

# **A Guide for Making Print Documents Accessible to Persons With Disabilities**



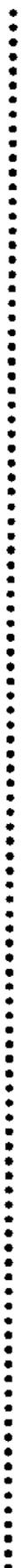
National Institute  
of  
Arthritis  
and  
Musculoskeletal  
and  
Skin Diseases

National Institutes of Health

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**Administrative Use**



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Print Documents  
Accessible to  
Persons With  
Disabilities**

**National Institute  
of  
Arthritis  
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Musculoskeletal  
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Skin Diseases**

## A C K N O W L E D G M E N T S

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The following organizations were consulted in creating this document:

American Association for the Advancement of Science  
American Council of the Blind  
American Council on Education, Health Resource Center  
American Foundation for the Blind  
American Printing House for the Blind, Inc.  
American Speech-Language-Hearing Association  
Canadian Parks Service  
Cutting Corporation  
Gallaudet University, National Information Center on Deafness  
Library of Congress, National Library Service for the Blind and Physically Handicapped  
Lighthouse Research Institute  
Metrolina Association for the Blind, Inc.  
Metropolitan Washington Ear, Inc.  
MSMT Braille Center  
National Association of the Deaf  
National Braille Association, Inc.  
National Braille Press, Inc.  
National Center for Accessible Media, Corporation for Public Broadcasting (CPB)/WGBH Educational Foundation  
National Eye Institute, National Eye Health Education Program  
National Federation of the Blind  
National Institute on Deafness and Other Communication Disorders, National Institute on Deafness and Other Communication Disorders Information Clearinghouse  
Northern Illinois University, Rehabilitation Research Training Center on Traditionally Underserved Persons Who Are Deaf  
Recording for the Blind  
Smithsonian Institution  
Texas Commission for the Blind  
Trace Research and Development Center  
U.S. Equal Employment Opportunity Commission  
U.S. Department of Education, National Rehabilitation Information Center  
U.S. Department of Education, Rehabilitation Services Administration, Office of Special Education and Rehabilitative Services, Deafness and Communicative Disorders Branch  
U.S. Department of Justice, Civil Rights Division  
U.S. General Services Administration, Clearinghouse on Computer Accommodation, Information Resources Management Service

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# I N T R O D U C T I O N

To better understand the requirements and techniques for making documents accessible to persons with disabilities, in 1994 the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) converted the booklet *What Black Women Should Know About Lupus* into large print, braille, audio, and electronic formats. As part of this document conversion project, we researched the information needs of persons with visual or mobility impairments, or who are deaf or hard of hearing; identified various formats for communicating with each group; reviewed existing standards and guidelines for these alternative formats; and proceeded to convert the booklet.

The experience we gained in managing this project led to the development of *A Guide for Making Print Documents Accessible to Persons With Disabilities*. The purpose of this *Guide* is to share the information and tips we learned about converting documents into alternative formats and help facilitate this process in other National Institutes of Health (NIH) programs.

The *Guide* is organized as follows:

Chapter I, *Background — Federal Requirements*, summarizes the legislation, regulations, and policies of the Federal Government on making print and audiovisual documents accessible to people with disabilities.

Chapter II, *Audience Profiles and Preferences*, consists of audience profiles and discusses the characteristics, information needs, and format preferences of persons with visual or mobility impairments, or who are deaf or hard of hearing.

Chapter III, *Production Tips and Guidelines*, is the heart of the *Guide*; it presents tips on converting documents into large print, braille, audio, and electronic formats. Tips for each format are organized as follows: planning and revising the document to be converted, developing specifications, articulating assumptions, providing review and quality control cycles, and do's and don'ts.

Chapter IV, *Logistics*, discusses logistical considerations when having materials converted into alternative formats, including production options, costs, and time expectations.

Chapter V, *Making Alternative Formats Part of an Information Dissemination Program*, discusses program considerations when making documents accessible, including converting material in advance versus on request, letting the public know that alternative formats are available, and planning for accessibility when creating new materials.

Chapter VI, *Frequently Asked Questions*, presents answers to general questions and concerns about converting materials into alternative formats.

Chapter VII, *Sources of Additional Information*, provides names and addresses of key organizations that serve persons with disabilities. These sources may be helpful for further consultation and advice regarding producing or promoting materials in alternative formats.

Appendix A, *Making Government Documents and Audio-Visual Presentations Available in Accessible Formats: Interagency Coordinating Council Policy Statement*, consists of the Interagency Disability Coordinating Council's policy statement to assist all Federal agencies in understanding their responsibility under section 504 of the Rehabilitation Act of 1973.

Appendix B, *NIAMS Document Conversion Project: Vendor Comparison*, presents lessons we learned from our experience with the vendors who converted the booklet *What Black Women Should Know About Lupus* into alternative formats.

Appendix C, *Commercial Producers of Accessible Material*, includes vendors for braille transcription and audiorecording services compiled from lists distributed by the Library of Congress and the American Foundation for the Blind.

# C H A P T E R I

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## BACKGROUND — FEDERAL REQUIREMENTS

The U.S. Census Bureau reports that an estimated 49 million, or about 1 in 5, noninstitutionalized Americans have a disability resulting from a variety of physical, mental, and emotional conditions. Of these, 24 million have a severe disability that is measured, among other ways, by being unable to perform what are known as functional activities. These include, among other activities, seeing the words and letters in ordinary newsprint or hearing what is said in normal conversation with another person.

Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) states, in part, that:

*No otherwise qualified individual with a disability in the United States, as defined in Section 706(8) of this title, shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance or under any program or activity conducted by any Executive agency or by the U.S. Postal Service.*

An amendment to the Act in 1992 provides that guidelines for electronic and information technology accessibility will be developed to ensure that individuals with disabilities have access to the same information and data as those who are not disabled, regardless of the type of medium.

Congress also established the Interagency Disability Coordinating Council (IDCC) [formerly, the Interagency Coordinating Council] to help coordinate the activities of various Federal agencies in connection with these requirements. In 1978, the IDCC issued the policy statement, *Making Government Documents and Audio-Visual Presentations Available in Accessible Formats*, that provides guidance to Federal agencies in applying the requirements of the Act to specific programs and activities. To ensure that this policy is followed, the statement lists the following as appropriate steps:

- Establish procedures to ensure that an individual who has a disability has ready access to the agency's programs and activities.
- Provide, on request, necessary auxiliary aids at agency expense.
- Establish procedures to ensure that individuals who need auxiliary aids are informed of the existence of accessible services and how to obtain them.

Available auxiliary aids are listed as computer text readers, brailled materials, audiorecordings, magnification devices, large print, open and closed captions, audio-described films and videos, amplified telephones, telecommunication devices for persons who are deaf (TDD), assistive listening systems, readers for persons with vision impairments, interpreters for persons who are deaf or hard of hearing, and amanuenses for persons with mobility impairments.

The policy statement also discusses the following topics:

- Procedures for determining how to provide materials in accessible formats.
- Agency employees and library patrons.
- Materials provided to the public.
- Choice of format.
- Cost to the agency.
- Burden of proof.
- Notice of available accessible format material.
- Available assistance.

This policy statement is quoted throughout this *Guide*; Appendix A contains the complete text.

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### AUDIENCE PROFILES AND PREFERENCES

Persons with visual or mobility impairments, or who are deaf or hard of hearing, face various problems when trying to access print documents. For those who are blind, a print document is unintelligible unless it has been converted into an oral or tactile presentation. Many persons who are deaf or hard of hearing can read print documents, but obtaining the material through a telephone service equipped with TDD may not be convenient or possible. Persons with severe mobility impairments may find physical access to print documents an insurmountable obstacle.

Print documents can be made accessible to persons with disabilities through large print, braille, audiorecording, and electronic formats. Preferences vary by type and severity of impairment, different communication styles, the type of information, convenience, and other factors. For example, for some persons with low vision, larger type is the answer. For others who are more severely visually impaired, large print causes eye strain, and an audiorecording of the document is required. Even for the same degree of impairment (such as blindness), communication styles can vary. For example, among persons who are blind, only 10 percent read braille. Moreover, preference for braille also depends on the type of information. In comparison with audiorecorded material, braille is most useful for information that is complex or will be referred to repeatedly.

Knowing what alternative formats are preferred and why, is therefore critical to making documents accessible in effective formats for persons with disabilities. According to the IDCC policy statement:

*When an agency is preparing accessible format publications for a potentially large distribution, . . . it should select the format that is likely to be useable by the largest number of people.*

This chapter provides a brief summary of how persons with disabilities access print documentation. Included on page 10 is a chart showing the pros and cons of each format from the user's perspective.

## **Computer Adaptive Technologies for Persons Who Are Visually Impaired**

The following information is extracted from a factsheet distributed by the American Foundation for the Blind.

**Synthesized Speech.** Systems for synthesized speech are text-to-speech systems comprised of a synthesizer that does the speaking and a screen access program that tells the synthesizer what to say. Their programming includes all the phonemes and grammatical rules of a language, allowing them to pronounce words correctly. However, names and compound words can cause problems, as they often contain unusual spellings and letter combinations.

**Braille Display Technology.** Braille display technology operates by raising and lowering different combinations of pins electronically to produce in braille what appears on a portion of the computer screen. The braille display sits on the user's desk, often underneath the computer keyboard. These devices show up to 80 characters from the screen and are refreshable; they change continuously as the user moves around on the screen. The advantages of the braille display in comparison with synthetic speech are in its direct access to information; the ability to check format, spacing, and spelling; and the fact that it is quiet.

**Magnification.** Two types of assistive technology products can be used by blind and visually impaired persons who need to magnify the information displayed on the computer screen. Software systems reside in the computer and will magnify most commercial applications. Any portion of the screen can be viewed by scrolling up, down, or across. The most basic of the software magnification systems limit magnification levels and will only magnify text-based information; the more sophisticated ones provide a choice of magnification between 2X and 16X and add graphics. Most magnification systems redraw characters to form more readable "rounded" or "squared" fonts, eliminating the "stair-step" appearance of standard computer-generated fonts. Some also create thinner than usual elements for each character or leave more space between characters or lines without changing the actual magnification.

**Optical Character Recognition (OCR) Systems.** OCR technology offers blind and visually impaired persons the capacity to scan printed text and then say it back in synthetic speech or save it to a computer. Little technology exists to interpret graphics such as line art, photographs, and graphs into a medium easily accessible to blind and visually impaired persons. It is also not yet possible to convert handwriting, whether script or block printing, into an accessible medium.

## **Persons With Visual Impairments**

Visual impairment ranges from individuals with low vision to total blindness. Even when wearing corrective lenses, 8.1 million people have difficulty seeing words or letters in ordinary newsprint, and of those, 1.6 million are unable to see words or letters at all, according to the U.S. Census Bureau. Depending on the severity of impaired vision, persons may access information through:

- Large print.
- Braille.
- Audiotape.
- Electronic text.

Large print is preferable among users who have some level of vision, even if it is very low. However, long documents in large print can be difficult for some people due to eye strain. Another alternative, the audiorecording, is a popular format because it is easy to access and convenient to store. Braille is a useful format for information that is complex or will be referred to repeatedly. However, among the population of individuals who are blind, only 10 percent read braille.

Persons with visual impairments are more frequently accessing information on diskette or through online information resources such as an electronic bulletin board. Materials distributed in computerized American Standard Code for Information Interchange (ASCII) format can be automatically converted into synthesized speech, enlarged text, or braille display by using the adaptive technologies described on page 6. However, these technologies can only access character-based systems. Materials with graphics or images that are accessed on graphical user interface (GUI), or point-and-click systems, cannot be read by braille or voice synthesizer devices. This means that materials distributed electronically for access by persons with visual impairments must first be edited to convert images, graphics, and other special features to text.

## **Persons With Mobility Impairments**

Persons with mobility impairments often find it difficult or impossible to access print documents. Depending on the severity of impairment, persons may access information by using:

- Page turners.
- Electronic text.
- Audiotape.

Assistive devices such as page turners can be helpful. However, although there are many different page turner designs, publications have so many variables, such as paper opacity or thickness, that page turners often do not work well and have largely become obsolete. Because of innovative solutions in computer-assisted technology, persons with limited mobility can access documents on diskette, E-Mail, electronic bulletin boards, and other electronic resources. For example, individuals with motor disabilities can use voice-recognition hardware or adaptive keyboard designs with

assistive input devices. Those who cannot use their arms can type with a stick in their mouth or use oral commands to direct the computer. Persons with extreme disabilities who cannot use any of their limbs and face muscles may be unable to speak or hit a switch. But, there are computer devices that will type words based on eye movements. Therefore, providing documents in electronic format can greatly facilitate information accessibility for those who are physically disabled and computer equipped.

Audiotape, though offering less flexibility for document access than computers, is still a useful option. If users can operate a tape recorder or have adaptive equipment, a document that is impossible to use in printed form becomes fully accessible in recorded format.

## **Persons Who Are Deaf or Hard of Hearing**

Hearing losses range from mild (e.g., having difficulty hearing soft sounds) to profound deafness. According to the National Institute on Deafness and Other Communication Disorders (NIDCD), approximately 2 million people are profoundly deaf, and more than one-third of the U.S. population has a significant hearing impairment by age 65. Persons who are deaf or hard of hearing use a variety of communication modes, depending on the severity of the hearing loss, the age when the impairment occurred, and what kinds of communication skills were emphasized. For example, the majority of people with hearing loss are hard of hearing and rely in varying degrees on their hearing for communication. However, persons who are deaf depend more on visual methods and symbol systems for communication such as:

- American Sign Language (ASL), which has its own grammar and syntax, usually with fingerspelling.
- Manually coded English that combines fingerspelling and sign language systems.
- Lip reading, which some individuals use without additional manual communication.

Some persons who regularly use sign language rather than English as their first language may have difficulty comprehending print materials in English. When prelingually deaf children are deprived of the natural language experience provided by either English or ASL, their reading skills develop more slowly than those of hearing children. Some may not attain the same level of word reading fluency as their peers, leaving school with a reading level between the third and eighth grade.

The majority of persons who are deaf or hard of hearing have functional English-language skills and find print materials fully accessible. However, the way in which materials are made available is important. Persons who are deaf or hard of hearing may be reluctant to use a telephone service, such as a clearinghouse, even with TDD access. Online communications networks offer deaf or hard of hearing individuals a major advantage for obtaining materials. Users can plug into the world of electronic access

that is open to anyone and can interactively communicate and download information without needing to go through special channels. For example many electronic bulletin boards are accessible by using the newer TDD's with an ASCII option or using PC-based, TDD-compatible modems. This may be of considerable benefit to computer-equipped individuals who are deaf or hard of hearing in communicating with NIH clearinghouses and information centers.

In the area of multimedia, computer systems are becoming less accessible to persons who are deaf or hard of hearing. Multimedia products often remove visual material in favor of audio-only presentations. Without captions, persons who rely on vision rather than audition are unable to access the information.

### Alternative Formats: Audience Pros and Cons

Impairment	Format	Pros	Cons
Visual	Large Print	<ul style="list-style-type: none"> <li>● Provides access for many persons with low vision.</li> </ul>	<ul style="list-style-type: none"> <li>● Long documents may cause eye strain in the severely impaired.</li> <li>● Long documents may be bulky.</li> </ul>
	Braille	<ul style="list-style-type: none"> <li>● Good for complex information, short reference materials (less than 10 pages), and for information that is referred to repeatedly such as meeting agendas.</li> </ul>	<ul style="list-style-type: none"> <li>● Only 10 percent of individuals who are blind read braille.</li> <li>● Documents in braille are bulky and heavy.</li> </ul>
Visual and Mobility	Audiorecording	<ul style="list-style-type: none"> <li>● Popular format that can be accessed and stored easily and conveniently.</li> <li>● Eliminates the need to manipulate a publication.</li> </ul>	<ul style="list-style-type: none"> <li>● If materials are long or complex, audiorecordings present the information in one dimension that is difficult to reread, scan, or use as a reference source.</li> <li>● Audiotapes do not always illuminate word spelling or format of the text.</li> </ul>
	Electronic	<ul style="list-style-type: none"> <li>● Users can access text on diskette or through online resources, using adaptive devices such as braille display, speech output, braille printing, large-screen magnification, or adaptive keyboard designs. TDD's with an ASCII option or PC-based, TDD-compatible modems allow users to communicate electronically with an information center or bulletin board system, reducing the dependence on voice-only telecommunications.</li> <li>● Easy and compact storage.</li> </ul>	<ul style="list-style-type: none"> <li>● Users must have access to a computer, be equipped with a modem (for online resources), and have adaptive devices.</li> <li>● Many software interfaces are graphically based or use point-and-click menus for accessing the information. Braille translation software, speech output devices, and PC-based, TDD's cannot access this type of information.</li> </ul>

## C H A P T E R I I I

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### PRODUCTION TIPS AND GUIDELINES

This chapter provides tips and guidelines for converting materials into the following formats:

- Large print.
- Braille.
- Audiorecording.
- Electronic.

The information is based on interviews with producers of alternative formats, discussions with national organizations that serve persons with disabilities, and our experience converting the brochure *What Black Women Should Know About Lupus* into large print, braille, audiorecording, and electronic formatted diskette.



## TIPS FOR CONVERTING DOCUMENTS INTO LARGE PRINT

### ***Step One: Prepare the Text***

- Text revisions should be unnecessary when converting publications into large print.
- Prepare an electronic version of the document on computer diskette using common word processing software so that it can be imported into a desktop publishing program.
  - A vendor will charge less to convert materials from disk rather than hard copy. If you submit only the print copy, the vendor must scan or key in the document.

### ***Step Two: Submit a Print and Disk Copy of the Publication for Redesktopping***

- When submitting a publication for conversion into large print, first discuss the specifications with the vendor and then confirm with a cover letter that documents the decisions and assumptions made.
- Point size, leading, font, page size, use of illustrations, margins, paper stock, color, and binding will affect the readability of a large print document.
  - Generally accepted guidelines for large print format specifications appear on page 13.
- Always request a proof copy before the material is printed.

### ***Step Three: Review a Draft Copy***

- Even if converted from an electronic file, the document needs to be carefully proofread. When files are electronically imported, computer errors such as merged words or inappropriate font changes occasionally occur.

### **Sample of Large Print Format**

.....

This sample is Helvetica 18-point type; line spacing is 1.25; upper/lower case; text is justified only at left margin for uniform spacing across lines. Dot leaders make tabular/columnar material easier to read.

Chapter 3 ..... Page 25

XYZ Center. .... 202-123-4567

## **Guidelines** FOR LARGE PRINT PUBLICATIONS

The following guidelines were compiled from several sources, including the Department of Justice and national organizations for the visually impaired in the United States and Canada.

**Type Size** The size of type affects readability. The unit of type size is called a point. The American point is about 1/72 inch in height, making a 12-point letter about 1/6 inch in height. Accessible type sizes (ranging from 14- to 64-point type) depend on the severity of visual impairment.

- Use 18-point type for universal access, even though many persons with visual impairment can read 14- to 16-point type.

**Typeface** There are many typefaces or styles; some are more readable than others. Here are some recommendations for type that is easily readable by visually impaired persons.

- Use clear and readable fonts that use the largest amount of available space for the character. Examples of acceptable fonts include Dutch/Times Roman or Helvetica/Swiss.
- Avoid italics, fine, or fancy typefaces.
- Select sans serif for 14 point and larger text as well as for captions, headings, and reversals.
- Use uppercase and lowercase letters, except for headings or titles, which can be uppercase.
- Avoid using very thick, bold typefaces. Regular bold typefaces are acceptable.

**Line Leading** Line leading is the space between lines of type, which helps the eye scan to the end of a line and return to the beginning of the next line. Leading should be 25 to 30 percent greater than the point size in the selected font. For example, for 18-point type size, leading should be 22 through 24 point.

**Formatting**

- Start paragraphs with an indent for the first line of the paragraph or an extra space between paragraphs if block style is used.
- Begin all text at the left margin. Do not center text; it could be difficult to track.
- Use proportional spacing; adjustments between letters eliminate unnecessary white spaces and allow extra space for wider letters.
- Avoid hyphenation; it breaks up words, thus requiring the reader to remember the last syllable on the previous line and to refocus on the remaining word part on the next line.
- Avoid text columns, as in a newspaper format.

- Use dot leaders for tabular material, and minimize the space between the columns.
- Avoid wrapping text around a figure or a photograph. Wrapping decreases readability by producing different line widths and irregular right and left margins.

### ***Contrast and Color***

- Provide maximum brightness contrast between the print and background to increase readability. According to the Lighthouse Research Institute, there is some evidence that “light (white or light yellow) letters on a dark (black) background are more readable than dark letters on a light background. However, the traditional dark on light may be aesthetically preferable.”
- Avoid using two shades of the same color. According to the Lighthouse Research Institute, “very high contrasts are difficult to achieve with color combinations other than black and white. Thus, printed material generally is most readable in black and white. Different colors may be important for aesthetic or other reasons; but it is better to use such combinations only for larger or highlighted text, such as headlines and titles.”

### ***Paper***

- Avoid white paper that produces too much glare; use nonglossy paper in cream or natural whites (not ivory). For example, the State of Texas produces school textbooks in large print on Nekossa Natural 60 or 70 lb. stock.
- Choose paper not larger than 8 1/2 x 11 inches; with 1 inch margins, lines will be 6 inches long. Longer lines will not track well for individuals who must use a magnifier.
- Avoid dark-colored paper and shades of red.
- Consider producing double-sided documents (if print does not bleed through), which will produce a less bulky publication.
- Consider the fact that one page of print (11-point type) equals approximately 3 pages of large print (18-point type), depending on the density of the text on the page.

### ***Binding***

Use spiral or GBC coil binding. This will permit the document to lie flat and will facilitate tracking text with a magnifier.

### ***Graphics***

Include graphics from the original publication, even though they use extra space.



## TIPS FOR CONVERTING DOCUMENTS INTO BRAILLE

### ***Step One: Prepare the Text***

Before converting documents into braille, the text may need some revision or markup.

- Script and incorporate into the text any graphics or illustrations that are important to the meaning of the document. This must be done because braille translation software cannot read graphics, illustrations, special symbols, or tables.
  - Some vendors can provide tactile reproductions of graphics, although this will be expensive.
- Mark the document for pages or chapters that should begin on the right-hand page.
  - In general, braille documents are not formatted so that new chapters begin on odd pages. However, if there are pages to be used separately such as a reader's checklist to tear out and take to the doctor, mark it for placement on the right-hand page.
- To avoid time delays, extra charges, and possible errors, take the time to convert publications into WordPerfect or ASCII.
  - If the publication is not submitted to the transcription service on disk, the vendor will convert the publication to an electronic file by either scanning or typing the text.

### ***Step Two: Submit a Print and Disk Copy for Transcription***

When submitting material for braille transcription, include a cover letter that documents the decisions and assumptions made about service and product specifications. Also, always request that the braille edition be manually proofread. Manual proofreading is required for quality transcription, even when using computerized braille translation software.

The following specifications will affect the quality of the product and should be discussed and clarified with the vendor:

- **Braille Code Standards.**
  - The transcription service should follow nationally recognized braille code standards such as those used by the Library of Congress, National Library Service (NLS) for the Blind and Physically Handicapped. Braille code standards for materials produced by the NLS are in conformance with the applicable codes set forth by the Braille Authority of North America (BANA).

- **Cover Page.**
  - Specify that the cover page should be printed in ink as well as braille with the title, author, and the date of the publication so that the document can be identified for storage and distribution.
- **Printing.**
  - Interpoint printing produces braille dots on both sides of a page, reducing the total bulk of the document.
- **Other Format, Paper, and Binding Specifications.**
  - See braille document guidelines on page 17.

***Step Three:  
Have a Draft Copy  
Reviewed by a  
Qualified Braille  
Reader***

- When you receive the final draft in braille, review obvious features such as the binding and the cover title.
- Arrange for someone who is blind and reads braille to proofread the document.

## **Guidelines** FOR BRAILLE DOCUMENTS

- Format**
- Consider using Grade II type braille, which is commonly preferred to Grade I. Grade I braille translates printed English text letter-for-letter into a six-dot braille character. Special braille characters are used to indicate capitalization and numbers. Grade II, a shorthand version of Grade I, uses contractions for commonly used letter combinations such “tion” or “th.” Braille readers like using Grade II because they can read it faster, and it takes up less space.
  - Avoid page number notations that indicate pages from the printed version. These numbers are distracting to the braille reader, except when the publication is used in an instructional setting and page numbers are referred to from the printed document (e.g., using a textbook with the instructor referring to the print version).
  - Avoid underlining in braille, which can be more distracting than helpful. To emphasize information, indenting or centering the text is more effective than underlining. For example, headings should be indented or centered, not underlined. However, underlining may be used to represent italics.
  - Avoid white space, which is ineffective in braille. Proper braille paragraphing means including blank lines only where necessary.
- Paper**
- The standard size for braille paper is 11 by 11 1/2 inches. However, publications in braille that are 8 1/2 by 11 inches are preferred because they are easier to store and to handle.
  - Standard braille paper is heavy in weight and typically has only 24 lines per page per 40 cells, or characters, per line.  
—One page of printed text roughly converts to 2-1/2 to 3 pages of Grade II braille.
  - Heavy stock paper should be used only if the document will be bound.
- Binding**
- Binding is recommended for braille documents that are 10 pages and longer, or use interpoint (double-sided) printing.
  - GBC coil binding is recommended, as it allows the publication to lie flat.



## TIPS FOR CONVERTING DOCUMENTS INTO AUDIORECORDINGS

### ***Step One: Prepare the Text***

Converting materials into audiorecordings almost always requires some advance time to revise the text for a listener rather than a reader. The way a publication sounds will be different than how it reads. Attention to detail will favorably affect whether the listener will understand your message.

Do not depend on the recording studio to adapt the text for a recording. If asked they will do so, but there will be an extra charge, and additional time will be needed to review the changes before the final recording is made.

Here are some suggestions for revising text for a listener:

- Provide written descriptions for any graphics that are important to the meaning of the text.
- Revise instructions requiring reading (e.g., “See the back of the brochure for a list of questions to ask your doctor” should be restated as “At the end of this recording, there will be a list of questions to ask your doctor”).
- Describe the publication at the beginning of the recording (e.g., “This recording is of a brochure that is in a question-and-answer format”).
- Add a final statement to let the listener know when the recording of the publication ends.
- Spell out acronyms (e.g., National Institutes of Health rather than NIH).

### ***Step Two: Submit One Print Copy of the Publication for Recording***

Before submitting material for recording, clarify with the vendor the following considerations about service and product specifications. Follow up with a letter to document the decisions; include expectations regarding vendor responsibility for correcting vendor errors.

- **Narrator.**
  - The narrator should be familiar with medical terminology or drug names, if appropriate.
  - If the publication is targeted to a special population, ask about the availability of a narrator appropriate for the audience.

- **Narration.**

- The narrator should spell difficult words, words of foreign origin, and ordering information (i.e., street and city names).
- The table of contents should be narrated as written. For single publications that are long enough to use multiple tapes, record the entire table of contents for the whole publication on the first tape and the specific contents of each tape at the beginning of subsequent tapes.

- **Multiple-Side Recordings.**

- Request that the narrator identify each side number, the document title, and the range of pages being read.

- **Tape Mastering.**

- A master tape can be made using reel to reel or cassette. Request reel-to-reel because it produces better quality copies.

- **Packaging.**

- Not all recording studios provide cassette size mailing boxes; therefore, be sure to check.
- For mailing, request soft plastic cases, which are more durable than hard plastic.

- **Cassette Labels.**

- Cassettes should be labeled with the publication title using large print, preferably overprinted with Grade II braille.
- For long publications with multiple tapes, each tape should include a label with the title and tape number (e.g., Tape 1 of 2).
- Label size will vary by vendor regarding the character and line limit. Long publication titles may need to be shortened for the braille title. Depending on the vendor, labels could include up to three lines of braille (two above and one below the cassette window) and could be 12 characters wide.
- Braille overprinting is expensive, and it may be cost effective to order labels separately from a vendor that specializes in braille labels.
- Alternatively, a much less expensive option is to print the title in braille and large print on a card that is inserted in the cassette case.

- **Type of Cassette.**

- Two-track cassettes are preferable to four-track, as the user can play them on commercially available tape machines.
- A two- or four-track recording can be remastered into either format if needed for a specific request.

- **Duplicating Services.**

- To be cost effective, consider requesting only a master and one copy and then sending the recording to a professional duplication service.

- **Tape Length.**

- Tape lengths can be cut to fit the length of the recording.

- For short recordings, consider adding another related publication onto the tape.

***Step Three:  
Review a Draft Copy of  
the Audiorecording***

Always request a review copy of the audiorecording. When reviewing the audiorecording, listen only at first. Then, read the publication along with the narrator.

- Watch out for mispronunciation, faltering, and hesitation.
- Inform the vendor about any existing errors or necessary text revision that need to be addressed.

### **Duplication Options**

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Whether the master audiotape will be duplicated by the recording studio or sent to a professional duplication service, the following are some guidelines and comparisons about duplication options:

- **High Speed.**

- Only if needed right away.

- Least expensive.

- Regular users of audiorecordings often prefer to listen at high speed. However, hiss noise increases at high speeds.

- **Digital Bin Loop.**

- Best for mass quantities.

- Digital process is extremely clear.

- Most expensive.

- **Real Time.**

- Use for up to 1,000 copies.

- Will produce the best recording quality. Dubbing is done in real time (duplicated at the same speed as was recorded). Should not get any hiss noise.

- Mid-expensive.



## TIPS FOR CONVERTING DOCUMENTS INTO ELECTRONIC FORMATS

### ***Converting Documents to Diskette***

Persons with mobility impairments who have adapted keyboards can access publications on diskette. Those with visual impairments can access diskettes with computer auxiliary equipment that “read” data aloud or display text in braille. In addition, diskettes offer document access for users with large, magnification devices on their computers. Most of these adaptive technologies, however, must access character-based text, preferably in ASCII format.

#### ***Step One: Convert Material to Electronic Text in ASCII Format***

- Convert printed documents into machine-readable form by scanning the text or having it keyed.
  - If a word-processed file of the text already exists, make sure it corresponds to the printed publication. Last-minute changes in the blueline may not have been updated in the word-processed version.
- Save the electronic file in plain DOS-based ASCII text.
  - Converting word-processed documents to ASCII text can be complicated, depending on the format of the print publication.
  - For helpful hints on converting to ASCII, see page 22.

#### ***Step Two: Reproduce and Package***

- After preparing the text, copy the file onto diskettes for distribution.
  - 3 1/2-inch DOS-formatted diskettes are the most commonly used, but be prepared for requests for 5 1/4-inch diskettes.
  - Cassette duplication can be done by an outside service.
- Label diskettes in large print with title, sponsoring organization, and date.
  - Ideally, diskettes for persons who are visually impaired should be labeled in braille, although the National Library Service for the Blind and Physically Handicapped does not provide diskettes with brailled labels and reports no complaints. The reasons that are given include high cost and the realization that users transfer the diskette file to their personal computer and name the file according to their own file management system.

## Guidelines

# FOR CONVERTING WORD PROCESSED DOCUMENTS INTO ASCII TEXT

Most word processing software can convert documents into ASCII text, sometimes called DOS text. However, do not assume that the conversion will be flawless. Carefully review the final product. Even if the first page looks fine, be sure the entire document is error free.

Guidelines for creating useable ASCII text files include:

- Always make a backup copy of the original document before beginning the conversion process.
- Format the document for 8 1/2 by 11-inch portrait orientation.
- Use Courier typeface, 10 characters per inch.
- Spell out symbols or special characters. For example,  $\alpha$ -interferon should be spelled out as alpha-interferon.
- Delete graphics, columns, boxes, sidebars, and tables and integrate them as text within the document.
  - In some cases, it may be helpful to use reveal codes to go through the document and strip out the control codes.
  - Add text to explain the information that was displayed in graphics. Integrate the text from columns, boxes, sidebars, or tables into the rest of the document.
- Integrate text from mastheads or headers of printed stationery or forms if needed.
- Change page number references within the text to correspond with ASCII page breaks.
- Check scanner-converted text for subtle errors (e.g., “0” instead of “o”).
- Check footnotes that may need to be rekeyed.
- View the document in ASCII by using an ASCII text viewer.
- Use the DOS command “type” to review the document. This gives you a good idea of what the viewer will see when they access the document.

## Converting Documents for Online Access

### Online Resources at NIH

- The NIH Gopher (a hierarchy of information in menu format), managed through the Office of the Deputy Director for the Division of Computer Resources and Technology (DCRT), provides access to information and publications from a number of NIH Institutes. DCRT also maintains and operates a World Wide Web site.
- CancerNet, managed by the National Cancer Institute, has several access points that include the NIH Gopher, an Internet LISTSERV (special interest group mailing list), an Internet file transfer protocol (FTP), and electronic bulletin boards.
- Electronic bulletin boards are operated by several Institutes, including: the Office of Communications in the NIH Office of the Director, National Institute of Dental Research; National Institute on Alcohol Abuse and Alcoholism; National Institute of Mental Health; and the National Heart, Lung, and Blood Institute.
- National Library of Medicine (NLM) distributes many full-text publications and provides other information services through access points, including its World Wide Web servers, the NLM Gopher, an anonymous file transfer protocol site, and telnet.

Persons with visual impairments can access documents in online resources that are character-based systems through computer braille displays, synthesized speech output, large-screen magnification, or voice recognition devices. Persons who are deaf or hard of hearing can use the newer PC-based, TDD-compatible modems for interactive communication on character-based electronic bulletin boards.

At NIII, a variety of platforms provide electronic access to NIH materials. A word of caution is in order, however, because some NIII platforms contain binary graphic/image files. To provide electronic file access to persons with visual or hearing impairments using computer equipment such as braille translators or PC-based, TDD systems, you must upload documents on character-based rather than graphic-based systems.

The NIH Information Center Bulletin Board System, operated by the Office of Communications in the NIH Office of the Director, provides electronic access to NIH publications. It is a character-based system and therefore is a viable option as an alternative format for electronic access by persons with disabilities. The NIH Information Center Bulletin Board System is available to the public through Fedworld and promoted to NIH grantee institutions, major news media, and through the electronic bulletin board online community. The following guidelines apply when preparing documents in electronic files for uploading onto this bulletin board:

- Convert the document into machine-readable form by scanning the text or having it keyed.
  - If the word-processed version of the final document was saved when it was being printed, make sure the electronic version still corresponds to the cleared publication. Any last-minute changes to the document before printing may not have been updated in the word-processed version.
- Save the electronic file in plain DOS-based ASCII text.
  - Converting word-processed documents to ASCII text can be complicated, depending on the format of the print publication.
  - For guidelines on converting to ASCII, see page 22.

# CHAPTER IV

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## LOGISTICS

This chapter discusses production options, cost factors, and turnaround time for converting print materials into alternative formats. The information is based on our specific experience when converting the brochure *What Black Women Should Know About Lupus* into large print, braille, audiorecording, and electronic formats.

### **Production Options**

When planning to make materials available in alternative formats, considerations will include deciding where to have the materials converted. Depending on the format, options include doing it yourself or contracting out, either through your contract staff or by procuring outside services. For listings of commercial producers of accessible material, refer to Appendix C.

#### ***Large Print***

Converting materials into large print may be easily done in-house yourself by using desktop publishing software and the large print guidelines shown on page 13. Some printers specialize in converting materials into large print and are cost effective for large quantities.

#### ***Braille***

Converting materials into braille will necessitate using an outside vendor. Many nonprofit or voluntary organizations that serve persons who are visually impaired provide braille transcription services. Of these, several are geared for large-scale professional quality production, though most provide services for individual or small quantity requests. Some braille transcription services can also convert documents to disk for access by persons with adaptive computer technology such as braille translation software or speech output devices.

#### ***Audiotape***

Commercial recording studios are available.

#### ***Electronic***

Converting print materials for access on disk can easily be done in-house following the specifications listed on page 21.

### **Cost Factors**

Costs for converting documents into alternative formats will depend on several factors such as quantity and turnaround time. Generally, price breaks are given by large-scale organizations for big orders that are not needed on a rush basis. However, small-scale organizations can fill single requests quickly and cost effectively. Refer to Appendix B for a cost and quality comparison of several vendors who converted *What Black Women Should Know About Lupus* into alternative formats.

### ***Large Print Costs***

Few large scale printing houses are well known for their special expertise in printing materials for persons who are visually impaired. In contrast, there are many smaller scale organizations that produce several alternative formats, including large print, braille, and audiotape. However, because they are not equipped for large-scale production, their prices for large quantities quickly escalate.

Factors that have an impact on large print costs include:

- **Setup.**
  - Documents submitted for conversion into large print should already be converted to electronic format to avoid scanning and proofing charges.
- **Number of Copies.**
  - Depending on the size of the publication and the quantity of copies, it may be more cost effective to print rather than photocopy from a desktop master.
- **Required Turnaround Time.**
  - Rush orders will be more expensive.
- **Type Size.**
  - Larger type requires more space and paper.
- **Type of Paper.**
  - House stock paper is less expensive.

### ***Braille Transcription Costs***

There is a significant range in price between braille transcription services depending on the organization and the type of equipment. Smaller organizations can cost effectively provide small quantities by using computer-based braille translation software and auxiliary braille printers. Large operations that use a braille press offer high-speed braille and features such as interpoint (two-sided) braille or tactile reproduction of pictures and graphics. A braille press is most cost effective for large quantities because most of the cost is incurred when setting up the press plates.

Other factors that have an impact on braille transcription costs include:

- **Format of the Original Material.**
  - Transcription is more efficient and less expensive when working from a disk instead of printed copy. There will be scanning or retyping charges if the document is not supplied in electronic format.
- **Length and Complexity of the Document.**
  - Prices are estimated by the number of braille pages, but the price for translation is higher if the document includes complex formatting.

- **Binding.**

- Binding is recommended for documents that are 10 pages and longer or that use interpoint printing.

- **Size of Paper.**

- 8 1/2 by 11-inch paper is preferred over the standard size of 11 1/2 by 13 inches for ease of handling. However, smaller size paper will result in more braille pages, which will affect cost.

- **Title.**

- Always include the title in both braille and type.

### Do It Yourself Braille: What Is Required?

Converting print publications into braille in-house requires:

- Qualified staff who are knowledgeable about braille translation software and can manually proofread and edit brailled documents. No braille translation software exists that can automatically produce a quality transcription. After computerized conversion of the ASCII text into braille, manual adjustment is required so that the document conforms with standardized braille formatting codes.
- Equipment:
  - Braille translation software (such as Duxbury for WordPerfect), which costs about \$500. Computer minimum requirements: IBM 386 or higher; 2 megabytes free hard disk space; 640 K RAM; MS DOS 3.3.
  - Braille printer, which can range from \$1,500 to more than \$60,000, depending on speed and other features. A printer in the \$10,000 to \$20,000 range is adequate for most users.

### **Recording Costs**

The studios contacted for recording *What Black Women Should Know About Lupus* submitted a wide variety of cost estimates. Upon listening to tapes done by several vendors, the quality of recording seemed to directly correspond with cost. The least expensive studios produced disappointing results, and two nationally known studios, although expensive, produced high quality and professional sounding recordings. These studios use professional readers and extensive quality control procedures to ensure satisfactory results.

Factors that have an impact on recording costs include:

- **Quality of the Narrator.**

- Professional readers will cost more but make a noticeable difference.

- **Recording Studio.**

- Commercial recording studios use high-quality equipment and professional recording technicians.

- **Type of Cassette.**
  - Chromc tapes are of better quality and more expensive.
- **Packaging.**
  - Soft, plastic tape boxes are more expensive than hard plastic but are more durable, especially for mailing.
- **Labeling.**
  - Large print labels overprinted with braille are recommended, though expensive. Cost estimates for labeling the audiorecording of *What Black Women Should Know About Lupus* ranged from \$0.75 to \$5 per label.
  - Labeling with large print/braille cards that are inserted in the tape box is less expensive.
- **Duplication.**
  - Recording studios will usually duplicate large quantities, but sub-contracting for duplication services saves costs.
- **Rush Orders.**
  - Rush orders can increase costs significantly.

### Do It Yourself Recordings: What Is Required?

Converting publications into audiorecordings can be done in-house and sent to a professional service for duplication and packaging. Requirements for an in-house recording include:

- A qualified reader who is familiar with medical terminology and comfortable with the subject. The reader should also have good diction and be able to record in a conversational tone and at a conversational pace.
- A staff member to read along silently with the narrator for quality control.
- A technician knowledgeable and skilled in editing an error-free master.
- Professional-level recording studio.

You will find complete instructions on the procedures and techniques necessary to produce high-quality recordings in the *Tape Recording Manual*, 1979 (third edition), produced by the National Braille Association, Inc.

## ***Electronic Formatting Costs***

Converting materials into electronic formats can be done in-house following the guidelines provided on page 21. Factors that have an impact on cost include:

- Scanning or rekeying the document.
- Converting to text features such as special characters, graphics, tables, sidebars, illustrations, special symbols, columns, and boxes.
- Labelling with large print/braille labels, which are expensive.
- **Cost-saving tip:** When having material transcribed into printed braille, also ask the vendor to format the document on disk for access by adaptive technologies. They will do so at a minimal charge.

## **Turnaround Time**

Turnaround time to convert materials into alternative formats varies according to the format and the type of vendor. You will also need to add other time factors such as advance preparation of the document, review cycles, and shipping.

### ***Large Print***

When contracting out for mass quantities of large print, allow 10 to 15 days from large-scale print houses, depending on whether the original document is supplied on disk. Smaller organizations can offer quicker turnaround time for desktopping.

### ***Braille***

Turnaround time for braille will depend on the length and complexity of the document as well as the number of copies required. To transcribe the 12-page brochure *What Black Women Should Know About Lupus*, vendor estimated 10 to 14 days of turnaround time. However, transcribing a 30-page document was estimated at 4 to 6 weeks. There are many services that will provide single requests of braille transcription relatively quickly (see Appendix C for a list of producers that provide individual copies).

### ***Audiorecording***

Audiorecording services can vary greatly in turnaround time. To record the 12-page lupus brochure, turnaround time estimates ranged from 14 days to 6 weeks. Factors include the length and complexity of the document in addition to whether the studio has a backlog of orders but a limited number of narrators.

### ***Electronic***

Most of the time needed to convert materials to disk or upload them onto an electronically available resource, such as an electronic bulletin board, will be upfront preparation of the text and conversion into ASCII. In addition, if the original document is not on disk in its most current version, extra time will be needed to type or scan the document.

## CHAPTER V

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### MAKING ALTERNATIVE FORMATS PART OF AN INFORMATION DISSEMINATION PROGRAM

Making alternative formats available to persons with disabilities adds another level of complexity to information dissemination programs. Developing an overall strategy for making your documents accessible will help with future decisions and coordination. For example, it is important to decide which material in inventory it would make sense to convert into alternative formats in advance of a request. Some of the considerations are cost, storage, turnaround time, and demand. After materials are converted, promotion will be key to ensuring that the alternative formats reach persons who will benefit from them. If possible, it would be ideal to assign specific staff for accessibility efforts — staff who could also stay informed and learn from concurrent efforts within the NIIH community or beyond.

Based on research about alternative formats and the actual experience of converting the brochure *What Black Women Should Know About Lupus* into large print, braille, audiorecording, and electronic formats, the following chapter will address some of the considerations to be faced when making alternative formats part of an information dissemination program.

#### Converting Materials in Advance Versus on Request

It is not practical or cost effective to convert all documents into alternative formats just to have them available if needed. Some materials may be more appropriately converted into alternative formats only on demand.

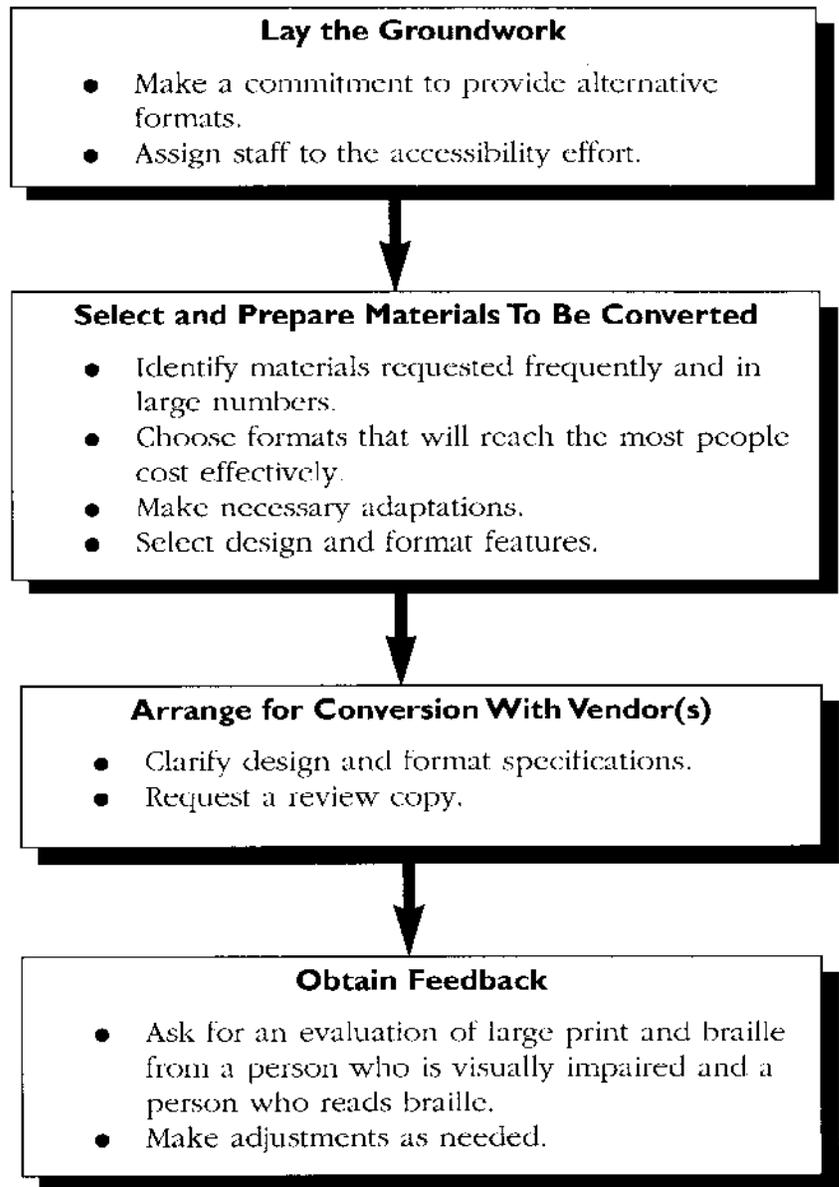
To clarify what the law expects of each agency regarding mass production versus conversion on request, the Interagency Disability Coordinating Council (IDCC) states that:

*Cost factors may properly influence an agency's decision as to whether it will produce all of its public documents in accessible formats prior to receiving requests. Mass production of material that is seldom requested may constitute an unwise allocation of scarce agency resources, and thus there may, on occasion, be good and sufficient reason not to provide a public document in one or another of the accessible formats unless and until it has been requested. . . . If the requested material is not time sensitive and few requests are anticipated, it would appear to be permissible for the agency to produce the material in an accessible format only upon request.*

Deciding which materials to convert into accessible formats in advance of a request will depend on the following considerations:

- Is the material popular and in high demand?
- Is the material time sensitive?

## Converting Materials Into Accessible Formats: A Planning Line



If a publication is in high demand, the need for accessible versions should be anticipated. However, mass producing a given document in every alternative format is not necessary. Choose formats most effective for reaching the greatest number of people. According to the IDCC policy statement (developed in 1978), audiotape is likely to be useable by the largest number of people with visual or mobility impairments. A more recent informal analysis by the Department of Justice reveals that of requests they receive for their documents in accessible formats, requests for information in ASCII text outnumbers those for audiotape. Making a document available in both audiotape and electronic formats may satisfy many requests for alternative formats. But, you must also be prepared to make the publication available in large print or braille if requested.

For publications that are time sensitive but not in high demand, consider producing a master copy of the document in each alternative format for duplication and distribution as needed. This is because the time to convert the document into a given alternative format on request may take longer than the requester finds reasonable, depending on the consequences of a delay for the requester in receiving the information. For example, consider having a vendor transcribe and archive a single, master braille version of a time-sensitive document so that duplicate copies can be ordered when needed. Though the braille vendor will need a few days to print the document using a braille press, at least the document will have been transcribed. Advance transcription is especially recommended if the document will be specifically promoted as available in braille.

## **Promotion**

The public needs to know how to obtain accessible versions of publicly distributed materials. Minimum requirements for listing the availability of alternative formats are spelled out in the IDCC policy statement:

*Material prepared for public distribution should list a contact person for requests of accessible materials. If the telephone number of the contact person is provided, a TDD number should be listed to provide access to persons who have hearing or speech impairments.*

In addition to these minimum requirements, information about obtaining alternative formats should also be promoted specifically to persons with disabilities. Radio reading services, telephone tapes, electronic bulletin boards, and newsletters sponsored by organizations for persons with disabilities may be willing to promote accessible publications or services. For example, NFB NET, a computer bulletin board system operated by the National Federation of the Blind (NFB), offers discussion areas on blindness, among other subjects, and a wide variety of computer files. The electronic bulletin board is provided as a service of the NFB to serve its members and other interested persons. For information about the NFB and other organizations serving persons with disabilities that may be helpful with promotion, refer to Chapter VII, *Sources of Additional Information* on page 39.

Other ways to promote materials in accessible formats include adding a statement about the availability of alternative formats in your program-related materials such as:

- Publications lists.
  - Print.
  - Automated telephone response service (TDD accessible).
- Order forms.
- Brochures.
- Flyers.
- Press releases.
- Public service announcements.
  - Print.
  - Television (close captioned).
- Newsletters.

In addition, because computers are a popular format for communication among persons with disabilities, consider using electronic resources, such as NIH electronic bulletin boards or Gopher servers, to get the word out about materials in accessible formats.

## Using Appropriate Terminology in Promotional Materials

Language to promote the availability of alternative formats should be used with care. Use people-first language in descriptive terminology about people with disabilities, placing the emphasis on the person before the physical characteristic. The following guidelines are excerpted in part from the booklet, *A Way With Words: Guidelines and Appropriate Terminology for the Portrayal of Persons With Disabilities*, produced by the Status of Disabled Persons Secretariat, Department of the Secretary of the State of Canada (1991).

- Use *persons with hearing loss* rather than *hard of hearing people*.
- Use *persons who are deaf or hard of hearing* rather than *persons with hearing impairments*.
- Avoid referring to the *hard of hearing* or the *deaf* or the *disabled*.
- Do not use *disabled* and *handicapped* interchangeably. A *disability* is a functional limitation or restriction of an individual's ability to perform an activity. A *handicap* is an environmental or attitudinal barrier that limits a person's opportunity for full participation. Negative attitudes or inaccessible entrances to buildings are handicaps.
- Avoid words like *suffers from*, *stricken with*, or *afflicted by*. A disability is a condition that does not necessarily cause pain or require medical attention.
- Avoid words such as *burden* or *special*, suggesting that persons with disabilities should be treated differently.

- Use conventional terminology to describe daily living activities that are acceptable. Persons who use wheelchairs go for *walks*, and people with visual impairments *see* what you mean. Persons with disabilities do some things in a different manner, but words to describe the activity need not be different.
- Avoid referring to persons who are not disabled as *normal*. Normal is only acceptable in reference to statistics, for example, *the norm*.
- Use *person with a disability*. Avoid *physically challenged* or *differentabled*.

## **Creating New Materials: Planning for Accessibility**

This *Guide* includes tips and guidelines for converting already existing documents into alternative formats. However, the most cost-effective way to make documents accessible is at the development stage. Ultimately, it would be best to establish procedures under which all materials developed for mass dissemination are simultaneously prepared in the appropriate accessible formats.

This section addresses considerations about document development procedures, format, design, and reading level that will make the original document more easily adaptable into large print, braille, audiorecording, and electronic formats.

### ***Document Development Procedures***

When developing a new publication, think ahead about what will need to be done to make the document accessible. For example, a copy of the document on diskette will be required when converting it to large print, braille, and ASCII formats for electronic access. Therefore, when developing a new document, maintain a tracking system so that an updated master copy on disk will always be available if needed for conversion into these formats.

### ***Print Format and Design***

Many specifications for large print will improve document readability of the original document. Consider incorporating large print guidelines such as large type point size, clear and readable fonts, and maximum contrast. Graphs, symbols, tables, and other features are increasingly common in standard print materials but cannot be accessed with adaptive computer devices that convert text into braille or speech. When planning ahead for conversion into electronic and audiorecordings, keep in mind that text descriptions will need to replace graphics, and sidebars, text boxes, and tables will need to be incorporated into the text.

### ***Reading Level***

To be accessible to audiences who have low-reading levels, materials may need to be adapted for specific language and reading abilities. Some persons who are deaf have English reading abilities between the third and eighth grade levels. This is because persons who are deaf from birth are deprived of the natural language experience of hearing children, who by kindergarten have already well-developed vocabularies and almost total mastery of syntactic structures. When deaf children begin to read, particularly those who have not learned ASL, they may have no comparable linguistic base. As a result, their reading skills develop significantly more slowly than those of hearing children.

When developing new materials, techniques such as using less text, simpler vocabulary, and less complex sentence structure will lower the reading level and present information that is more easily readable and clearly understandable to all audiences.

Although there are no national guidelines for making materials accessible to persons who are deaf and are at a low reading level, several manuals exist that may be helpful.

- *Readable English for Hearing-Impaired Students: Multi-Level Guidelines for Linguistically Controlled Reading Materials* incorporates research findings by the Caption Center (working with the Corporation for Public Broadcasting/WGBH National Center for Accessible Media) about deaf children's English skills. The manual is used not only by educators of persons who are deaf but also by museums, educational clearinghouses, vocational rehabilitation centers, religious educators, public school systems, university and college teacher training programs, and public libraries.
- *How To Write and Caption for Deaf People* includes guidelines and instructional material for not only preparing captioned media but also adapting existing print material or writing original print and media materials for a deaf audience. The manual was written by the National Technical Institute for the Deaf (NTID) [funded by the U.S. Department of Education] as a result of its experience in writing and editing captions for nearly 600 educational projects at the NTID.

# CHAPTER VI

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## FREQUENTLY ASKED QUESTIONS

- Q.** *Why convert materials into alternative formats? We never get calls from persons who have disabilities.*
- A.** Many persons who would benefit from alternative formats are reluctant to ask for them if they are not certain that they are available. Persons with disabilities are being unintentionally excluded because information accessibility issues are not considered in materials development and dissemination. However, by law, Government agencies must provide equal access to their programs or services. Furthermore, as alternative formats are produced and promoted, requests will inevitably be made.
- Q.** *Are persons with disabilities a special population?*
- A.** Persons with visual or physical impairments, or who are deaf or hard of hearing, do not want to be targeted in a special way that singles them out. They are part of the larger audience for which a given material is intended. All materials, whether targeted to specific or general populations, should be equally accessible by persons with alternative information access needs. For example, compiling an abridged version of several educational materials to fit on a single audiotape is not considered equal access to information otherwise distributed as unabridged products.
- Q.** *What's the demand?*
- A.** During background research for this guide, we asked several key organizations for persons with disabilities about the demand for alternative formats, but there was no definitive answer at this time. Knowing that there are 24 million people with severe functional disabilities (according to the U.S. Census Bureau)—that is, 10 percent of the population—should give some idea of the demand for a document in alternative formats, depending on its demand in the general population. Recently, the Smithsonian Institution began distributing guide about access to its facilities for persons with disabilities. The guide is available in large print, braille, and audiorecording and was promoted in the *Washington Post* in December 1994 and the *Los Angeles Times* in March 1995. According to the Smithsonian, from October 1, 1994, to March 31, 1995, they received the following requests for *Smithsonian Access*, by format:

Standard print format:	1,139 requests
Braille:	25
Large print:	49
Audiotape	<u>22</u>
Total:	1,235 requests

**Q. How should I plan on meeting this demand?**

**A.** If a given publication is made widely available to the general population and is in high demand, it is reasonable to expect many requests for it in alternative formats, depending on the extent of the promotion. Publications about health issues that are not specific to persons with disabilities and that apply to a small percentage of the general population will be proportionally less requested in alternative formats. Therefore, for frequently requested publications, begin by converting a reasonable number into large print, audiotape, and diskette formats. In addition, have a single copy transcribed into braille for printing on request as needed.

**Q. Can't I just use the enlarger on my photocopy machine to make large print materials?**

**A.** In large print, point size should be at least 14 point, and enlarging to this size will force the document to lose proportional spacing and layout. The resulting format will be compromised in readability as compared with the original document. For persons with disabilities, documents should not be compromised in quality; rather they are to be as equally accessible as they are in conventional formats.

**Q. How can I store all this?**

**A.** Storage requirements depend on the format. Diskette and audiocassette require the least storage space. To save space and depending on the length of your publication, you may want to consider recording more than one publication per cassette. This will present problems, however, should one of the publications be time sensitive and become outdated before the other.

Large print and brailled materials can require significant storage space. One page of 8 1/2 by 11-inch print takes approximately 3 pages of large print using 18-point type. One page of 8 1/2 by 11-inch print takes 2-1/2 to 3 pages of braille. Braille paper is also heavy, which can produce a bulky document, depending on its length.

For publications that are not in high demand, consider storing only master copies of each alternative format and filling requests on demand as needed.

**Q. This will cost a lot. How do I pay for this?**

**A.** You are not required to sustain prohibitive costs when making your materials available in alternative formats. Cost-saving techniques that can help include planning ahead when developing new materials and incorporating accessible features in the original publication. Similarly, it is most cost effective to produce the alternative formats (or master copies for duplication) at the same time that the original documents are produced.

## CHAPTER VII

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### SOURCES OF ADDITIONAL INFORMATION

The following organizations, listed by populations served, are sources of additional information about document accessibility and other topics relevant to persons with disabilities. Most of these organizations provided information that contributed to the development of *A Guide for Making Print Documents Accessible to Persons With Disabilities*.

#### **Serving Persons With Disabilities**

##### **Disability Statistics Rehabilitation, Research and Training Center**

Institute for Health and Aging  
University of California, San Francisco  
Box 0646, Laurel Heights  
San Francisco, CA 94143-0646  
(415) 502-5210 (Voice/TTY)

The Disability Statistics Rehabilitation, Research and Training Center (RRTC) is a program funded by the U.S. Department of Education's National Institute on Disability and Rehabilitation Research to train individuals and develop statistical information on disability in the United States. The Disability Statistics RRTC Information Service provides statistical information on a wide variety of topics concerning disability in the United States.

##### **National Center for Accessible Media**

CPB/WGBH  
125 Western Avenue  
Boston, MA 02134  
(617) 492-9258 (Voice)

The National Center for Accessible Media, a service of the WGBH Educational Foundation that is partially funded by the Corporation for Public Broadcasting, is dedicated to examining media access issues for underserved consumers such as the deaf, blind, and learning disabled populations.

##### **National Council on Disability**

1331 F Street, N.W.  
Washington, D.C. 20004-1107  
(202) 272-2004 (Voice)  
(202) 272-2074 (TTY)

An independent agency of the Federal Government, the National Council on Disability (NCOD) provides leadership in the development of national disability policy. The NCOD makes recommendations on issues of public policy that affect people with disabilities, regardless of age, disability type, perceived employment potential, perceived economic needs, specific functional ability, status as a veteran, or other individual circumstances.

**National Organization on Disability**

910 16th Street, N.W.  
Washington, D.C. 20006  
(202) 293-5960 (Voice)  
(202) 293-5968 (FDD)

The National Organization on Disability is an information resource on topics relevant to people with disabilities. A nonprofit organization, it promotes the full participation of persons with mental and physical disabilities in all aspects of life.

**National Rehabilitation Information Center**

8455 Colesville Road, Suite 935  
Silver Spring, MD 20910-3319  
(301) 588-9284 (Voice/TDD)  
(800) 346-2742 (Voice/TDD)

Funded through the U.S. Department of Education, the National Rehabilitation Information Center is a research and referral information center dealing with disability rehabilitation and related issues. It disseminates findings of programs funded by the National Institute on Disability and Rehabilitation Research, prepares custom bibliographies, and responds to information requests.

**Trace Research and Development Center**

University of Wisconsin-Madison  
1500 Highland Avenue  
S151 Waisman Center  
Madison, WI 53705-2280  
(608) 262-6966 (Voice)

The Trace Research and Development Center, funded primarily by the U.S. Department of Education, is a research, development, and resource center whose activities range from basic research to information summation and dissemination. Its primary objective is to act as an interface between R&D activities and clinic, classroom, or home-based delivery of service, with a special interest in techniques to provide computer access, portable writing systems, and augmentative communication aids for people with disabilities. It maintains a computerized registry of products enabling people with disabilities to use computers.

**Serving Persons With  
Visual Impairments**

**American Association of the Deaf-Blind**

814 Thayer Avenue  
Silver Spring, MD 20910  
(301) 588 6545 (TTY only)

The American Association of the Deaf-Blind, a national consumer organization, seeks to encourage independent living for deaf-blind individuals. It conducts service programs, advocates interests of members before public policy bodies, and acts as a referral service.

**American Council of the Blind**

1155 15th Street, N.W.  
Washington, D.C. 20005  
(202) 467-5081 (Voice)  
(800) 424-8666 (Voice)

The American Council of the Blind (ACB) is a national consumer and advocacy organization comprised primarily of people who are blind or visually impaired. The ACB strives to strengthen vocational and rehabilitation programs for the blind, ensure that blind people are treated favorably by Federal programs such as the Supplemental Security Income program, and support funding for eye research. The ACB provides information and consultation on legal problems, education and training of visually handicapped individuals, and public education about blindness.

**American Foundation for the Blind**

15 West 16th Street  
New York, NY 10011  
(212) 620-2147 (Voice)

The American Foundation for the Blind (AFB) is a national nonprofit organization that advocates, develops, and provides programs and services to enable persons who are blind or visually impaired to achieve equality of access and opportunity. The AFB develops and sells consumer products, produces talking books, publishes books and videos on blindness, monitors legislative developments, makes referrals, conducts psychosocial research on blindness, promotes improved special education and vocational rehabilitation, and maintains an extensive library. The AFB publishes braille, recorded, large-type, and standard versions of its materials, some of which are available free of charge.

**American Printing House for the Blind, Inc.**

1839 Frankfort Avenue  
P.O. Box 6085  
Louisville, KY 40206-0085  
(502) 895-2405 (Voice)

The American Printing House for the Blind (APH), a nonprofit organization, manufactures materials for people who are blind and visually handicapped. Reading materials include textbooks and magazines in braille and large print. The APH also records books and produces educational tools such as braille writing and embossing equipment, computer software and hardware, educational games, low-vision aids, braille and large-type paper, binders, and notebooks. The APH also sells tape recorders designed to record taped publications.

**Associated Services for the Blind**

919 Walnut Street  
Philadelphia, PA 19107  
(215) 627-0600 (Voice)

The Associated Services for the Blind, a nonprofit organization, helps blind and visually impaired people live independently. Activities include operating a retail store that sells items of special interest to blind and visually impaired individuals and a printing house that transcribes print materials into braille.

**Association of Radio Reading Services**

4202 East Fowler Avenue  
WRB 209  
Tampa, FL 33620  
(813) 974-4193 (Voice)

The Association of Radio Reading Services seeks to provide for the development and exchange of technological advances. Members are radio reading services that provide independently operated closed-circuit radio broadcasts of daily newspapers and additional printed materials for the blind and others incapable of reading for themselves.

**Braille Authority of North America**

1939 Frankfurt Street  
Louisville, KY 40206-0085  
(416) 480-7530 (Voice)

The Braille Authority of North America promotes and facilitates the use, teaching, and production of braille texts and other braille items.

**Cutting Corporation**

4940 Hampden Lane, Suite 300  
Bethesda, MD 20814  
(301) 654 2887 (Voice)

The Cutting Corporation serves a variety of audio needs in the Washington, D.C., area. Among its activities are recording books for the blind, duplicating cassettes, and preserving historical records.

**Metropolitan Washington Ear, Inc.**

35 University Boulevard, East  
Silver Spring, MD 20901  
(301) 681-6636 (Voice)

The Metropolitan Washington Ear, Inc., a nonprofit organization, provides a radio reading service for persons with visual and physical impairments and also trains describers, guides, docents, and writers in the art of audio description.

**National Association of the Deaf**

814 Thayer Avenue  
Silver Spring, MD 20910  
(301) 587-1788 (Voice)  
(301) 587-1789 (TTY)

The mission of the National Association of the Deaf (NAD) is to ensure that a comprehensive, coordinated system of services is accessible to all people with hearing loss in the United States. It serves to improve opportunities for deaf persons in such areas as communication, cultural activities, education, employment, and full citizenship benefits. In addition to publishing textbooks on American Sign Language (ASL) and other systems of manual communication, the NAD also publishes books for deaf children and materials such as note paper and bumper stickers in sign language.

**National Braille Association, Inc.**

3 Townline Circle  
Rochester, NY 14623-2513  
(716) 427-8260 (Voice)

The National Braille Association (NBA), a nonprofit organization, assists transcribers and narrators in the development and improvement of skills and techniques required for the production of reading materials for individuals who are print-handicapped. Direct services to the blind include braille transcription of educational, vocational, and recreational materials. The NBA maintains the Braille Book Bank, which houses and duplicates materials from its braille collections of textbooks, foreign language, mathematics, music, and general interest materials. The Braille Technical Tables Bank provides copies of nearly 500 standard tables used in mathematics, computer science, statistics, chemistry, physics, and finance to transcribers for insertion into new materials and to visually impaired students.

**National Braille Press, Inc.**

88 St. Stephen Street  
Boston, MA 02115  
(617) 266-6160 (Voice)

National Braille Press, Inc. is a nonprofit, private organization that offers printing press services to organizations, including transcription, printing, binding, and distribution of magazines, pamphlets, and books. Services are directed towards the legally blind, deaf-blind, and those so physically disabled that they are unable to read conventional print. In addition, books, magazines, pamphlets, and specially formatted braille are produced and distributed for other agencies and organizations, most notably the Library of Congress' NLS for the Blind and Physically Handicapped.

### **National Eye Health Education Program**

National Eye Institute  
National Institutes of Health  
2020 Vision Place  
Bethesda, MD 20892-3655  
(301) 496-5248 (Voice)  
(800) 869-2020 (For use by health professionals)

The National Eye Institute (NEI) coordinates the National Eye Health Education Program (NEHEP) in partnership with a variety of public and private organizations that plan and implement eye health education programs targeted to a variety of high-risk audiences. The NEHEP focuses on public and professional education programs that encourage early detection and timely treatment of glaucoma and diabetic eye disease. The NEHEP strengthens NEI's commitment to improving public health and preventing unnecessary vision loss.

### **National Federation of the Blind**

1800 Johnson Street  
Baltimore, MD 21230  
(410) 659-9314 (Voice)

The National Federation of the Blind (NFB) is a consumer group that answers questions about blindness, refers people to appropriate resources or adapted equipment, and provides publications lists.

### **National Library Service for the Blind and Physically Handicapped**

Library of Congress  
1291 Taylor Street, N.W.  
Washington, D.C. 20542  
(202) 707-5100 (Voice)  
(800) 424-8567 (Voice)

With the cooperation of authors and publishers who grant permission to use copyrighted works, the Library of Congress' NLS for the Blind and Physically Handicapped selects and produces full-length books and magazines in braille and on recorded disk and cassette. Reading materials are distributed to a cooperating network of regional and subregional (local) libraries where they are circulated to eligible borrowers.

### **Recording For the Blind**

20 Roszel Road  
Princeton, NJ 08540  
(609) 452-0606 (Voice)  
(800) 221-4972 (Book orders only)

Recording For the Blind (RFB) is a nonprofit service organization that provides recorded textbooks, library services, and other educational services to individuals who cannot read regular print because of a visual, perceptual, or physical disability. The Master Tape Library contains more than 75,000 titles circulated to students and professionals at all levels. Newly requested titles are recorded by volunteer experts in the subject fields and then mailed directly to the user.

**Vision Foundation, Inc.**

818 Mt. Auburn Street  
 Watertown, MA 02172  
 (617) 926-4232 (Voice)  
 (800) 852-3029 (Massachusetts only)

Vision Foundation, Inc. is a self-help organization that provides information and referral services, individualized advocacy, a telephone network to share information, and self-help support groups for persons recently blinded or becoming blind. It also distributes materials in large print, braille, and cassette.

**Voice Indexing for the Blind**

7420 Westlake Terrace, #203  
 Bethesda, MD 20817  
 (301) 469-9470 (Voice)

Voice Indexing for the Blind specializes in voice indexing, which allows users to highlight and scan taped materials. It also provides voice-indexed recordings on contract and lectures on how people with blindness or low vision can access printed materials.

**Serving Persons Who  
 Are Deaf or Hard of  
 Hearing**

**American Association of the Deaf-Blind**

814 Thayer Avenue  
 Silver Spring, MD 20910  
 (301) 588-6545 (TTY only)

The American Association of the Deaf-Blind seeks to encourage independent living for deaf-blind individuals. It conducts service programs, advocates interests of members before public policy bodies, and acts as a referral service.

**American Deafness and Rehabilitation Association**

P.O. Box 251554  
 Little Rock, AR 72225  
 (501) 868-8850 (Voice/TTY)

The American Deafness and Rehabilitation Association (ADRA) is a partnership of national organizations, local affiliates, professional sections, and individual members that actively seeks to enhance the quality of human services provided to persons who are deaf or hard of hearing. The ADRA also produces educational materials and provides training and other information services to professionals who serve the community of persons who are deaf.

**American Speech-Language-Hearing Association**

10801 Rockville Pike  
Rockville, MD 20852  
(301) 897-5700 (Voice/TDD)  
(800) 638-8255 (Helpline: Voice/TDD)

The American Speech-Language-Hearing Association, a professional association for speech-language pathologists and audiologists, acts as an accrediting agency for programs and a certifying body for professionals providing speech, language, and hearing therapy to the public. It also conducts research on communication disorders and community needs and has a computerized database and electronic publishing component.

**Deafness and Communicative Disorders Branch**

Rehabilitation Services Administration  
Office of Special Education and Rehabilitative Services  
U.S. Department of Education  
330 C Street, S.W., Room 3228  
Washington, D.C. 20202-2736  
(202) 205-9152 (Voice)  
(202) 205-8352 (TTY)

The Deafness and Communicative Disorders Branch of the U.S. Department of Education's Rehabilitation Services Administration (RSA) promotes improved and expanded rehabilitation services for deaf and hard of hearing people and individuals with speech or language impairments. It also provides technical assistance to RSA staff, state rehabilitation agencies, other public and private agencies, and individuals.

**National Information Center on Deafness**

Gallaudet University  
800 Florida Avenue, N.E.  
Washington, D.C. 20002-3695  
(202) 651-5051 (Voice)  
(202) 651-5052 (TTY)

The National Information Center on Deafness (NICD) serves as a centralized source of information on topics dealing with deafness and hearing loss. The NICD collects, develops, and disseminates information about all aspects of hearing loss and services offered to deaf and hard of hearing people.

**National Institute on Deafness and Other Communication Disorder  
Information Clearinghouse**

National Institute on Deafness and Other Communication Disorders  
National Institutes of Health  
1 Communication Avenue  
Bethesda, MD 20892-3456  
(800) 241-1044 (Voice)  
(800) 241-1055 (TDD/TTY)

The National Institute on Deafness and Other Communication Disorders (NIDCD), one of the components of the NIH, disseminates information and resources on normal and disordered processes of human communication through the NIDCD Information Clearinghouse. The Clearinghouse is a national resource center for information about hearing, balance, smell, taste, voice, speech, and language for health professionals, patients, people in the industry, and the public. The Clearinghouse provides an information service, materials development and distribution, and a computerized database.

**Rehabilitation Research Training Center on Traditionally  
Underserved Persons Who Are Deaf**

Northern Illinois University  
Department of Communicative Disorders  
DeKalb, IL 60115  
(815) 753-6514 (Voice)

Funded by the U.S. Department of Education's RSA, the Rehabilitation Research Training Center provides research and training on traditionally underserved persons who are deaf. The Center conducts research, resource development training, technical interventions, and service provider interventions.

**Self Help for Hard of Hearing People**

7910 Woodmont Avenue, Suite 1200  
Bethesda, MD 20814  
(301) 657-2248 (Voice)

Self Help for Hard of Hearing People is a volunteer organization that educates members and the public about the nature, causes, and complications of hearing loss and instructs them in its detection, management, and possible prevention. It operates an Assistive Devices Demonstration Center and develops public and professional acceptance of the needs and values of hard of hearing people and encourages them to seek alternative communication skills.

## LIST OF SELECTED RESOURCES FOR FURTHER INFORMATION

American Association for the Advancement of Science. *Barrier-Free in Brief: Access in Word and Deed*. Washington, DC: American Association for the Advancement of Science, 1991. AAAS Publication #91-288. 52 p.

Arditi, A. *Print Legibility and Partial Sight: Guidelines for Designing Legible Text*. New York, NY: Lighthouse Inc., 1994. 8-panel brochure.

Decker, N., et al. *Readable English for Hearing-Impaired Students*. Boston: The Caption Center/WGBH-TV, 1980. 95 p.

Department of the Secretary of State of Canada. Status of Disabled Persons Secretariat. *A Way With Words: Guidelines and Appropriate Terminology for the Portrayal of Persons With Disabilities*. Ottawa, Ontario: Status of Disabled Persons Secretariat, 1991. 13 p.

Environment Canada Parks Service. *Access Series: Design Guidelines for Media Accessibility*. Ottawa, Ontario: Minister of Supply and Services, 1993. 48 p.

Long, N.M. *Report of the Northern Illinois University Research and Training Center on Traditionally Underserved Persons Who Are Deaf Regarding Adaptations of FEOC Produced ADA Materials*. DeKalb, IL: Northern Illinois University, April 1992. 12 p.

National Braille Association, Inc. *Tape Recording Manual*. Third edition. Midland Park, NJ: National Braille Association, Inc., 1979. 68 p.

National Braille Press. *Individual Braille Transcription Services 1994*. Boston: National Braille Press, 1994. 25 p.

National Library Service for the Blind and Physically Handicapped. *Braille Books and Pamphlets*. Washington, DC: Library of Congress, 1991. 178 p.

Texas Commission for the Blind. *The Duxbury Braille Translator for WordPerfect (DUXWP)*. Austin, TX: Texas Commission for the Blind. 133 p.

U.S. Department of Commerce, Bureau of the Census. *Statistical Brief: Americans With Disabilities*. Washington, DC: U.S. Department of Commerce, January 1994. 1 p. SB/94-1.

U.S. Department of Education, National Institute on Disability and Rehabilitation Research. "Fact Sheet 2: Providing Effective Communication." *The Americans with Disabilities Act Fact Sheet Series*, October 26, 1992. 8 p.

Verlinde, R., Schragle, P. *How to Write and Caption for Deaf People*. Silver Spring, MD: T.J. Publishers, Inc., 1986. 28 p.

# **Appendix A**

**Making Government Documents  
and Audio-Visual Presentations  
Available in Accessible Formats**

**Interagency Coordinating Council  
Policy Statement**

# MAKING GOVERNMENT DOCUMENTS AND AUDIO-VISUAL PRESENTATIONS AVAILABLE IN ACCESSIBLE FORMATS

## INTERAGENCY COORDINATING COUNCIL POLICY STATEMENT

### Background

The Interagency Coordinating Council (the Council)<sup>1</sup> is issuing this policy statement to assist all Federal agencies in understanding their responsibility under section 504 of the Rehabilitation Act of 1973, to make Government documents and audio-visual material available in accessible formats for people who are unable to use conventionally printed or filmed material.

Section 504 forbids Federal agencies to deny persons with disabilities access to programs and activities. By Federal regulations, each agency is to provide material to disabled persons in an accessible format if the material would ordinarily be made available to other individuals in printed or audio-visual forms, *see, e.g.*, 28 C.F.R. § 39.160 (DOJ regulation implementing section 504 as it applies to federally conducted programs),<sup>2</sup> unless the agency can demonstrate that providing the material in an accessible format would constitute a fundamental alteration in the agency's program or would require the agency to undertake undue financial and administrative burdens. 28 C.F.R. § 39.160(d).<sup>3</sup> *See also Southeastern Community College v. Davis*, 442 U.S. 397 (1979). It is the purpose of this policy statement to provide guidance to Federal agencies seeking to apply the requirements of the regulation to specific programs and activities that they administer.

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<sup>1</sup> The Interagency Coordinating Council was established by the Rehabilitation, Comprehensive Services, and Developmental Disabilities Amendments of 1978 (Pub. L. 95-602, § 120(a); 29 U.S.C. § 794c) to "promote efficiency . . . and eliminate . . . inconsistencies among the operations . . . of the various departments . . . of the Federal Government responsible for the implementation and enforcement of [title V of the Rehabilitation Act]."

The eight Federal agencies represented on the Council are the Departments of Justice, Labor, Education, Health and Human Services, and the Interior; the Equal Employment Opportunity Commission; the Office of Personnel Management; and the Architectural and Transportation Barriers Compliance Board. The Department of Justice, which chairs the Council, has government-wide coordination authority for section 504 of the Rehabilitation Act pursuant to Executive Order 12,250 (45 Fed. Reg. 72995, 3 C.F.R., 1980 Comp., p. 298).

<sup>2</sup> *See, also*, 36 C.F.R. § 1154.160 (Architectural and Transportation Barriers Compliance Board); 43 C.F.R. § 17.560 (Department of the Interior); 29 C.F.R. § 33.11 (Department of Labor); 16 C.F.R. § 6.160 (Federal Trade Commission); 22 C.F.R. § 144.160 (Department of State); 10 C.F.R. § 1041.10 (Department of Energy); and 29 C.F.R. § 1615.160 (Equal Employment Opportunity Commission).

<sup>3</sup> *See, also*, 36 C.F.R. § 1154.160(e) (Architectural and Transportation Barriers Compliance Board); 43 C.F.R. § 17.560(d) (Department of the Interior); 29 C.F.R. § 33.11(e) (Department of Labor); 16 C.F.R. § 5.160(d) (Federal Trade Commission); 22 C.F.R. § 144.160(d) (Department of State); 10 C.F.R. § 1041.160(d) (Department of Energy); and 29 C.F.R. § 1615.160(d) (Equal Employment Opportunity Commission).

## **Policy Statement**

Each agency has a responsibility, pursuant to section 504 of the Rehabilitation Act, as amended, to communicate fully and effectively with employees, applicants, program participants, personnel of other federal entities, and members of the public who have disabilities. Federal regulations implementing section 504 require each agency to take appropriate steps to ensure that this policy is served. *See, e.g.*, 28 C.F.R. §§ 39.160(a)(1) and 39.160(b). Such steps include (1) establishing auxiliary aids procedures to ensure that an individual who has a disability has ready access to the agency's programs and activities; (2) providing on request necessary auxiliary aids at agency expense; and (3) establishing procedures to ensure that individuals who need auxiliary aids are informed of the existence of accessible services and how to obtain them.

Historically, agency personnel have not been apprised of these responsibilities. All staff should be apprised of their responsibilities once a year, at a minimum.

## **Available Auxiliary Aids**

Available auxiliary aids include computer text readers, brailled materials, audio recordings, magnification devices, large print formats, open and closed captioning, closed caption decoders, audio described films and videos, amplified telephones, TDD's (telecommunication devices for the deaf), and assistive listening systems. Agencies may also assign agency personnel or contract employees to provide assistance as readers for persons with vision impairments, interpreters for persons with hearing impairments, or amanuenses for persons with mobility impairments, or to provide other assistance needed by persons with disabilities.

The regulations implementing section 504 provide that, when an agency is providing materials in an accessible format for a specific individual, it must determine which format is most suited to the needs of that individual. When an agency is preparing accessible format publications for a potentially large distribution, *e.g.*, a pamphlet explaining Social Security program benefits, it should select the format that is likely to be usable by the largest number of people. At this time, these formats are audio tape for persons with vision impairments or other disabilities that prevent the use of conventionally printed material and open captioned video tape for persons with hearing impairments or other disabilities that prevent the use of uncaptioned videos. Agencies should be aware that preparation of materials in one accessible format, such as audio tape, may not eliminate the need for the agency to also produce the material in a different accessible format, such as braille, in response to a specific request from an individual with a disability; however, it is not necessary to prepare material in all possible accessible formats prior to receiving a request. Material prepared for public distribution should list a contact person for requests of accessible materials. If the telephone number of the contact person is provided, a TDD number should be listed to provide access to persons who have hearing or speech impairments.

## **Procedures for Determining How To Provide Materials in Accessible Formats**

Because of the variations in agency missions and experiences, it is impossible for the Council to provide detailed guidelines that would be uniformly applicable to determinations made by all agencies. Therefore, it is important for each agency to review its current procedures to identify its printed and filmed materials and ascertain which ones, if any, can be routinely made available in accessible formats and which might be made available only upon request. Some agencies routinely produce material that is regularly requested by the public; other agencies may find that their only requests for accessible material arise in specific cases, such as Freedom of Information Act requests or direct contact with program participants.

To satisfy its responsibility under section 504, each agency should identify each category of material that may be subject to access and determine how the material in that category should be made accessible to persons with disabilities. Each agency should identify the specific material that should be put into an accessible format at the time that it is issued or produced. In addition, each agency should be prepared to make available any of its material in accessible formats upon request. Agencies should be aware that it is most cost-effective to have accessible versions of documents or videos that will be distributed to a significant number of people prepared at the time that the material is initially produced.

## **Agency Employees and Library Patrons**

The agency's review should include consideration of materials that may be provided only to an agency employee in the performance of his or her official duties and those that are made available to users of the agency library. Routine procedures should be established to ensure that employees and library users who need auxiliary aids have the services of readers or optical aids that will enable them to have access to printed materials on an equal basis with nondisabled persons. In addition, if taped or filmed material is used by agency employees and library patrons, equipment capable of displaying captioned material should be available.

The Interagency Committee on Employment of Persons with Disabilities issued guidance to Federal agencies on strategies for making documents and video presentations accessible to Federal employees with disabilities. Agency staff should be made aware of this resource.

## **Materials Provided to the Public**

In determining whether specific material (e.g., all regulations or all press releases) should be prepared in an accessible format prior to receiving a specific request, the agency should consider, among other things, the consequences of a delay to the requester. Section 504 requires that individuals with disabilities must be provided an equal opportunity to participate in federally conducted programs and activities. If, for example, the activity in question is the right to comment on a regulation, to apply for a job, or to file a timely tax return, then the agency should undertake to provide the information in an accessible format without delay. If the agency is unable to respond promptly to a request for material in an accessible format, the agency must take steps to ensure that the requester's rights are not prejudiced as the result of agency action. If the requested material is not time sensitive, and few requests are anticipated, it would appear to be permissible for the agency to produce the material in an accessible format only upon request.

If the agency decides that it need not prepare accessible format documents prior to receiving a request, it is necessary for the agency to advise all agency personnel who may receive such requests that persons with disabilities may request materials in accessible formats. Agency personnel should be trained in the procedures to be followed in producing accessible material. The Department of Justice has prepared technical assistance guides for Federal agencies that provide specific information about obtaining audio tapes, brailled or large print documents, and captioned videos. Federal agencies should make their employees aware of these resources.

## Choice of Format

In selecting the appropriate accessible format, agency personnel should be aware that the regulations implementing section 504 call upon the agency to give primary consideration to the use of the format preferred by the individual who is making the request. See 28 C.F.R. § 39.160(a)(1). The agency shall honor that choice unless it can demonstrate that another effective means of communication exists<sup>4</sup> or that the format requested would not be required because it would require a fundamental alteration in the program or would require undue financial and administrative burdens. (See discussion *infra*.) When the agency is selecting a format for distribution of a document or the presentation of a film to a large number of people other than responding to an individual request, it is not necessary to prepare the document or video in all possible accessible formats. It is sufficient to produce the material in the format that may be used by the largest number of people. At this time, these formats are audiotaping for printed material and open-captioning for videos. However, when an agency has a large amount of printed material, such as a library, that is likely to be subject to frequent access requests, but is not easily converted to tape or braille, the purchase of mechanical readers may be the most effective way to ensure that the library's material is readily accessible.

Agencies should be aware that preparation of a document in one accessible format, such as audio tape, may not eliminate the need for the agency to also produce the material in a different accessible format, such as braille, in response to a specific request. However, it is not necessary to prepare material in all possible accessible formats prior to receiving a request.

## Cost to the Agency

Section 504 contemplates that each agency will bear the cost of making its documents available in accessible formats, but it does not require the agency to undertake undue financial and administrative burdens. *Southeastern Community College v. Davis* 442 U.S. 397 (1979). In applying *Davis* the courts have recognized that section 504 may require an agency to undertake more than minimal expense in order to make its programs accessible. See e.g. *Nelson v. Thornburgh* 567 F. Supp. 369 (E.D. Pa. 1983), *aff'd without opinion*, 732 F.2d 146 (3d Cir. 1984), *cert. denied* 469 U.S. 1188 (1985).

Cost factors may properly influence an agency's decision as to whether it will produce all of its public documents in accessible formats prior to receiving requests. Mass production of material that is seldom requested may constitute an unwise allocation of scarce agency resources, and thus there may on occasion be good and sufficient reason not to provide a public document in one or another of the accessible formats unless and until it has been requested. The most cost efficient way of producing material in accessible formats is at the development stage. Thus, agencies should consider establishing procedures under which all material produced for mass distribution is simultaneously prepared in an appropriate accessible format.

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<sup>4</sup> In some circumstances, a notepad and written material may be sufficient to permit effective communication with a person who has a hearing impairment or other disability that impedes aural communication. In many circumstances, they will not be, particularly when the information being communicated is complex or exchanged for a lengthy period of time (e.g., a meeting) or where the individual is not skilled in spoken or written language. In these cases, a sign language interpreter may be appropriate. For people who cannot use conventionally printed material, effective communication may be achieved by several means, including the use of readers or audio recordings. However, as with the example of the notepad, where the document is lengthy or complex (e.g., Federal Register publications), audio tape may not be as effective as braille.

## **Burden of Proof**

The agency bears the burden of demonstrating that the preparation of material in an accessible format would cause undue financial and administrative burdens. Agency personnel should be made aware that this determination may only be made by the agency head or his or her designee and only after consideration of all of the resources available for use in the program in question. Agency personnel should also be aware that if it is determined that a specific request would constitute an undue burden, the agency must ascertain whether there exists another way to make the information available to the requesting person without causing undue financial and administrative burdens. If so, that accessible format must be used.

## **Notice of Available Accessible Format Material**

Each agency is responsible for ensuring that persons with disabilities are informed of their right to request material in accessible formats and that they receive information identifying any material that is routinely provided in an accessible format. The Council recommends that agencies include statements in all Federal Register notices, pamphlets, manuals, and other publications to inform the public that copies of these issuances may be made available in accessible formats upon request. If an agency uses television and radio announcements to communicate with the public, such announcements should include a statement that any advertised publication may be made available in an accessible format. Material prepared for television should also be captioned.

## **Available Assistance**

The Department of Justice has published technical assistance guides that have been distributed to Federal agencies that provide information about accessible format material. In addition, the Department provides technical assistance to agencies upon request. Agencies that want assistance in developing procedures to comply with the requirements of section 504 may contact the:

Coordination and Review  
Section  
Civil Rights Division  
Department of Justice  
P.O. Box 66118  
Washington, D.C. 20035-6118  
Telephone: (202) 307-2222 (voice)  
(202) 307-2678 (TDD)

The Interagency Committee on Employment of People with Disabilities has also issued guidance for Federal agencies on strategies for making documents and videos accessible for Federal employees who have disabilities. Further information may be obtained from the:

Interagency Committee on  
Employment of People with  
Disabilities  
1801 "L" Street, N.W.  
Washington, D.C. 20748  
Telephone: (202) 663-4568 (voice)  
(202) 663-4053 (TDD)

# Appendix B



**NIAMS Document Conversion  
Project: Vendor Comparison**

# NIAMS DOCUMENT CONVERSION PROJECT: VENDOR COMPARISON

As part of the NIAMS document conversion project, we asked six vendors to convert the brochure *What Black Women Should Know About Lupus* into large print, braille, and audiorecording. By obtaining conversion services from several vendors, we were able to compare customer service, product quality, and costs. This appendix provides a summary of our comparison and the resulting lessons learned for future vendor negotiations.

## Selection of Vendors for Conversion

Based on recommendations from several national organizations serving persons with disabilities, we identified 10 vendors specializing in alternative formats. Considering their varying turnaround times, costs, and size, we selected six vendors to produce a single copy of the lupus brochure in the respective alternative formats. After notifying these vendors by telephone, we sent them a letter confirming our request to produce a single copy of the lupus brochure. The letter contained detailed specifications for each format and the assumed cost and turnaround time based on each vendor's original estimate (see attached letter of request).

### Vendors Used by Format

#### Braille

Vendor A  
Vendor B  
Vendor C  
Vendor D

#### Large Print

Vendor A  
Vendor E  
Vendor B  
Vendor C

#### Audiorecording

Vendor A  
Vendor E  
Vendor B  
Vendor F

Vendors F and D specialize in only one format. The other vendors provide at least two formats.

## Customer Service

When reviewing how well vendors performed regarding customer service, we considered several variables such as response time for both the initial estimates and the final products as well as effective and timely communication about delays or specification changes. In addition, we discussed many issues and questions with each vendor before, during, and after the products were completed.

### *Response Time*

In the initial research phase of the project, we asked 10 vendors to submit estimates for turnaround time to convert and produce a single copy of the lupus brochure in alternative formats. Almost all of the vendors took longer than anticipated to provide estimates, and several companies provided particularly slow service. As a result of delayed, confusing, and excessively high estimates, we asked only six vendors to proceed with converting the brochure.

Among most of the six selected vendors, response time for final products was generally consistent with their initial estimate.

- Braille and large print products were received within 1 to 2 weeks.
- Audiorecordings were received within 1 to 4 weeks.

Vendor A, however, missed its initial production estimate by 4 days and then had to redo two of its products, which took another 4 weeks.

### ***Communication***

All vendors were careful to call ahead about expected delays or specification changes, with the exception of one company. Vendor F never acknowledged receipt of the purchase order. Several weeks later after we called to inquire about the status of the audiorecording, they apologized for the delay and submitted the audiotape within another 2 weeks.

During the initial research and in the course of production, we held indepth discussions with each vendor. Although all of the vendors provided useful information, vendors D, E, and F were notable in the manner and extent to which they shared their expertise. Each of these vendors also submitted high-quality products.

### **Quality Review**

We provided purchase orders with detailed specifications to each vendor. When reviewing products received, we included the following quality measures:

- Whether the product followed specifications regarding format.
- Whether the product included error-free text.

Several vendors submitted disappointing products because of sloppy production or not following instructions. Two out of four of the large print versions (produced by vendors A and B) contained obvious text errors, despite our having provided them with a disk version of the brochure. In the audiotapes, only vendor F produced an error-free tape without mispronunciation, faltering, or missteps by the narrator. Braille versions of the brochure produced by vendors A and C did not include an ink print title on the cover. Other quality differences in the products were more subjective; for example, in an audiotape of the brochure produced by vendor A, the narrator sounded so professional as to be almost too slick.

Charts on pages B-4 and B-5 present a comparison of products submitted by vendors for each alternative format. Estimated costs by vendor for small-, medium-, and large-scale quantities are also included.

## What We Learned

When comparing products between the six vendors that converted the lupus brochure in alternative formats, we preferred vendors D, E, and F for their product quality and customer service. These organizations were among the mid- to large-size vendors, and their cost estimates for small quantities of the brochure in large print, braille, or audiotape were generally higher than vendors B and C. However, vendors D, E, and F generally provided better quality products, and even if only ordering small quantities, these vendors were found to be worth the added expense.

Most of what we learned from experience with these vendors about producing alternative formats has been incorporated into *A Guide for Making Print Documents Accessible to Persons With Disabilities*. Some of the important lessons we learned include the following:

- Always request and carefully review or listen to a proof copy of the alternative format before final production.
- Ensure that a person who is blind and can read braille reviews the braille transcriptions.

We also learned that you may need to plan for some revision of the original text when making a print document accessible in audiotape, braille, or electronic formats.

## Large Print Quality and Cost Comparison

<b>Large Print</b>	<b>Vendor A</b>	<b>Vendor B</b>	<b>Vendor C</b>	<b>Vendor E</b>
Estimated turnaround	10 days	2-5 days	10 days	3 weeks
Actual turnaround	15 days	7 days	10 days	9 days
Length	12 pages	10 pages	9 pages	8 pages
Leading	20 point	20 point	24 point	22 point
Print quality	laser	laser	dot matrix	typeset
Cover paper	text stock	text stock	cover stock	cover stock
Cover color	white	off white	off white	light blue
Text paper color	white	off white	off white	off white
Graphics	yes	no	no	yes
Binding	stapled	no	stapled	saddle stitch
Setup cost	\$100.00	\$8.55	\$64.00	\$24.19
Cost per 100 (including setup)	\$385.00	\$77.00	\$171.00	\$67.00
Cost per 1,000 (including setup)	NA	\$550.00	\$1,614.00	\$580.00
Cost per 10,000 (including setup)	NA	\$5,500.00	\$10,664.00	\$1,400.00

## Braille Quality and Cost Comparison

<b>Braille</b>	<b>Vendor A</b>	<b>Vendor B</b>	<b>Vendor C</b>	<b>Vendor D</b>
Estimated turnaround	10 days	10-14 days	10 days	2-3 weeks
Actual turnaround	14 days	8 days	10 days	7 days
Ink title	No	No	Yes	Yes
Cover page	No	No	Yes	Yes
Back page	No	No	Yes	Yes
Blind proofreader	No	Yes	Yes	Yes
Number pages	8	13 pages (no interpoint)	8	10
Setup cost	\$37.50	\$7.50	\$94.00	\$88.00
Cost per 10 (including setup)	\$70.00	\$29.50	\$134.00	\$128.00
Cost per 100 (including setup)	\$322.50	\$227.50	\$239.00	\$400.00 (from disk) \$430.00 (scan) \$450.00 (retype)
Cost per 500 (including setup)	\$1362.50	\$997.50	\$779.00	\$525.00 (from disk) \$575.00 (scan) \$585.00 (retype)

## Audiotape Quality and Cost Comparison

Audiotape	Vendor A	Vendor B	Vendor F
Estimated turnaround	10 days	1 week	Will work with deadlines
Actual turnaround	14 working days for first tape. Redo took 4 weeks	8 working days	4 weeks for first tape. Redubbing took 2 days
Pronunciation errors	Errors found	Errors found	No errors
Complete text included	Yes	No	Yes
Dubbing errors	No	No	Yes, first tape double speed. Tape redubbed
Cost per 100	\$350 + \$25 for master	\$85.50 + \$3.50 for master	\$150 + \$150 for master
Cost per 1,000	\$2,700 + \$25 for master	\$842.50 + \$3.50 for master	\$600 + \$150 for master
Cost per 10,000	\$22,500 + \$25 for master	\$8,300 + \$3.50 for master	\$5,400 + \$150 for master

November 3, 1994

Vendor A  
Address  
City, State Zip

Dear Vendor,

Recently, I presented to the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) estimates you quoted for converting the brochure, *What Black Women Should Know About Lupus*, into alternative formats. NIAMS would now like to order the brochure in braille, large print, audiorecording, and electronic format.

Enclosed is a print copy and a WordPerfect version of the brochure. Please produce a single copy of the brochure in audiorecording, large print, braille, and electronic format.

The following are assumptions about the **recorded** version:

- the tape will be chrome
- plastic box packaging is included
- braille/large print label is included
- the tape length will be cut to the size of the recording
- a master DAT recording, plus two copies, costs \$25

The following are assumptions about the **large print** version:

- the brochure will be typeset using 18-point print
- graphics will be included
- 8 1/2 by 11-inch paper
- a cover will be included

The following are assumptions about the **braille** version:

- no illustrations will be used or integrated into the text
- the type of braille will be Grade II
- bold type in the print version will be conveyed in the braille version
- proofreading will be done by a blind proofreader
- there will be a cover, but no cover art
- the title will appear both in braille and in print
- no binding—stapled in the upper left corner
- a master transcription, with two copies, costs \$35

# **Appendix C**



## **Commercial Producers of Accessible Material**

### **Lists Distributed by:**

- **Library of Congress**
- **American Foundation for  
the Blind**



**National Library Service  
for the Blind and  
Physically Handicapped**

**The Library of Congress**

1291 Taylor Street, NW, Washington, DC 20542; Telephone 202-707-5100; TWX 710-822 1969; FAX 202 707-0712

**Reply from the Reference Section in response to your inquiry:**

Books and magazines recorded for the National Library Service for the Blind and Physically Handicapped (NLS) are produced by commercial and volunteer agencies under contract. These agencies are responsible for hiring their own narrators, but they must record the materials according to specified requirements from NLS. Following is a list of producers with capabilities to record and duplicate quantities of materials on 4-track or 2-track (standard) cassettes and on 8 rpm or 33-1/3 rpm (standard) records. The records are flexible discs.

American Foundation for the Blind  
Attention: Jim Rossi  
15 West 16th Street  
New York, New York 10011  
(212) 620-2130

American Printing House for the Blind  
Attention: Jack Decker  
1839 Frankfort Avenue  
Louisville, Kentucky 40206  
(502) 895-2405

Eva-Tone Soundsheets, Inc. (duplication only)  
Attention: Guynith Evans  
P.O. Box 7020  
Clearwater, Florida 34618  
(813) 572-7000

Magnetix Corporation (limited)  
Attention: Jim Baker  
770 West Bay Street  
Winter Garden, Florida 34787  
(407) 656-4494

Potomac Talking Book Services  
c/o Cutting Corporation  
Attention: Bob Norton or Mary Cutting  
4940 Hampden Lane  
Suite 300  
Bethesda, Maryland 20814  
(301) 654-2887  
(301) 907-3822

Talking Book Publishers, Inc.  
Attention: Bob Stecker  
1055 West Arizona Avenue  
Denver, Colorado 80223  
(303) 778-8606

The following volunteer organizations also produce NLS materials and have capabilities to record or duplicate materials in quantity.

Brevard Association for the Advancement  
of the Blind  
Attention: Judith Joyner  
674 South Patrick Drive  
Satellite Beach, Florida 32937  
(407) 773-1222

Insight for the Blind  
Attention: Caroline Mansur  
1401 N.E. 4th Avenue  
Fort Lauderdale, Florida 33304  
(305) 522-5072

North Texas Taping and Radio  
for the Blind  
Attention: Dick Jenkins  
3001 Bookhout  
Dallas, Texas 75201  
(214) 871-7668

You can also contact the library serving blind and physically handicapped individuals in your area.



**National Library Service  
for the Blind and  
Physically Handicapped**

**The Library of Congress**

1291 Taylor Street, NW, Washington, DC 20542; Telephone 202-707-5100; TWX 710-822-1969; FAX 202-707-0712

**Reply from the Reference Section in response to your inquiry:**

Following is a list of producers that provide braille materials under contract to the National Library Service for the Blind and Physically Handicapped.

American Printing House for the Blind  
Attention: Phyllis Campana  
1839 Frankfort Avenue  
Louisville, Kentucky 40206  
(502) 895-2405

Associated Services for the Blind  
Attention: Dolores Ferrara-Godzieba  
919 Walnut Street  
Philadelphia, Pennsylvania 19107  
(215) 627-0600

Braille International, Inc.  
Attention: Steve Brubaker  
3142 SE Jay Street  
Stuart, Florida 34997  
(407) 286-8366

The Clovernook Center - Opportunities  
for the Blind  
Attention: John Mitchell  
7000 Hamilton Avenue  
Cincinnati, Ohio 45231  
(513) 522-3860

National Braille Press  
Attention: Eileen Curran  
88 Saint Stephen Street  
Boston, Massachusetts 02115  
(617) 266-6160



**American  
Foundation  
for the Blind**

Governmental Relations  
1615 M Street, NW  
Suite 250  
Washington, DC 20036  
Tel: 202.457.1487  
Fax: 202.457.1492

*Incorporated  
in 1942*

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## **Commercial Producers of Accessible Material**

## **Braille Press**

National Braille Press  
88 St. Stephen Street  
Boston, MA 02115  
(617) 266-6160

Clovernook Printing House for the Blind  
7000 Hamilton Avenue  
Cincinnati, OH 45231  
(513) 522-3860

American Printing House for the Blind  
P.O. Box 6085  
Louisville, KY 40206  
(502) 895-2405

Braille International  
3142 S.E. Jay Street  
Stewart, FL 34997  
(407) 286-8366

Associated Services for the Blind  
919 Walnut Street  
Philadelphia, PA 19107  
(215) 627-0600

Braille Institute of America  
Attn: Braille Press  
741 N. Vermont Avenue  
Los Angeles, CA 90029  
(213) 662-1111

This list is for your information only. The American Foundation for the Blind does not endorse a organization nor does it assume any responsibility for the quality of the produce. Contact producers for current prices and/or estimates.



**American  
Foundation  
for the Blind**

Governmental Relations  
1615 M Street, NW  
Suite 250  
Washington, DC 20036  
Tel: 202.457.1487  
Fax: 202.457.1492

*Incorporated  
in 19.*

## Commercial Producers of Accessible Material

## Recording/Duplicatin

Organization	Contact	Studio Recording	2- track	4- track	Duplicates
American Foundation for the Blind 15 West 16th Street New York, NY 10011	Talking Books (212) 620-2091	✓	✓	✓	✓
American Printing House for the Blind P.O. Box 6085 Louisville, KY 40206	Jack Decker (502) 8905-2405	✓	✓	✓	✓
Recording for the Blind 20 Roszel Road Princeton, NJ 08540	Liz Webber (609) 452-0606 Ext 244	✓	✓	✓	✓
Talking Book Publishers P.O. Box 1653 Englewood, CO 80150	Bob Stecker (303) 3778-8606	✓	✓	✓	
Evatone 4801 Ulmerton Road Clearwater, FL 34622	Mr. Pat Augustine (813) 572-7000				✓ sound sheets & cassettes
TinMan 2800 Yellow Brick Road St. Louis, MO 63129	Kathy Miller (314) 487-3735				✓
Cutting Corporation 4940 Hampden Lane Suite 300 Bethesda, MD 20814	Mary Cutting (301) 654-2887	✓	✓	✓	✓
Magnetix 770 West Bay Street Winter Garden, FL 37487	Jim Baker (407) 656-4494	✓	✓	✓	✓
Sun Sounds 7290 E. Broadway Tucson, AZ 85710	Elissa Lines (Tucson) (602) 296-2400 Dede Pearse (Phoenix) (602) 231-0500	✓	✓		✓
RPL 1100 State Street Camden, NJ 08105 (301) 654-2887	Lisa Oliano (609) 963-3000	✓	✓	✓	✓

In keeping with our goal to achieve equality of information access for people who are blind or visually impaired, this document is available, upon request, in the following accessible formats: IBM computer diskette, braille, cassette, large print.



**American  
Foundation  
for the Blind**

Governmental Relations  
1615 M Street, NW  
Suite 250  
Washington, DC 20036  
Tel: 202.457.1487  
Fax: 202.457.1492

*Incorporated  
in 1921*

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## **Commercial Producers of Accessible Material**

## **Individual Braille Transcription Services**

This list is for your information only. The American Foundation for the Blind does not endorse any organization nor does it assume any responsibility for the quality of the product. Prices may not be current. Contact organizations for current prices and/or estimates.

Ms. Judith Dixon  
1104 N. Stafford Street  
Arlington, VA 22201  
703) 276-9191

Prices depend on medium submitted and complexity of format.

### **Access U.S.A.**

Attn: Ms. Deborah Haight  
P.O. Box 116  
242 James Street  
Clayton, NY 13624  
800) 263 2750

Alternate media. Call for services and estimates.

The following listing was furnished as a public service by National Braille Press Inc., 88 St. Stephen Street, Boston, MA 02115, (617) 266-6160.

Due to the large number of requests we [National Braille Press] receive for individual braille transcription, we have compiled a listing of braille transcription services across the country. Pay no attention to their geographic proximity; utilization of these services requires nothing more than access to a post office box.

This information was collected in May of 1992 and is subject to change as time goes by. We make no recommendations regarding these braille services although we assume they all offer reasonable braille transcription at relatively similar prices. Alphabetically they are:

### **Associated Services for the Blind**

Attn: Ms. Dolores Ferrara-Godziecha  
119 Walnut Street  
Philadelphia, PA 19107  
215) 627-0600

Associated Services will transcribe documents from print or from IBM disk. The fee is 25 cents per braille page. They produce single-sided braille on computer-sized paper or Thermoform. They can handle music, math, and computer-related materials. All work is proofread. They do handle RUSH jobs for an extra charge. The approximate turnaround time is 15-40 working days, depending on the size of the job.

**Braille Action Lab**

Perceptual Alternatives Laboratory  
358 Life Sciences Bldg., University of Louisville  
Louisville, KY 40292  
(502) 588-8258

Documents received in print can be scanned by their optical character reader; material received on disk either in BEX or WordPerfect can be directly transcribed into braille. Braille is process on computer-sized paper on a single side. The fee is 10 cents per braille page, including binding. Agencies, schools, and businesses pay a higher rate to be negotiated. There is a minimum of \$2 per order. They do not handle math or music, but do transcribe some computer-related material. Turnaround time is from 10 to 45 work ing days depending on the length and nature of the document, and technique by which the material is processed.

**Braille Communication Services**

Attn: Randy  
P.O. Box 16126  
Lansing, MI 48901  
(517) 393-5752

This group produces both braille and large print (up to 32 point). Materials can be received in print (for scanning on Kurzweil), through a modem, or on disk (from most operating systems). The fee is 10.2 cent per braille page. Materials may be bound or stapled. They do not handle math or music, but can do computer-related materials. There is a special RUSH fee for 24-hour service. Otherwise, turnaround is 3 work- ing days, depending on the size. They also sell tractor-feed braille paper for \$35/1,000.

**Braille Computer Center**

Attn: Ms. Priscilla Simmons  
Boulder Public Library  
P.O. Drawer H  
Boulder, CO 80306  
(303) 441-3098

Preference is given to Colorado residents, although they do take jobs from out of state. They can transcribe documents from print or from an Apple or IBM disk for a fee of 5 cents per braille page for Colorado residents. The fee is 15 cents per braille page, regardless of input method, for out-of-staters. Covers and binding charges are extra. They produce single-sided braille on computer-sized paper. They do not handle music or math, but can do computer-related materials. If time permits, they can handle a RUSH job for an extra charge. The turnaround time for a short document is 2 weeks; 3-6 weeks for a larg document.

**Braille Inc.**

184 Seapit Road  
P.O. Box 457  
F. Falmouth, MA 02536  
Telephone: (508) 540 0800  
Fax: (508) 548-6116

Braille Inc. Can receive documents in print or on IBM disk for braille. Prices range from \$1.25 per braille page for literary braille, for math, and \$2 for computer and technical materials or diagrams. Organization particularly strong in the areas of higher math, foreign and computer-related jobs. They produce single-sided braille computer-sized paper or Thermoform. They do handle RUSH jobs for extra charge if they have the time. Approximate turnaround time for a document is 10 days, and for a large document it's 1-2 months.

**Braille Institute**

Attn: Ms. Carol Jimenez  
741 North Vermont Avenue  
Los Angeles, CA 90029-3594  
(213) 663-1111

They can transcribe documents from print or IBM disk. They produce single-sided or interpointed braille on either paper or Thermoform. They cannot handle music and only have the resources to handle Nemeth and computer-related. They will handle RUSH jobs for an extra fee. The approximate time for a short job is 2 weeks to 3 months, depending on the load; book-size jobs take six months to 1 year.

**The Dot Spot**

Attn: Ms. Linda Huffman  
P.O. Box 8425  
Phoenix, AZ 85066  
(602) 243-9222

The Dot Spot is a small nonprofit brailleing service dedicated to helping the individual. Turnaround time is up to 4-6 months for large items. Smaller items can usually be returned, with the print, within 1 month. The fee is 35 cents per braille page. Plastic binding strips and paper covers are up to \$2.20 per volume. They accept originals in print and on 3.5" or 5.25" low-density, IBM-compatible disks. Estimates are provided for all projects. They do specialized braille greeting cards without graphics for \$1.00 each with envelope. For any specialized project, please call.

**Massachusetts Association for the Blind**

Attn: Ms. Ruth Lehrer, Braille Department  
200 Ivy Street  
Brookline, MA 02146  
(617) 738-5110

MAB transcribes books and other materials through volunteers who work either on a Perkins Braille or computer (IBM and Apple). The fee for individuals is 12 cents per page and 18 cents per Thermoform page. Binding is an additional \$4. Prices are slightly higher for businesses. They can receive materials in print or Apple or MM 5 1/4" computer disks. MAB can handle math, music, and computer-related materials. The RUSH fee charge is an additional \$50. Turnaround time varies depending on the assignment, but a volume can be completed in three months. Work for students and professionals is given priority.

**Michigan Braille Transcribing Services**

Attn: Mr. Ralph Hoffman, Director  
4000 Cooper Street  
Jackson, MI 49201  
(517) 788-7560, ext. 494

This industrious group did over 750,000 pages of braille last year! They can handle math and computer-related materials, but not music. Fees vary from 24 cents per braille page for Nemeth to 22 cents per braille page for literary braille. Commercial enterprises may pay a higher rate. Binding is \$1.00 per volume. They can receive materials in print or from virtually any computer system disk. Single-sided or interpointed braille is available. Turnaround time is 2 days to 2 weeks for a short document. Text books are done at a rate of about two volumes a week. They offer a Quick-Braille service with a 48-hour turnaround (no more than 10 print pages) for a fee of 35 cents per braille page.

**Mile High Chapter**

American Red Cross Braille Service  
444 Sherman Street  
Denver, CO 80203  
(303) 722-7474

The Mile High Chapter transcribes documents from print or from IBM disk. The cost to individuals is 10 cents per braille page. They handle individual requests, textbooks, and math materials. They handle RUSH jobs, too. The approximate turnaround time is 15-40 working days contingent upon the size of the job.

**MSMT Braille Center (A Division of Goodwill Industries)**

Attn: Ms. Carolyn Colclough  
3917 Mayette Avenue  
Santa Rosa, CA 95405  
(707) 579-1115

Full-service braille transcription house that can transcribe documents from print, IBM disk, Apple disk, or by modem. Fees vary from 15 cents a braille page, including transcription, to work done by estimate only. There is a minimum charge of \$30 on all orders. They can produce single-sided and interpointed braille on computer-sized paper or 8 1/2 x 11. They cannot do Nemeth or music but can handle computer-related materials. There are special prices for computerized braille graphs, maps, charts, or diagrams. MSMT can translate and braille up to 100 typed pages and guarantee delivery within 72 hours for an extra RUSH order charge. Binding, packaging, matting, and handling fees are extra on all orders. Approximate turnaround time is 1-5 days for a short document and 10-30 days for a large document.

**National Braille Association, Inc.**

Attn: Ms. Angela Coffaro  
1290 University Avenue  
Rochester, NY 14607  
(716) 473-0900

Volunteers transcribe from print only. The fee is 12 cents per braille page for individuals paying with their own funds (this price includes binding). There is a \$5 minimum charge for any order. Produces braille on single sided, 11 x 11 1/2" paper or Thermoform. Accepts requests for Nemeth, music, and computer-related materials. Does not handle RUSH orders. Turnaround time varies depending on the size of the job. Catalogs of the braille collection are available on request.

**Northwest Braille Services**

P.O. Box 234  
Ferndale, WA 98248  
(206) 733-6714

Northwest Braille Services currently has three certified braillists and one in training. They accept requests from individuals; turnaround time depends upon the size of the project. They use Perkins Brailers, Thermoform copies, and can provide transcriptions on Apple Braille Ed-It formatted disks. Computer embossing is not currently available. Northwest Braille Services is a nonprofit organization dependent upon donations. Annual membership is \$5/individual, \$10/family, \$25/group or agency. Clients are encouraged to submit annual dues and pay 25 cents per braille page.

### **National Federation of the Blind of Utah**

Attn: Ms. Jannis Spencer  
72 East 400 South, Suite 275  
Salt Lake City, UT 84111  
(801) 364-9007 or (800) 876-9007

Preference is given to Utah residents, but they will accommodate others. They prefer to receive materials on an IBM disk, but they can type materials in as well. Services are free to Utah residents; out-of-staters pay 50 cents per braille page (includes binding). Braille is produced on one side of computer-sized paper. They cannot handle music or Nemeth, but do handle computer-related materials. Turnaround time for material coming in on disk is about two weeks; typed-in materials varies depending on the document.

### **Northern Nevada Braille Transcribers**

Attn: Ms. Lois Baskerville  
1015 Oxford Avenue  
Sparks, NV 89431  
(702) 358-2456

This is a small volunteer group, specializing in personalized transcription for deaf-blind braille readers. The group runs strictly on contributions. Services are free to individuals, organizations are charged for paper and binding costs only.

### **Sun Sounds**

Attn: Ms. Elissa Lines  
7290 E. Broadway  
Tucson, AZ 85710  
Telephone: (602) 290-6007  
Fax: (602) 290-1998

### **Sun Sounds**

Attn: Ms. Dede Pearce  
3124 E. Roosevelt  
Phoenix, AZ 85008  
Telephone: (602) 231-0500  
Fax: (602) 220-9335

Materials are typed in, scanned, received via modem, or on disk. The turnaround time is 3 weeks or less. The cost is 30 cents per braille page with substantial savings on quantity orders (15 cents per braille page for example). They use computer-sized paper or 8-1/2 x 11. They are not equipped to transcribe music or Nemeth. Any printed materials can be converted into large print, braille, computer disk, electronic bulletin board, or audio. Binding services available.

### **Quik-Scribe**

Attn: Mr. Ron and Ms. Sue Staley  
14144 Burbank Blvd.  
Van Nuys, CA 91401  
(818) 989-2137

Quik-Scribe is a quick and convenient way to have your materials prepared in print, large print, and hard-copy braille. Materials transcribed include employment-related materials, textbooks, computer manuals, instructional brochures, and cookbooks, among others. Quik-Scribe can transcribe from print or Apple or MS-DOS disks. Braille is produced on computer-sized paper or thermoform. They do not handle Nemeth or music, but can do computer-related materials. The approximate turnaround time for short documents is 3 days to 3 weeks; large jobs are sent out piecemeal, as sections are completed, over a period of 3-6 months.

Charges are as follows:

from print to braille, non-technical	\$ 1.00
from print to braille, technical	1.25
transcribed from disk and edited	.25
transcribed from disk and not proofread	.15
(per volume)	1.00
and covering (per volume)	2.00
from print to disk (per hour)	20.00

### **TFB Publications**

Attn: Mr. John Dragona  
75th Street  
Bergen, NJ 07047  
(201) 662-0956

TFB Publications has a variety of services, including braille transcription, large-print reproduction, and tape duplication. Materials can be received in print, over a modem, or on disk. The cost for braille is 15 cents per braille page for ten copies or more, and 25 cents per braille page for less than ten copies. If the document could be made available to others, then the lower rate may apply regardless of quantity. Binding is 25 cents per volume. Braille is produced on a single side of either letter-sized paper or computer-sized paper. They do not handle Nemeth or music, but they do some computer-related materials. Turnaround time is less than a week for a short document of less than 30 print pages.

### **Volunteer Braille Services**

Attn: Ms. Jean Zolik  
3730 Toledo Avenue, North  
Robbinsdale, NM 55422  
(612) 533-7332

This organization charges 6 cents per braille page for residents of Minnesota and 9 cents for out-of-staters. Binding is an additional \$3.50. They handle some Nemeth but no computer-related materials or music. Most of their requests are for text books and literary braille. They advertise a quick turnaround time but did not give any time tables. They suggest you call first for an estimate.

### **Volunteers Who Produce Books**

National Library Service for the Blind and  
Physically Handicapped  
Library of Congress  
Washington, DC 20542  
(800) 424-8567

The Library of Congress has compiled a directory, available in large print and braille formats, which gives the names of volunteer groups and individuals who transcribe and record books and other reading materials for blind readers. The listing is alphabetical by state. Send for your free copy from LOC.

April 1, 1993