized system to identify medications, have the patient demonstrate its use to verify comprehension, memory, and accuracy.

When determining the best method to distinguish among medication containers, several factors should be taken into consideration (Sokol and Michels, 2006). The most critical is the level of vision loss, including visual acuity, visual field, contrast sensitivity, and color discrimination. Additional patient-related factors are cognitive skills, hearing ability, manual strength, range of motion, fine motor coordination, tactile sensation, the number and type of medications and their storage and preparation requirements, the complexity of the patient’s medication regimen, and the availability and level of caregiver support. The availability and cost of labeling materials or devices and ease of use also should be considered.

Audible labeling, tactile labeling, and other identifier aids are available through many of the independent living products suppliers listed in Appendix 1 and the audible device suppliers listed in Appendix 2.

Visual Labels

Depending on the level of vision loss, visual labels may be adequate for some patients to distinguish among medication containers and to match large-print duplicate labels and CMI with the prescription container.

- **Letter Coded**—Letters can be handmade using permanent, pointed markers, or computer-generated. Self-adhesive large-print letters are commercially available.

- **Color Coded**—For people who have color vision, brightly colored stickers (available at office supply stores) may be used.

Visual-Tactile Labels

- **3-D “Ink” or Paint**—Visual or tactile labels can be made using color contrasting liquid fabric paint (available in craft and sewing stores) or specialty 3-D ink products (such as HI-MARK™ or Spot ‘n Line pens, which are designed for this purpose), to differentiate medication containers.
• **Rubber Bands**
  - Different numbers, thicknesses, and even colors of rubber bands can be used to differentiate among medication containers.
  - Different numbers of rubber bands can also be used to indicate dosage instructions (e.g., number of rubber bands indicates number of times per day the medication is taken).
  - Rubber bands can and do break and may come off the container. If they are used, they should be new and the right size for the container. An alternative is the use of elastic hair bands, which can also be used to attach tactile identifiers.
  - The use of rubber bands may not be appropriate to distinguish among more than three or four medications.

• **Touch-to-See Identifiers**
  - Self-adhesive, bold, black letters and numbers, composed of sharply raised dots and the equivalent braille symbol located below, on a white background.

**Tactile Labels**

Note that tactile markings may only be useful for differentiating two or three items from one another, since elaborate memorization schemes would be required to deal with more items.

• **Bump Dots**—Raised dots in a variety of colors, shapes, and sizes, with peel-and-stick backs, can be used to differentiate medication containers or indicate dosage instructions (e.g., number of bump dots indicates number of times per day the medication is taken).

• **Tape**—Strips of tape can be affixed in different directions (vertical, horizontal, or zigzag). Some people may lack the sensation in the fingertips required to distinguish strips of tape.

**Audible Labels**

There are numerous audible prescription labeling devices available. See Appendix 2 for a list of devices and suppliers.

**Medication Container and Organization**

• Some medication containers may be distinguished by size and shape.

• The size and shape of a pill may help with identification. The individual may need to practice feeling the different shapes and sizes of the pills.

• Medication containers may be kept in a logical order, such as alphabetical or sorted by the time of day the medication is taken; or different medications can be stored in different locations (e.g., nightstand and kitchen).

• Suggest using a dark or light colored tray (depending on the color of the medication containers) when organizing medications. The tray can provide contrast with the
medication containers to help with identifying them. Also, a tray with a raised edge can catch pills if they are dropped and prevent them from rolling onto the floor.


ASSISTIVE TECHNOLOGY†

There are a variety of medication use aids and other assistive technology designed for people with vision loss, including "talking" prescription labels, voiced scanning devices, and magnification systems, which should be recommended to individuals with low vision as an alternative to label modification. See Appendix 1 for independent living product suppliers, Appendix 2 for descriptions of audible devices and suppliers, Appendix 3 for insulin syringe filling aids, and Appendices 4 and 5 for assistive reading technology devices and suppliers.

† Assistive technology is used by individuals with disabilities in order to perform functions that might otherwise be difficult or impossible. Assistive technology can be anything homemade, purchased off the shelf, modified, or commercially available that is used to help an individual perform some task of daily living. The term assistive technology encompasses a broad range of devices from "low tech" (e.g., pencil grips, paper stabilizers) to "high tech" (e.g., computers, speech synthesizers, braille readers).
BACKGROUND

There are currently no requirements for the format of information on prescription labels, and existing formatting requirements for consumer medication information are inadequate for persons with vision loss. To address this problem, the American Society of Consultant Pharmacists Foundation, in collaboration with the American Foundation for the Blind, developed Guidelines for Prescription Labeling and Consumer Medication Information (CMI) for Persons with Vision Loss (“Guidelines”).

The purpose of the Guidelines is to provide pharmacists and pharmacies with recommendations for making important medication information accessible for patients with vision loss. The Guidelines will also serve as a resource for persons with vision loss and organizations serving this population.

Scope of the Problem

Although estimates vary, there are approximately 10 million blind and visually impaired people in the United States; of these, 1.3 million Americans are legally blind, and more than one half (6.5 million) are age 65 and older (American Foundation for the Blind). The prevalence of blindness and vision impairment increases rapidly in the later years, particularly after age 75 (Prevent Blindness America, 2002). People age 80 years and older currently make up 8% of the population but account for 69% of blindness (Eye Diseases Prevalence Research Group, 2004).

According to the Eye Diseases Prevalence Research Group, the leading cause of blindness among white Americans is age-related macular degeneration, accounting for 54% of all blindness; while among black persons, cataract and open-angle glaucoma account for more than 60% of blindness. Cataract is the most frequently reported condition in persons with low vision, responsible for approximately 50% of low vision cases among white, black, and Hispanic persons (Eye Diseases Prevalence Research Group, 2004). Uncorrected refractive error is perhaps the most prevalent form of correctable visual disability occurring in the United States among all segments of the population (Vitale et al, 2006).

The leading causes of vision impairment and blindness among older adults in the U.S. are age-related eye diseases (Prevent Blindness America, 2002). The number of Americans at risk for age-related eye diseases is increasing as the baby boomer generation ages. These conditions—including age-related macular degeneration, cataracts, diabetic retinopathy, and glaucoma—affect more Americans than ever before. The number of Americans with age-related eye disease and the vision impairment that results is expected to double within the next three decades (Prevent Blindness America, 2002). In addition to age-related eye diseases, physiologic changes in vision that occur with age, such as loss of near focus (presbyopia), reduced contrast sensitivity, and visual field impairment contribute to a reduction in near as well as distance visual acuity (Watanabe 1994).
According to a 2007 study, the impact of vision loss on the U.S. economy is estimated at $51.4 billion annually (Prevent Blindness America, 2007). The number of persons who are blind is projected to increase by 70% by 2020, with a similar rise projected for persons with low vision (Eye Diseases Prevalence Research Group, 2004).

Most older people who lose their vision due to age-related eye disease are not aware of services that can help them cope with vision loss or devices that can make their activities of daily living easier.

**Medication Safety Issues**

There are many medication safety issues associated with vision loss. Low vision and blindness affect the ability to read prescription labels and information sheets about medications; determine the color, shape, and markings distinguishing a medication; or see markings on measuring or testing devices. In a 2007 national poll conducted by the American Foundation for the Blind (AFB), 65% of those surveyed expressed concern about properly identifying medication (AFB, 2007).

The information provided on the prescription label is essential for the correct taking of medication. People who cannot read prescription labels or distinguish among different medications must rely on memory, use compensatory strategies or devices, or depend on someone else for help. As a result, many people with vision loss and older adults with reduced visual acuity are unable to “access” important instructions for use and safety information from prescription labels and consumer medication information.

Several studies have demonstrated the importance of label format—font type, point size, letter compression, line spacing—on readability, comprehensibility, and usefulness to consumers (Watanabe, 1994; Cramer, 1998; Cohen, 2000; Wogalter and Vigilante, 2003). One recent study noted significant improvements in comprehension and adherence among older adults when the prescription label was printed in 22 pt Arial font (Drummond et al, 2004), which is almost three times the point size usually used on prescription labels. The findings of many of the studies suggest that older consumers may be unable to acquire information—such as product identification, instructions for use, and safety information—from prescription or product labels and various sources of consumer medication information. It is essential to ensure that the size of the print is large enough to enable information transmission from the label to the receiver (Wogalter and Vigilante, 2003).

**Current Regulations and Guidelines**

Existing recommendations and practices for prescription labeling and consumer medication information (CMI) are inadequate to ensure access to important medication information for those who are blind or visually impaired or have decreased visual acuity. This presents a patient safety issue that may result in medication errors and medication nonadherence.
State Boards of Pharmacy

State boards of pharmacy specify the requirements for the content of prescription labels; however, there are no requirements for the format of the information. In general, the information required on a prescription label includes:

- Name and address of the dispenser or pharmacy
- Telephone number of the pharmacy
- Serial number of the prescription
- Current date of its filling or refilling
- Name of the prescriber
- Name of the patient
- Directions for use, including precautions, if any, as indicated on the prescription
- Drug name and strength and quantity; if generic, the name of the manufacturer
- The phrase "use by" followed by the product's use by date, if dispensed in any packaging other than the manufacturer's original packaging
- All auxiliary labeling as recommended by the manufacturer and/or as deemed appropriate in the professional judgment of the dispensing pharmacist
- Initials or name of the dispensing pharmacist

The state boards of pharmacy provide no guidance for prescription labeling for people with vision loss.

Food and Drug Administration

In 1995, the Food and Drug Administration (FDA) proposed a regulation entitled Prescription Drug Product Labeling: Medication Guide Requirements (60 FR 44182; August 24, 1995), designed to set specific distribution and quality goals and time frames for distributing written consumer medication information (CMI). In 1996, a steering committee—which included health care professionals, consumer organizations, voluntary health agencies, pharmaceutical manufacturers, prescription drug wholesalers, drug information database companies, CMI developers, and others—developed a report entitled Action Plan for the Provision of Useful Prescription Medicine Information. The Action Plan delineated criteria for evaluating whether a particular piece of written medication information is useful to consumers (Steering Committee, 1996).

To provide clarification on how the Action Plan criteria should be interpreted and implemented, the FDA developed a guidance document on useful written consumer medication information, which is intended to assist individuals or organizations (e.g., pharmacies, private vendors, health care associations) in developing useful, written CMI (Food and Drug Administration, 2006). The FDA guidance recommends the following formatting for CMI:

- Use 10-point or larger type size.
- Do not use ornate typefaces and italics. Choose a bolder type over a thin version of the same style.
• Use upper- and lower-case lettering, not all capitals.
• Use boldface type or a box to call attention to important information rather than highlighting or underlining.
• Provide adequate space between letters, lines, and paragraphs. Text should generally have no more than –3 kerning (space between letters). With 10-point type, 12-point leading (space between lines) is recommended (at least 2.2 millimeters). Provide adequate space between paragraphs and space above and below headings.
• Do not use a line length that is too long. In 10-point or 12-point type, optimal line length is approximately 40 letters long.
• Select text color and paper that give a strong contrast. Black, dark blue, or brown ink on white or pale yellow uncoated paper provides the best contrast. Other combinations should be avoided.
• Use short paragraphs and bullets where possible.

The Guidelines Advisory Board believes that the FDA recommendation regarding minimum type size falls far short of meeting the needs of persons with vision loss or decreased visual acuity. Studies regarding print legibility for persons who are visually impaired indicate that type should be at least 16- to 18-point (Arditi, 2002). Furthermore, the FDA CMI guidance does not address the needs of individuals who cannot read print due to vision loss.

**Medicare Prescription Drug, Improvement, and Modernization Act Provision**

The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA) required that the Secretary of Health and Human Services undertake a study on how to make prescription pharmaceutical information, including drug labels and usage instructions, accessible to blind and visually impaired individuals. The legislation required that the study “include a review of existing and emerging technologies, including assistive technology, that makes essential information on the content and prescribed use of pharmaceutical medicines available in a usable format for blind and visually impaired individuals.” This task was given to the Food and Drug Administration (FDA).

The 2004 FDA study—which included a review of the published literature, a call for comments from a 30-day public docket, and consultation with other federal agencies and technology manufacturers—found that a significant number of blind and visually impaired individuals were not using assistive technology to access prescription drug label and usage information because they were unaware of its availability or it was not effective or practical to meet their particular needs (Department of Health and Human Services, 2005). Among the study’s key findings:

• Two of the most critical barriers to the use of assistive technology are lack of awareness and cost of some assistive technologies.
• No single currently available assistive technology can meet the needs of all or even the majority of people with vision loss; therefore, multiple means of communicating drug information are necessary.

The National Institute on Disability and Rehabilitation Research (NIDRR) was asked to convene a meeting of experts and key stakeholders in eye health, assistive technology, and pharmacology to address the issues raised in the FDA study; the meeting was held March 22, 2006. The work was continued on September 19, 2007, when NIDRR and the U.S. Department of Health and Human Services convened an expert panel to develop a federal research agenda that addresses the use of assistive technologies and modalities to make prescription drug information accessible to individuals who are blind or visually impaired.

SUMMARY

With no requirements for the format of information on prescription labels and inadequate formatting requirements for CMI, the collaborating organizations believe that guidelines are needed that enable pharmacists and pharmacies to make important medication use information accessible to their patients with vision loss.

COLLABORATING ORGANIZATIONS

The American Foundation for the Blind (AFB) is a national nonprofit organization that expands possibilities for people with vision loss. AFB’s priorities include advocating on behalf of people with vision loss, broadening access to technology, elevating the quality of information and tools for the professionals who serve blind and visually impaired persons, and promoting independent and healthy living for individuals with vision loss by providing them and their families with relevant and timely resources. Visit AFB’s Web site at www.afb.org, and its component for older consumers, www.afb.org/seniorsite.

AFB’s principal product is knowledge. AFB fulfills its mission by publishing seminal textbooks, conducting crucial research, and presenting teacher training courses, professional conferences, and symposia. In addition, it shapes the public agenda by defining the important issues affecting blind and visually impaired persons and mobilizing support to bring about change in these areas.

AFB has embarked on the Rx Label Enable campaign to ensure that people with vision loss have ready access to the vital information available to all consumers via prescription labeling and consumer medication information, enabling them to take medications safely, effectively, and independently. AFB is reaching out to all stakeholders, including consumers experiencing vision loss, policymakers, federal regulators, doctors, the pharmaceutical industry, retailers, assistive technology providers, and public and private insurers to promote solutions, build consensus, and take action (www.afb.org/Section.asp?SectionID=3&TopicID=329).

The ASCP Foundation is the research and education affiliate of the American Society of Consultant Pharmacists (ASCP). The ASCP Foundation has a proven track record of
developing practical interventions for improving medication use in the senior population. The mission of the ASCP Foundation is to foster appropriate, effective, and safe medication use in older persons. The unique focus of the ASCP Foundation is the development, integration, and application of knowledge regarding medication use in the senior population and the practice of senior care pharmacy to optimize health outcomes. The ASCP Foundation has a history of leadership, innovation, and expertise in medicines and aging and has collaborated with numerous organizations to address the information and education needs of consumers, families, caregivers, health care professionals, and the aging network regarding medication use. Visit the ASCP Foundation’s Web site at www.ascpfoundation.org.

ACKNOWLEDGEMENTS

We would like to acknowledge the invaluable contribution of the many people at the American Foundation for the Blind; Ann S. Williams, PhD, RN, CDE, and her colleagues from the Disabilities Specialty Practice Group of the American Association of Diabetes Educators; Katharina V. Echt, PhD, Emory University School of Medicine and Atlanta VA Rehabilitation Research and Development Center of Excellence for Aging Veterans with Vision Loss; and the members of the Advisory Board to the development of the Guidelines for Prescription Labeling and Consumer Medication Information for People with Vision Loss. This project was funded by the American Foundation for the Blind, American Society of Consultant Pharmacists Foundation, and a vendor contract from Pfizer Inc.

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APPENDIX 1. INDEPENDENT LIVING PRODUCTS SUPPLIERS

The following is a list of some of the suppliers of independent living products for people with vision loss, such as lamps; magnifiers; scales (talking and large print); measuring aids; timers, watches and clocks (talking, braille, and low vision); large print and braille playing cards; tactile labeling aids and item identifiers; and medication aids, including specialized syringes and syringe holders, syringe magnifiers, and label magnifiers. This list is not intended to be a complete listing of all organizations that sell such products, nor is it intended to be an endorsement of the actual products.

New products are continually marketed, and suppliers change; check these sites for new products and suppliers:

- [www.afb.org/prodMain.asp](http://www.afb.org/prodMain.asp)
- [www.nyise.org/lowvision.htm](http://www.nyise.org/lowvision.htm)

**ActiveForever** – Low vision products.  [www.activeforever.com/c-8-low-vision-aids.aspx](http://www.activeforever.com/c-8-low-vision-aids.aspx)

**American Printing House for the Blind** – Adapted educational and daily living products.  [www.aph.org](http://www.aph.org)

**Ann Morris Enterprises** – Wide variety of products for people with vision loss.  [www.annmorris.com](http://www.annmorris.com)

**Carolyn’s Low Vision Products** – [www.carolynscatalog.com](http://www.carolynscatalog.com)

**CAPTEK** – Extensive array of items adapted for use by the vision impaired.  [www.captek.net/](http://www.captek.net/)

**Dynamic Living** – Kitchen products, bathroom helpers, and unique daily living aids for independent living.  [www.dynamic-living.com](http://www.dynamic-living.com)

**Enable Mart** – Assistive technology, including vision products.  [www.enablemart.com](http://www.enablemart.com)

**EnvisionEveryday** – Adapted aids for people who are blind or have low vision.  [www.orderscenter.com/cart.asp?MerchantID=WCM00001](http://www.orderscenter.com/cart.asp?MerchantID=WCM00001)

**“Eye-Dea” Shop** – Assistive aids for people with vision loss.  [clevelandsightcenter.org](http://clevelandsightcenter.org)

**Full Life Products** – Big button phones, talking caller ID, talking calculators, and VoiceMate Organizer.  [www.superproducts.com](http://www.superproducts.com)

**Hear-More** – Products for people with vision and hearing loss.  [www.hearmore.com](http://www.hearmore.com)

**Independent Living Aids, Inc.** – Wide variety of products and aids for daily living designed for people with vision loss.  [www.independentliving.com](http://www.independentliving.com)
LS&S Group – Products for people with vision and hearing loss.  www.lssproducts.com


Mons International, Inc. – Low vision products and services.  www.magnifiers.com

National Federation of the Blind – Blindness-related resources and products. www.nfb.org


RehabMart.com – Medical equipment, including products for low vision. www.rehabmart.com

See-More Vision Aiding Products, Inc. – Wide variety of products and aids for daily living designed for people with vision loss.  www.seemorevision.com

ShopLowVision.com – Electronic low vision products and daily living aids. www.shoplowvision.com

Speak To Me – A catalog of talking products.  www.speaktomecatalog.com
APPENDIX 2. AUDIBLE DEVICES

The following is a list of some of the suppliers of audible devices for people with vision loss. This list is not intended to be a complete listing of all organizations that sell such products, nor is it intended to be an endorsement of the actual products. New products are continually marketed, and suppliers change; check these sites for new products and suppliers:

- www_afb_org_prodMain_asp
- www_nfb_org_nfb_Technology_Resource_List1_asp?SnID=1730878500
- www_nyise_org_lowvision_htm

AUDIBLE PRESCRIPTION LABELING DEVICES

This list is not intended to be a complete listing of all products, nor is it intended to be an endorsement of the actual products.

**Rex-The Talking Bottle** – Disposable talking bottle that provides audible label information. A special bottle recorder microphone allows the user to record the medication use information directly into the bottle. To playback the recorded information, users simply press a button on the base of the bottle and listen to the message. Batteries will last approximately 300 message plays. Starter kit contains three disposable bottles, a recording unit, a microphone that makes the recording possible by simply pressing a button and speaking, power supply, and easy-to-follow instructions. [www.rxtalks.com](http://www.rxtalks.com)

**ScripTalk™ Talking Prescription Reader** – The ScripTalk System requires the pharmacy to have the software to print and program an auxiliary smart label using a dedicated, small-footprint printer. The smart label, which stores prescription information, is placed onto the prescription container by the pharmacist. In the home, the patient uses a hand-held ScripTalk Reader that speaks out the label information using speech synthesis technology. Supports Spanish or English. Runs on batteries. [www.envisionamerica.com](http://www.envisionamerica.com)

**Sherlock Talking Label Identifier Kit** – A digital voice recorder with each recorded message keyed to an adhesive label or plastic disk tag. Holds up to two-and-a-half hours of recorded information and supports up to 2,000 labels. Available from American Printing House for the Blind. [http://sun1.aph.org/starweb/APHBLLouis/servlet.starweb](http://sun1.aph.org/starweb/APHBLLouis/servlet.starweb)

**Talking Rx®** – Portable, re-usable digital memo recorder that attaches to common-sized prescription bottles and allows a physician, pharmacist, caregiver, family member, or patient to record up to sixty seconds of recorded information about the medication. Can only be used for one prescription at a time. [www.talkingrx.com](http://www.talkingrx.com)

**Tel-Rx Prescription Recorder** – Twenty second recording time allows user to record necessary information about the medication. Attached to prescription bottle with tie or
band (included). Runs on batteries. Can only be used for one prescription at a time. Available through various outlets: www.learnmoreshop.com; www.maxiaids.com

**VOXCOM III** – A verbal marking system that records a 10-second message on a card, which is then attached to the item. To “read” the card, insert it into the VOXCOM to hear the recording. Several methods of attachment are included: rubber bands, plastic ties, magnets, and hook and loop attachments. Available through various outlets: www.maxiaids.com; www.hearmore.com

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**“VOICED” SCANNING DEVICES**

This list is not intended to be a complete listing of all products, nor is it intended to be an endorsement of the actual products.

**i.d. mate OMNI** – Portable "all-in-one" talking bar code scanner. It allows an individual to identify items using the product's bar code or UPC. A database of more than a million North American UPCs and descriptions give the user a huge head start in identifying the product and getting the information needed about the item. The user can add additional voice recorded information to existing products or to items not found in the database. The user can also record, play, erase and organize messages in the memo mode. Used products are available for half-price through the manufacturer. www.envisionamerica.com/products.php

**Kurzweil-National Federation of the Blind Reader** – A portable, hand-held device that scans and reads printed material. Combining a digital camera with a personal data assistant housed in a case, the Kurzweil–National Federation of the Blind Reader puts character recognition software together with text-to-speech conversion technology. To use, hold the Reader’s camera over print (e.g., a restaurant menu, directions, or a memo) and snap a picture. In seconds the contents of the printed document are read in clear synthetic speech. The Reader also has a headphone jack. www.knfbreader.com

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**“TALKING” BLOOD GLUCOSE MONITORS**

This list is not intended to be a complete listing of all products, nor is it intended to be an endorsement of the actual products.

**Advocate™** – English/Spanish talking blood glucose monitors. Advocate Duo includes a blood pressure meter. www.pharmasupply.com/

**Digi-Voice Voice Module** – Plugs into the data port of standard One Touch Basic or Sure Step blood glucose meters and announces what appears in the display, including prompts, error messages, and readings. www.captek.net

**Prodigy® Voice** – Totally audible blood glucose monitoring system specially designed for the blind. Does not require calibration; has tactually distinct buttons for different
features; is fully accessible in all functions; and includes instructions in audio format.  
www.prodigymeter.com/home.cfm

“TALKING” BLOOD PRESSURE MONITORS

This list is not intended to be a complete listing of all products, nor is it intended to be an endorsement of the actual products.

LifeSource® Talking Auto-Inflation Blood Pressure Monitor – Audio announcement of measurement results.  www.lifesourceonline.com

Lumiscope® Talking Wrist Blood Pressure Monitor – Audio announcement of measurement results.  www.lumiscope.net/index.shtml

Oregon Scientific Talking Wrist Blood Pressure Monitor – Audio announcement of measurement results.  www2.oregonscientific.com

APPENDIX 3. INSULIN SYRINGE FILLING AIDS

The following is a list of some of the suppliers of insulin syringe filling aids for people with vision loss. This list is not intended to be a complete listing of all organizations that sell such products, nor is it intended to be an endorsement of the actual products. New products are continually marketed, and suppliers change; check these sites for new products and suppliers:

wwwafb.org/prodMain.asp
www.nyise.org/lowvision.htm

BD Magni-Guide™ Scale Magnifier – Magnifies the scale on syringe 1.7 times for easier reading and helps to guide the insulin syringe needle into the vial.

Count-a-Dose – Syringe filling device for blind or partially-sighted people with diabetes. Uses only a ½ cc B-D syringe. Available from various suppliers.

Ezy-Dose Syringe Magnifier – Clips to insulin syringe for easier reading of calibrations; fits on 1 cc and ½ cc syringes. Available from various suppliers.

Inject Assist – Guides the syringe into the vial. Can be used to measure a single dose pre-set by a sighted person. www.apothecaryproducts.com

Insul-Eze – Syringe loading device with magnifier for those with visual or manual dexterity problems. Magnifies (2.5 times) syringe calibrations and automatically aligns the bottle seal with the needle. Manufactured by Palco Labs, www.palcolabs.com

Safe Shot Syringe Loader – Allows secure adjustment of intake of insulin or other injectables; can be preset for accurate volume. Available from various suppliers.
www.maxiaids.com; www.hearmore.com

Syringe Support – For use with U-100 insulin. Fills a BD 100 unit syringe using a calibrated screw that can be set by a blind user. Available from various suppliers.
www.maxiaids.com; http://eyedeashop.com

Tru-Hand Insulin Holder and Magnifier – Syringe needle guide and vial holder designed to magnify the syringe scale for individuals with low vision. The device holds the insulin bottle and has a magnifying window that enlarges the syringe’s print two-fold. Manufactured by Whittier Medical. Available from various suppliers.
www.diabeticexpress.com; www.diabeticcareservices.com

Unit Calibration Aid – Incorporates two adjustable preset stoppers, allowing two different doses or insulin mixing. Secures the syringe in place leaving the plunger free to set an accurate dose with a pre-set dosage guide. Holds U-100, U-80, and U-40 syringes. Any adjustment of dose requires sighted aid. http://eyedeashop.com
APPENDIX 4. GLOSSARY OF ASSISTIVE “READING” TECHNOLOGY

**Braille Display.** Provides access to information on a computer screen in braille. These desk-top devices operate by electronically raising and lowering different combinations of pins to produce in braille what appears on a portion of the computer screen. The device displays up to 80 characters from the computer screen at one time and is refreshable; that is, it changes continuously as the user moves around the screen.

**Braille Embosser.** A printer that renders text as braille.

**Braille Translation Software.** Software used to convert a standard document from a word processor into braille for printing on a braille embosser.

**Large-Print Printer.** Any inkjet, dot matrix, or laser printer can produce large print if the font size is set larger before printing.

**Optical Character Recognition (OCR) System.** Software used to convert scanned text, from books or other documents, into electronic format. The blind or visually impaired user can access the scanned text by using adaptive technology devices that magnify the computer screen or provide speech or braille output.

**Screen Magnification Software.** Software designed to work like a magnifying glass moving over a page.

**Screen Reading Software.** Software used to convert text on the computer screen into spoken words. A synthetic speech system is composed of two parts: the synthesizer that does the speaking and the screen reader that tells the synthesizer what to say. The synthesizers used with PCs are text-to-speech systems.

**Video Magnifier**, or closed-circuit television (CCTV). Uses a stand-mounted or hand-held video camera to project a magnified image onto a video monitor, a television screen, or a computer monitor. It also can be used to magnify the print in books and newspapers, write letters and checks, and do different types of crafts, such as needlepoint.
APPENDIX 5. ASSISTIVE “READING” TECHNOLOGY SUPPLIERS

The following is a list of some of the suppliers of assistive technology for people with vision loss. This list is not intended to be a complete listing of all organizations that sell such products, nor is it intended to be an endorsement of the actual products. New products are continually marketed, and suppliers change; check these sites for new assistive technology and suppliers:

  - www.afb.org
  - www.nyise.org/lowvision.htm

Access Ingenuity – Catalog with a wide variety of assistive technology for low vision and blindness.  www.accessingenuity.com/products/vision

Adaptive Solutions, Inc. – Sells assistive technology products for persons who are blind or visually impaired.  www.talksight.com

Ai Squared – Leading developer of screen magnification and screen reading software.  www.aisquared.com

Vision Cue – Catalog with a wide variety of assistive technology for low vision and blindness.  www.visioncue.com

BIGSHOT – Screen magnification.  www.bigshotmagnifier.com

Clarity Solutions – Manufactures autofocus video magnifiers (CCTV) for near and distance viewing.  www.clarityusa.com

Duxbury Systems – Braille Translation software for Windows, Macintosh, DOS, and UNIX.  www.duxburysystems.com

Enabling Technologies – Braille embossers (braille printers) for the smallest home office to the largest commercial printing house.  www.brailler.com

Enhanced Vision – Manufactures head mounted and stand type CCTVs.  www.enhancedvision.com

Eschenbach Optik – Optical and other magnification products.  www.eschenbach.com

Freedom Box – Voice-controlled Internet access device that combines an audio output interface with voice recognition.  www.freedombox.info

Freedom Scientific – Screen reading and magnification software, Web access software, braille note takers, embossers and displays, scanning and reading software/hardware.  www.freedomscientific.com
GW Micro – Window-Eyes screen reading software and other adaptive technology for computer, PDA, palm-top, and CCTV devices. www.gwmicro.com

Innoventions, Inc. – Magni-Cam is an affordable electronic magnifier that turns your television set in to a CCTV. www.magnicam.com

Kurzweil Educational Systems – Software that converts the printed word into speech output. www.kurzweiledu.com

Mons International, Inc. – Sells low vision products, including CCTVs, telescopes, and binoculars. www.magnifiers.com


Net-Tamer – A shareware DOS PPP dial-up access program. www.nettamer.com

Optelec – CCTVs, high-quality magnifiers, and other products for people with low vision. www.optelec.com

OVAC Reading Systems for the Visually Impaired – Makers of affordable low vision reading systems (CCTVs). www.ovac.com

Pulse Data HumanWare – Refreshable braille displays, braille note takers, braille embossers, screen access software, and braille translation software. www.pulsedata.com

RJ Cooper & Associates – Adaptive software and hardware for persons with special needs. www.rjcooper.com

Telesensory – Video magnifiers (CCTVs), scanners (OCR), and screen magnification products. www.telesensory.com
APPENDIX 6. BLINDNESS/VISION LOSS ORGANIZATIONS AND RESOURCES

Many state, local, and national organizations/agencies provide information on services, resources, and vendors specializing in products for people with vision loss. The following is a list of some of these organizations. See the following links for current lists or locators:

- www.lowvision.com/services/national-resources/
- www.nyise.org/orgs.htm
- http://afb.org/services.asp

ABLEDATA. Provides objective information on assistive technology and rehabilitation equipment available from domestic and international sources to consumers, organizations, professionals, and caregivers within the United States. Serving the nation’s disability, rehabilitation, and senior communities, ABLEDATA is sponsored by the National Institute on Disability and Rehabilitation Research (NIDRR), part of the Office of Special Education and Rehabilitative Services (OSERS) of the U.S. Department of Education. www.abledata.com/

American Council of the Blind. Membership organization of blind and visually impaired people. Web site contains helpful resources for people who are blind or visually impaired. www.acb.org

American Foundation for the Blind (AFB). National nonprofit organization that advocates on behalf of people with vision loss and focuses on broadening access to technology, elevating the quality of information and tools for the professionals who serve blind and visually impaired persons, and promoting independent and healthy living for individuals with vision loss by providing them and their families with relevant and timely resources. www.afb.org

- **AFB AccessWorld®: Technology and People who are Blind or Visually Impaired.** A free, Web-based publication that provides technology news and product evaluations. www.afb.org/aw/main.asp
- **AFB Senior Site.** Site to encourage aging adults with eye diseases to live independently and productively. Includes locator to find senior services by state. www.afb.org/seniorsitehome.asp

American Macular Degeneration Foundation. Works for the prevention, treatment, and cure of macular degeneration through raising funds, educating the public, and supporting scientific research. Low vision resources, low vision centers, reading services, state agencies. www.macular.org

Lighthouse International. A leading non-profit organization dedicated to preserving vision and to providing critically needed vision and rehabilitation services to help people of all ages overcome the challenges of vision loss. www.lighthouse.org
**Macular Degeneration Partnership.** Coalition of patients and families, researchers, clinicians, industry partners, and leaders in the fields of vision and aging collaborating to disseminate information about age-related macular degeneration, provide support to patients, and marshal resources for a cure. Web site contains links to resources for health, aging, and low vision information, along with tools and other related resources. [www.amd.org](http://www.amd.org)

**National Association for Visually Handicapped.** Non-profit health agency providing assistance to those with limited vision. Web site contains NAVH locator and catalogue of vision aids. [www.navh.org](http://www.navh.org)

**National Eye Institute.** Established by Congress in 1968 to protect and prolong the vision of the American people. As one of the Federal government's National Institutes of Health (NIH), the NEI conducts and supports research that helps prevent and treat eye diseases and other disorders of vision. [www.nei.nih.gov](http://www.nei.nih.gov)

**National Federation of the Blind.** Membership organization of blind people in the United States. Web site provides information on vision loss, resources, products, and technology. [www.nfb.org](http://www.nfb.org)

**New York Institute for Special Education, Blindness Resource Center.** Low vision resources, blindness organizations, vendors specializing in technology for the blind. [www.nyise.org/blind.htm](http://www.nyise.org/blind.htm)

**VisionAWARE.** “Self help for vision loss” Web site. Web site provides information and self-help tips for people with vision loss on topics ranging from eye disorders and rehabilitation services to tips for independent living and advice on coping with vision loss. [www.visionaware.org/](http://www.visionaware.org/)
APPENDIX 7. BRAILLE TRANSCRIPTION SERVICES LINKS

Braille is a system of writing or printing, devised by Louis Braille in 1824, for use by people who are blind or visually impaired. The system uses raised dots that are read by touch. There are numerous commercial and volunteer organizations that provide braille transcription services. Some links are provided below.

- **New York Institute for Special Education, Blindness Resource Center:**
  [www.nyise.org/braille.htm#transcription](http://www.nyise.org/braille.htm#transcription)
- **Braille Plus:** [www.brailleplus.com](http://www.brailleplus.com)
- **Braille Plus, Inc.:** [www.brailleplus.net](http://www.brailleplus.net)
- **Valley Braille Service Inc:** [www.valleybraille.com](http://www.valleybraille.com)
- **All-Braille:** [www.allbraille.com](http://www.allbraille.com)
- **Quik-Scrybe:** [www.quikscrybe.com](http://www.quikscrybe.com)
- **The Braille Bookstore:** [www.braillebookstore.com/braille-transcription.htm](http://www.braillebookstore.com/braille-transcription.htm)
- **The Hadley School for the Blind:** [www.hadley.edu/7_f_brailleTranscribing.asp](http://www.hadley.edu/7_f_brailleTranscribing.asp)
APPENDIX 8. VISION GLOSSARY

**Cataract:** A clouding of the lens in the eye that affects vision, causing cloudy or blurry vision, poor night vision, and problems with glare. Cataracts are very common in older people; by age 80, more than half of all Americans either have a cataract or have had cataract surgery.

**Diabetic Retinopathy:** A complication of diabetes and a leading cause of blindness. It occurs when diabetes damages the tiny blood vessels inside the retina in the back of the eye. Often there are no visual symptoms or pain in the early stages of the disease; therefore persons with diabetes should have a comprehensive dilated eye exam at least once a year.

**Glaucoma:** Glaucoma is a group of eye diseases that can damage the eye's optic nerve and result in vision loss and blindness. Optic nerve damage produces certain characteristic visual field defects in peripheral (side) as well as central vision. Once nerve damage and visual loss occur, it is permanent. Early detection and treatment are the keys to preventing optic nerve damage and vision loss from glaucoma.

**Low Vision or Visual Impairment:** Vision loss that may be severe enough to impede a person's ability to carry on everyday activities but still allows some functionally useful sight. Low vision may be caused by macular degeneration, cataracts, glaucoma, or other eye conditions or diseases. Low vision may range from moderate impairment to near-total blindness; it cannot be fully corrected by eyeglasses, contact lenses, or surgery. However, a person with low vision may benefit from any of a variety of available optical devices, such as magnifying lens or hand-held magnifiers, and task-directed lighting. Special software developed for computer users with low vision can display type in large size or read text aloud.

**Macular Degeneration:** A type of retinal degenerative disease that causes dysfunction of the macula, the area in the middle of the retina that makes possible the sharp central vision needed for such everyday activities as reading, driving, and recognizing faces and colors. There are two forms: “wet” and “dry.” Age-related macular degeneration is the leading cause of severe vision loss in people over age 60. Macular degeneration causes blurred, distorted, or dim vision or a blind spot in the center of the visual field; peripheral vision is generally not affected. The condition is painless and may progress so gradually that the affected person at first notices little change.

**Presbyopia:** The eye's gradually decreasing ability to focus on nearby objects. Presbyopia is a normal part of aging and affects virtually everyone, usually becoming noticeable after age 40. People with presbyopia typically hold reading materials at arm's length in order to bring the words into focus. Presbyopia can be corrected with reading glasses, bifocal or variable focus lenses, or contact lenses. Using bright, direct light when reading is also helpful.
## APPENDIX 9. VISION LOSS SIMULATION

### Age-related Macular Degeneration (AMD)

Causes blurred, distorted, or dim vision, or a blind spot in the center of the visual field, which can make it difficult to read, drive, recognize faces, or perform other activities requiring fine, detailed vision. Peripheral vision is generally not affected. AMD often causes difficulties with contrast or focusing, rivalry between the two eyes (ghost images), images jumping into the field of view (eccentric viewing), or the seeing of objects that do not exist (Charles Bonnet Syndrome).

Source: National Eye Institute

### Cataract

Is the clouding of the eye's lens, which can interfere with vision, causing images to appear blurred or fuzzy and colors to seem faded.

Source: National Eye Institute

### Glaucoma

Is the term for a diverse group of eye diseases, all of which involve progressive damage to the optic nerve. Glaucoma can result in mild peripheral (side) field loss with good central acuity; severe peripheral field loss, or tunnel vision, with good central acuity; or tunnel vision with very poor central acuity. The most important hallmark of the visual disability from glaucoma is the loss of contrast. Glaucoma sufferers need high contrast print with good glare-free lighting.

Source: National Eye Institute

### Diabetic Retinopathy

Is a complication of diabetes that damages the eye's retina, which can lead to vision loss, including blindness. In the early stages, there may not be any noticeable change in vision; in its final stage, bleeding can occur. Symptoms may include "spiders," "cobwebs" or tiny specks floating in the visual field, dark streaks or a red film that blocks vision, vision loss or blurred vision, a dark or empty spot in the center of the visual field, poor night vision, and difficulty adjusting from bright light to dim light.

Source: National Eye Institute